South Africa's Defence Industry
2006
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ADS – African Defence Systems
AISI – Aerospace Industry Support Initiative
AMS – Aerospace Monitoring & Systems
ATE – Advanced Technologies & Engineering
AMD – African Aerospace, Maritime and Defence Industries Association
Armscor – Armaments Development and Production Corporation of South Africa
AAM – Air-to-air missile
BEE – Black economic-empowerment
DAC – Defence Advisory Council
Datam – Denel Aviation Transport Aircraft Maintenance
DOD – Department of Defence
DPS – Denel Personnel Solutions
DTI – Department of Trade and Industry
Dip – Defence industrial participation
DSTV – Digital satellite television
DPE – Department of Public Enterprises
Ergotech – Ergonomics Technologies
ESACC – European South African Corvette Consortium
EADS – European Aeronautic Defence and Space Company
FBS – Futuristic Business Solutions
GDP – Gross domestic product
GQA – Government quality assurance
GEW – Grintek Ewation
GSC – German Submarine Consortium
GES – Grinaker Electronic Systems
Defining the defence-related industries

Globally, the current defence climate is one in which there is a growing tendency for companies producing defence equipment to make use of civilian technologies, or to manufacture dual-use products which can be sold to both defence and non-defence markets. There is also a growing overlap between defence and civilian production within companies, both nationally and internationally.

This report will, therefore, make use of the term defence-related industries, rather than using the more common, but less accurate phrases – defence industry, armaments industry and defence suppliers.

In line with the 1999 White Paper on the South African Defence Related Industries, the report will take this cluster of industries to include those organisations in the public and private sectors, and commercial companies and business units of such organisations, which are directly or indirectly involved in the provision of goods and services defined as armaments, to security forces. This involvement includes research, design, development, production, assembly, testing, evaluation, upgrading, procurement, export, import, maintenance, logistical support, human support or project management.
The development of South Africa’s defence-related industries

South Africa’s involvement in the development of defence technology began in the 19th century when the country produced its first pieces of artillery. However, the manufacture of armaments on a significant scale began only around the time of the Second World War when, making use of British aid, the country began to produce weapons for use by Allied forces.

Employing some 12 000 people, based at six factories around the country, the wartime defence industry produced 5 770 armoured cars, 600 guns of various calibre and more than 30 000 military vehicles of 80 different types. Large quantities of bombs, and more than half of all the small-arms ammunition required by the Allies were also manufactured in South Africa. In addition, the country made notable technology developments in the form of the MK 1 armoured car and the JB 1 radar system, becoming one of the first countries to develop and manufacture radar sets.

After the war, most of the defence factories reverted to their prewar civilian activities, with only a small defence industrial base being retained. The result was that, during the 1950s and early 1960s, South Africa relied on arms imports.

Also during the early 1960s, however, South Africa began to experience increasing international opposition to its apartheid policies. The country withdrew from the Commonwealth in 1961, and experienced the imposition of a voluntary United Nations (UN) arms embargo in 1963. These events, together with growing domestic and regional resistance, prompted the expansion of the country’s defence-related industries which, at that stage, were concentrated in the private sector.

In 1964, a statutory body known as the Armaments Production Board was established to control the manufacture, procurement and supply of all armaments for the South African National Defence Force (SADF), including arms produced by the private sector. The board was given the task of laying the infrastructural foundations to enable the coordination and extension of arms production in the country.

Private-sector involvement in the defence-related industries increased and, in 1967, former South African President PW Botha, who at that stage was the country’s Minister of Defence, visited Portugal and France to investigate arms production, in an attempt to structure a model for the development of the South African industry. In the same year, the UN Security Council passed its first resolution calling on all states to stop supplying arms to South Africa.

By 1968, government determined that the Armaments Production Board had realised its initial objective of laying the necessary infrastructural foundations for the development of the industry, and the board’s name was changed to the Armaments Board, under the Armaments Development and Production Act of 1968. In terms of this act, the duties of the board were expanded to include overall responsibility for armaments acquisition for the SADF, and the determination of the best use of the private sector in arms production.

Also in 1968, due to strategic concerns over the implications of the UN arms embargo, government established the Armaments Development and Production Corporation of South Africa (Armscor), which was mandated to promote and coordinate the development, manufacture, standardisation, maintenance, acquisition, and supply of armaments.

The corporation took over previously government-controlled munitions factories as subsidiaries and, over the next few years, acquired various private sector companies and established a number of new production and research and development facilities.

The 1970s saw the State undertaking a major reorganisation and expansion of the local defence-
related industries, again in response to strategic imperatives generated by the UN arms embargo.

The reorganisation started in 1973 with the establishment of a Defence Advisory Council (DAC) to coordinate the involvement of the private sector in domestic arms production. The council was chaired by the Minister of Defence, and included the President of the Armaments Board and representatives from many of the country’s main private sector companies, such as Anglo American, Barlow Rand, Tongaat and South African Breweries. As can be seen from the membership of the council, the formation of the DAC was indicative of the growing links between the State, the military and the private sector.

Recognising the need to centralise responsibility for the procurement of armaments and control of armaments production, the Armaments Board and Armscor were amalgamated in 1977 to form the Armaments Corporation of South Africa, which retained the name Armscor. The corporation was given three main tasks – the manufacture of armaments, the acquisition of armaments, and arms control – as well as a number of secondary tasks, such as testing and evaluation, defence research and development, industrial development, and the marketing and sale of excess SADF stock. The corporation played an important role in overall coordination and the development of policy for the industry. Its board acted as the State tender board for the acquisition of capital equipment in terms of the SADF’s Special Defence Account, as well as for the South African Police and other government departments such as the Prisons Service.

In 1977, the UN imposed a mandatory arms embargo against South Africa, and Armscor continued its drive for self-sufficiency. Despite the embargo, South Africa developed the most advanced military-industrial base on the continent, ranking behind Brazil and Israel, among developing-country arms suppliers in the late 1970s. Massive State investment in the corporation saw Armscor growing into one of the largest industrial groups in South Africa and, by 1981, it had assets of R2-billion, a yearly turnover of R1,5-billion and more than 25,000 employees.

Armscor itself concentrated on weapons systems development and integration, and the group established operational research and systems engineering facilities, but seeking to avoid the duplication of capabilities already available in the private sector, made use of materials, components, subsystems and, in many cases, complete products, generated by private firms. By 1981 Armscor was contracting more than 900 companies in the private sector and, by 1984, more than 2,000 private sector firms were involved in domestic arms production.

During the 1980s, South Africa was militarily involved in a number of regional conflicts, fuelled by Cold War and apartheid imperatives, which required a guaranteed supply of increasingly-sophisticated weapons. Roughly half of the rapidly growing defence budget was being allocated for the procurement of armaments, and Armscor and the private sector defence-related industries grew to meet demand. Product development capabilities were enhanced, elevating the defence sector to a designing industry, and the country’s general industrial base experienced spin-off investment.

While growth in the industry seemed strong, the 1980s also brought a number of difficulties to the local defence sector. Due to the UN arms embargo, Armscor was obliged to engage in a number of uneconomic practices, such as stockpiling certain items, investing in research and development for commercially unviable production facilities, and carrying out short production runs. This resulted in increasing production costs which, together with excess capacities created by falling domestic demand following the initial build-up, led to dramatic staff cuts at Armscor and the cancellation of a number of contracts with private-sector firms.

In order to improve unit costs for local customers and make use of excess capacity, Armscor, relatively successfully, became involved in the export market in 1982. This led to a UN Security Resolution in 1984 requesting all nations to refrain from buying arms produced in South Africa. South Africa’s willingness to sell arms to states that were similarly excluded from access to the world’s main arms producers, however, saw the value of the country’s arms exports increase by nearly 300% between 1982 and 1989. Although Armscor did not disclose export figures, the US government estimated that South Africa earned about $273-million (in constant 1989 dollars) in export sales, during 1984 to 1988.

By the late 1980s, the industry was in a strong position, in spite of UN attempts to stifle it, and defence production had become one of the most significant activities in the country’s industrial base. Defence-related industries employed over 130,000
people, directly and indirectly, accounting for 9% of manufacturing employment. More than 3 000 firms and business units in the public and private sector, representing 10% of all manufacturing establishments, were involved in various aspects of defence production as contractors, subcontractors and suppliers.

The industry had also reached a relatively high degree of self-sufficiency by the end of the 1980s, with most of the SADF’s requirements being met locally. The country’s limited research and development resources, however, meant that the local defence-related industries did not attempt to reproduce work carried out by the major Western arms producers, but rather focused on acquiring a capacity for upgrading, modifying and modernising existing armaments and weapons systems.

The achievement of self-sufficiency and industry growth, however, was not indicative of unqualified success, and the development of the industry from the late 1970s through the 1980s was informed by strategic rather than economic considerations at a time when the economy was performing poorly. The result of this was that the defence-related industries imposed a burden on the national economy, and contributed to deteriorating economic performance.

The high levels of State investment in defence also limited the funds available for direct investment into more productive sectors of the economy, leading to declining productivity and output performance in the general manufacturing sector. It has been said that the expansion of the domestic arms industry during the 1970s and 1980s distorted the trajectory of the country’s industrial development and imposed a number of long-term costs on the economy.

The significance of job creation was limited, as most of the jobs were highly capital- and skill-intensive, and thus inappropriate considering South Africa’s vast base of unskilled workers. Defence-related industries captured a disproportionate amount of the country’s scarce labour resources – around 10% of the country’s total number of scientists and engineers by the late 1980s – imposing costs on the more productive sectors of the economy and lowering the aggregate productivity of human capital.

The absorption of scarce labour, capital and foreign exchange resources, and the crowding-out of nonmilitary public and private investment, and of nonmilitary research and development, contributed to the underdevelopment, declining productivity and poor international competitiveness of the civilian economy.

The expansion in exports was also less beneficial for the economy than the figures depict, as the hidden costs of export subsidies are not reflected. Marketing activities were paid for by Armscor out of the defence budget and much of the research and development and production costs of the export products were subsidised by the domestic procurement budget. Also, despite the growth in exports, South Africa’s trade balance in armaments remained negative between 1982 and 1989, with the result that the defence sector remained a net user of foreign exchange resources throughout the 1980s.

In short, the nature and structure of the South African defence-related industries prior to the country’s democratic transition in 1994 was the result of a number of factors related to the development of the apartheid state: the imposition of UN arms embargoes; South Africa’s military involvement in a number of regional conflicts, which required a guaranteed supply of military equipment; the ideological imperatives of the apartheid state and the desire for self-sufficiency in strategic industries, including armaments; and government support for import-substitution industrialisation. These factors led to the creation of a relatively sophisticated but economically unviable defence industrial base, while having a bad effect on the economy as a whole.

After 1989, many of the elements that had shaped South Africa’s defence sector began to change.

Levels of military spending around the world fell following the end of the Cold War and, in Southern Africa, reduced superpower involvement in areas of conflict limited resources available to combatants. In addition, ideological tensions between and within countries in the region lessened, providing countries with the opportunity to reduce their levels of military spending, and to implement disarmament measures, such as demobilisation.

Perceived external threats to South Africa’s security dissipated and, in 1989, the country withdrew its armed forces from Namibia and Angola.

Further changes in the South African defence sector were brought about by internal factors, including the
initiation of negotiations over democratic governance in the country. These negotiations culminated in the 1994 elections that introduced the Government of National Unity, under which new budgetary priorities emerged. The defence allocation in the national budget decreased significantly, beginning a process of demilitarisation to reverse the militarisation of South African society that had occurred in the 1970s and 1980s.

Accompanying the budget cuts were moves to end conscription for white males, re-establish civilian control over the armed forces, and implement disarmament measures. The country’s nuclear weapons programme was terminated, and several major weapons projects were cancelled or postponed. Redundant, obsolete and surplus military equipment was sold, and the country’s stockpile of antipersonnel mines was destroyed.

As the Department of Defence was the largest, and in many cases the only, client for defence products and services, local defence-related companies found themselves forced into a process of downsizing and restructuring. Large numbers of employees were retrenched.

Armscor made presentations to Government during 1990 and 1991, indicating that most of its industrial facilities could be used for commercial purposes, while remaining available to supply the country’s defence needs and, in April 1992, Armscor was divided into two separate organisations – Armscor and Denel. Armscor, which would remain part of the Department of Defence, retained responsibility for defence industrial development policy, arms control and acquisition management for the new South African National Defence Force (SANDF), formed to incorporate the statutory and nonstatutory forces, and, to a lesser extent, for the South African Police Service and South African Correctional Services. A new State-owned company, Denel, was established to take over the corporation’s research and development and production capabilities. Denel was placed under the Department of Public Enterprises.

In 1995, the roles and functions of Armscor relating to the international trading of arms were transferred to the National Conventional Arms Control Committee, chaired by a cabinet minister other than the Minister of Defence, thus further focusing Armscor on acquisition management and the management of certain strategic capabilities on behalf of the Department of Defence through its subsidiary companies.

In recent years, the declines in defence expenditure have slowed, although defence budget allocations remain modest, and the SANDF has been allocated funds to buy new weapons systems. The procurement package, the so-called Strategic Defence Package, is linked to offset agreements, which may hold some promise for the domestic defence-related industries.
Nature and structure of South Africa’s defence-related industries

Industry players

In 1994, South Africa’s defence-related industries were dominated by parastatal Denel and three private-sector companies – Grintek, Altech and Reunert. In 2005, Saab raised its interest in Grintek and became the majority owner the company. The company is now called Saab Grintek. Altech has, however, left the defence market, and Reunert’s involvement in the sector has lessened. In 2006, Reunert announced that it was considering the disposal of most, if not all, of its defence businesses. The majority of private-sector turnover in the defence market is now spread over several companies ¬– Grintek, Reutech (the defence arm of Reunert), Advanced Technologies & Engineering (ATE), African Defence Systems (ADS), Land Systems OMC (formerly known as Alvis-OMC) and Tellumat – and the number of large companies in the sector is falling.

The South African Aerospace, Maritime and Defence Industries Association (AMD), has 43 members and claims to represent over 90% of all defence-related business in South Africa and over 97% of defence-related exports.

State-owned Denel has been included in the restructuring plans of the Department of Public Enterprises (DPE). BAE Systems, a British firm, was to acquire a 30% stake in Denel, but this fell through in 2002. Turbomeca, part of the French group Snecma, has acquired a majority shareholding in Denel’s airmotive division, which has been renamed Turbomeca Africa. Despite these restructuring efforts, however, the South African government has indicated that it intends retaining control of Denel, as it is regarded as a strategic asset.

Denel is by far the most significant contributor to South Africa’s defence-related sector, both in terms of the value of its defence sales and its dependence on these sales, averaging 48% of the local defence-related market, with the private sector’s share averaging 52%. Although this is down on the almost 70% held by Armscor subsidiaries during the 1980s and prior to the formation of Denel, the company continues to dominate most of the seven main sectors of the market, particularly aerospace, ammunition (small, medium and large calibre), weapons systems (including infantry weapons, cannons, artillery systems and missiles) and military vehicles. It also dominates a number of subsectors, including information technology and testing.

The three main sectors of the market not controlled by Denel – electronics, maritime and support equipment – are dominated by Saab Grintek, Reutech, ATE, ADS and Land Systems OMC, together with a large number of small and medium-sized companies, none of which focus exclusively on defence work. The defence-related industries also contain a number of small skills-based entrepreneurial companies that subcontract to the major companies, and tend to also find other work both locally and abroad, migrating defence industry skills to the rest of industry. For example, Aerosud exports cabin fittings for Boeing 737 series aircraft, and Land Mobility Technology does suspension simulation, evaluation and qualification for Land Rover.

Denel’s financial performance has been volatile since its establishment in 1992. Between 1992 and 1996, its turnover dropped by nearly six per cent a year in real terms, while the three largest private sector companies–Reutech, Altech and Grintek–saw increases in their turnover during the same period.

In March 2005, Denel reported a loss of R 1.6-billion owing due to a lack of supportive domestic industry clients and limited access to international defence contracts. Denel also reported that it expected another loss of more than R1-billion rand for the 2006 financial year. As a result of the loss,
Denel received a R2-billion cash injection to bring it back to profitability. Denel has indicated that it is no longer viable under its current model and is currently involved in a turnaround strategy.

In 2006, Reunert announced that it was considering the disposal of its defence companies. Although Reutech recovered from its loss position in 2004 to record an operating profit of R3,8-million in 2005, Reunert announced that its defence operations would not have a material effect on the company even if they performed at optimal levels, and that it was therefore considering a disposal of the business.

Nature and structure of the defence industry

Two policy documents, the White Paper on Defence (1996) and the Defence Review (1998), currently guide the SANDF. The white paper gives guidance on conducting defence in a democracy, and the defence review details the required force design and structure. Global developments and subsequent changes in legislation, such as the Public Finance Management Act (1999) and the Defence Act (2002), require that both documents be updated to reflect changing legal obligations. The update is expected to be completed during 2006.

The White Paper on South African Defence-Related Industries lists six strategically essential defence technologies and capabilities that the South African defence-related industry should maintain. They are: logistic support, repair and maintenance of equipment and systems; systems integration; command, control and communication systems; sensors, signal processing and data processing; combat systems software and support; and simulation systems and war-gaming.

At present, the local defence-related industries’ specific areas of competence are electronics, weapons systems and communications. In the field of electronics, skills exist in the design and manufacture of guidance systems for missiles, gun-control systems for vehicles and fire-control systems for artillery. Many companies are involved in the design and development of avionics subsystems for fighter aircraft and attack helicopters. Regarding weapons systems, competences include weapons for aircraft, helicopters, ships, vehicles, artillery and infantry, while in the field of communications, South Africa is skilled in the development of secure communications, electronic warfare, radar and information technology.

Further, South Africa is a leader in the design and manufacture of unmanned aerial vehicles and produces components for large international aerospace companies, such as Boeing.

Specific product lines that have been identified as worth maintaining include the G5 and G6 artillery systems; turret and gun systems for armoured cars and infantry combat vehicles; ammunition and propulsion systems for these systems; observation payloads and sighting systems for unmanned airborne vehicles and helicopters; air–ground self-defence missile systems; laser range-finders and submarine periscopes; mine-protected vehicles; missile launch warning systems and low-cost radar warning receivers for aircraft; health and utilisation monitoring systems for avionics; and electronic fuses for a variety of artillery rounds and aircraft bombs.

In part as a result of the arms embargo, which made defence equipment purchases difficult, South African companies are also skilled in upgrading outdated systems, enabling large cost reductions to be attained. For example, in September 2005, Land Systems OMC was awarded a follow-on R171-million (£15-million) contract by Armscor, for the upgrade of Olifant MK2 Main Battle Tanks, which were previously not considered viable.

The local manufacture of personal weapons and ammunition has been affected by global overcapacity, resulting in the South African defence-related industries choosing to focus on small-volume products, such as machine guns for combat vehicle turrets and custom-built hunting rifles, and exports of brass parts used in the manufacture of ammunition.

In an attempt to consolidate their positions in the domestic market, the three major private defence firms – Grintek, Altech and Reunert – have acquired various small and medium-sized defence firms since the early 1990s. These large firms, like Denel, have also attempted to vertically integrate, by outsourcing less of their defence business. This had a negative impact on many of the smaller defence firms, especially those who were suppliers and subcontractors to the larger defence firms. Many
small and medium-sized private defence firms, either left the market, merged with, or were acquired by larger defence firms. As a result, the domestic defence market (excluding imports) has become increasingly concentrated.

The structure of the local defence-related industry has become such that, although the larger companies usually act as main contractors, much of the work is contracted out, to the point where the value added by the main contractor may be a minor fraction of the total value of the project. In fact, the principal skill of Denel and major private-sector defence-related groups is system or subsystem design, development, integration and testing, while most of the actual manufacture and assembly is subcontracted out to more specialised industries which are part of the country’s general industrial base. Much of the value, therefore, trickles down to the smaller companies that are not specifically involved in defence production.

This trickle-down effect, however, is spread among a large number of companies, with the result that most South African defence-related companies have sales of less than R100-million a year, and a third of the companies have sales of less than R10-million a year.

Defence production is concentrated in the Gauteng province, where over 80% of defence work takes place, primarily in the Johannesburg and Pretoria areas. Other areas of concentration include Durban and Pinetown, in KwaZulu-Natal, and Cape Town, in the Cape Province.

The sole domestic client for defence-related production is government, which places most of its contracts through its defence procurement agency, Armscor. Most local defence-related businesses, however, are involved in export programmes, which have become vital in the current defence climate, in which there is low government expenditure on defence-related equipment.

### Defence budget

Between 1989 and 1998, the defence budget was cut by more than 50% in real terms. As a percentage of the gross domestic product (GDP), the defence allocation from the budget fell from 2.5% in 1994 to 1.5% in 2004, including allocations for the strategic defence packages (SDP). As a percentage of government expenditure, defence allocations fell from 7.5% in 1994 to 5.7% in 2005.

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Source: Presentation by Jack Grundling at the African Defence Summit 2003

The cuts in defence-related spending in South Africa were linked to changing political imperatives within the country, as well as to broader international trends, with the end of the Cold War having brought about profound changes in the levels of military spending around the world. Most defence industries were forced to downscale accordingly. Between 1989 and 1998, world military spending fell by a third, although there were wide regional variations. Western Europe, for example, experienced a decline of 14%, while the US saw a reduction of 32%, and the Commonwealth of Independent States experienced a decrease of 76%, between 1992 and 1998.

However, South Africa’s defence spending as a percentage of GDP is not necessarily in line with international standards. In 2004, the world average for military expenditure as a percentage of GDP amounted to 2.45%. At 1.47%, South Africa was also below the norm with regards to high income and low income countries, where military expenditure as a percentage of GDP amounted to 2.57% and 2.34% respectively.

The Department of Defence’s expenditure increased by 6.5% from R19.5-billion in 2002/3, to R23.5-billion in 2005/6. A defence budget allocation of R23.8-billion has been made for the 2006/7 year.
Payments for the strategic armaments takes place through the Special Defence Account programme. The account will continue to consume over a third of the defence budget, although it is set to decline by an average rate of 23% over the next three years. This could be extended if further acquisitions are made, including a possible fifth corvette and recapitalisation of the army.

The 2006/2007 budget also paid particular attention to the landward budget or South African army, which has hitherto been excluded from the Strategic Defence Package, that saw the navy and airforce acquiring new assets. Over the medium term, the landward defence programme is projected to comprise, on average, 16.8% of the department’s total expenditure.

The defence budget will also make additional allocations for a number of initiatives. These include modernising of defence equipment, renewing of defence information and communication systems, further rejuvenating of the human resources component, investing in the maintenance and repair of defence infrastructure and facilities and expanding the department’s antiretroviral rollout programme.

Defence exports and imports

In South Africa, as the State had been the primary client of the defence-related industries throughout the apartheid years, the sudden reduced levels of government defence spending meant that local demand became insufficient to sustain the defence sector.

At around the same time as government began reducing its expenditure on defence, however, the UN was lifting its arms embargoes against the country, offering local defence-related businesses the opportunity to explore export markets, and to ensure their long-term survival and growth.

According to the White Paper on Defence-Related Industries, beyond ensuring the survival of the industry, exports can assist local companies in reaching internationally competitive standards, achieving economies of scale, and generating resources for research and development. The White Paper uses these reasons, among others, as a justification for export support, and commits organised industry, the Department of Defence, Armscor, the Department of Trade and Industry (DTI), the South African National Defence Force, and the Department of Foreign Affairs to playing an active role in the promotion of exports.

Government has been seen to actively support the drive to export South African defence-related products, dedicating State resources to maintain the country’s defence export infrastructure. A portion of Armscor’s operating subsidy from the defence budget has been used to maintain overseas offices, to provide international marketing support, and to assist the participation of South African firms at international defence exhibitions.

Further, a South African Defence Export Support Organisation (Sadeso), has been established by the Defence Secretariat, which is the accounting officer of the Department of Defence and responsible for policy and civilian oversight of all defence matters. Sadeso, which comprises the Department of Defence, Armscor and AMD, has taken up the challenge to support the export initiatives of the South African defence-related industry. On behalf of the South African Government and the broader South...
African defence-related industry (represented by AMD), and by means of Government export support structures, initiatives and incentives, Sadeso aims to develop and facilitate a South Africa incorporated export drive.

Almost all South African defence-related firms have pursued export markets quite aggressively since 1989, and particularly since the lifting of the UN arms embargoes in May 1994, with the result that defence-related exports have increased from R163-million in 1990 to R1,7-billion in 2001. Some local companies are already conducting more than half of their business outside South Africa.

Of the approvals granted for arms exports in 2001, some 32% were for the sale of arms into Africa, with Algeria accounting for 28% and the rest of the continent the remaining 4%. Some 16% were for sales to South Asia, 16% for Europe, 15% for Asia, 15% for the Middle East, and 5% for North and South America. One per cent was for the United Nations.

Nonetheless, local orders remain important in the acquisition of export orders, as government support of a company inspires international confidence, which is important considering the current global defence production overcapacity, which makes competition for contracts fierce.

In spite of its export growth, South Africa remains a minor player in the international arms market. While the United States accounts for more than 50% of global defence exports, South Africa’s contribution amounts to less than half a per cent.

The international defence industry, according to the Institute for Security Studies, consists of a few large first-tier firms at the core, serving as centres of excellence for weapons design, development and systems integration, and global supply chains that extend out to second-tier states on the periphery. South Africa is a second-tier supplier and, although hierarchically integrated as part of the global ladder of production, the country is a subordinate player, largely and increasingly responsible for supplying niche systems or low-technology items, such as structural components.

Nonetheless, it is hoped that Sadeso will improve the country’s position as a defence exporter and extend the export success beyond Denel, which has been the source of most of South Africa’s defence-related exports, to smaller companies, who have been experiencing difficulties in exporting their products and services. Further, it is hoped that the organisation will facilitate sustainable export deals that extend beyond the exports associated with the strategic defence acquisition package, through which government is aiming to effect a selective and phased renewal of the main weapons systems of the SANDF.

In terms of this package, about R30-billion-worth of military equipment is being procured from international defence companies, which, as part of their contract agreements, are required to implement industrial participation programmes that will benefit the South African economy in general, and the defence-related sector in particular.

Specifically, there is a window of opportunity for South Africa’s aerospace industry – which has a relatively well-developed capacity to design and manufacture missiles, aerospace engines and fixed- and rotary-wing military aircraft – to benefit from the offset programme. For example, the world’s leading aerospace company, Boeing is involved in an industrial participation programme, resulting from the sale of Boeing 737-800 aircraft to South African Airways as well as the VIP Boeing business jet acquired by the South African Air Force. Boeing completed its industrial obligations of $270-million over four years before the required time. Boeing also contributed towards the development of the South African aerospace strategy, which resulted in the establishment of the advanced manufacturing-technology strategy and the aerospace industry support initiative.

Another milestone for South Africa’s aerospace industry is the involvement in the Airbus A400M military transport project. In December 2004, government signed a Declaration of Intent with Airbus Military, a subsidiary of Europe’s Airbus, for the development of the A400M multi-role military transport craft. The project will entail South African aerospace companies working together with Airbus Military to produce components and subcomponents for every Airbus A400M military transport aircraft that is built. Denel and Aerosud have been contracted to manufacture the mainframe for the A400M.

South Africa’s order, placed in April 2005, for eight, and the 180 ordered by seven European countries
in May 2003, increases the A400M order book to 192 aircraft. Airbus Military expects to win many more orders for the aircraft in coming decades.

An implementation strategy for an aerospace industry support initiative (AISI) was completed at the end of 2005, by the DTI. The strategy recognises that the ability of the South African industry in the defence arena should be used as a platform, ensuring that technologies, skills and internationally-recognised products are retained and ultimately entering into civilian aerospace manufacturing opportunities. AISI's objectives are to enhance the global competitiveness of the South African aerospace industry, to provide an institutional platform to facilitate partnerships, to identify and develop South Africa's aerospace industry, and to accelerate the achievement of government strategic growth and equity.

There have been concerns by the defence industry over the DTI's industrial development plan for the aerospace sector, and more specifically the A400M. The A400M programme is a DTI initiative and some argue that the funds for the programme should come from the DTI, instead of the Defence budget. By being included in the Defence budget, it has been speculated that the A400M programme has sidelined the Department of Defence's strategic defence acquisition projects. Further, the A400M programme may pose a financial threat to other local defence programmes. The DTI has reported that the programme is a strategic and essential investment and that South Africa's airforce will reap the benefits in the long run. Many jobs are expected to created and South Africa's involvement will ensure that skills acquired while working on the A400M will be retained in the country. There is still, however, an ongoing argument over the short term benefits of the A400M for the defence force.

Boosting the aerospace industry, the South African government is currently conceptualising an industrial development plan for the aerospace sector along the lines of its successful Motor Industry Development Programme (MIDP), which led to the domestic motor industry becoming a supplier on the world stage. The South African government has stated that it wants the aerospace industry to be as healthy as the automotive industry by the year 2014. Unlike the MIDP, the strategy for the aerospace sector is not part of a defensive industrial policy intervention, but a lead component in an emerging advanced-manufacturing thrust. Government is very supportive of foreign participation in the industry, and the development of international partnerships will advance the plan.

Several of the industrial participation programmes linked to the strategic acquisition programme already under way have involved South African defence-related companies in the export market. For example, under various defence industrial participation (Dip) obligations local company AMS has been contracted to supply health and usage monitoring systems to Australia, India and the UK. These contracts represent a form of indirect defence industrial participation. Direct defence industrial participation agreements that involve South Africa in the export market have also been concluded, including the incorporation of South African-manufactured and designed systems in the Swedish and British-produced fighter and trainer aircraft that are being procured as part of the package.

While the exports facilitated by the strategic defence acquisition programme are valuable to the industry, they will not last indefinitely, and the industry needs to be able to continue to grow once the acquisition project is complete.

Aside from exports associated with the arms deal, South Africa has achieved export success in the field of maintenance programmes and life extension developments. Such capabilities were developed during the isolation period, when the country was forced to upgrade existing technologies due to the difficulties associated with acquiring new technologies. Today, South African defence-related companies are world-leaders in upgrading outdated systems, and have had several export opportunities associated with such abilities. An example is the Eland armoured car, which was originally designed in France, as the AML series, in 1962. The vehicle received several upgrades in South Africa, and a new model emerged that incorporated local innovation and ingenuity to produce a superior product, more suitable for African conditions. This model has been successfully exported.

Other export successes for the country's defence-related industries successes include the sale of the Arachnida weapons-management system, which carries out ballistics computations and assists in command and control of field units, to the UK, and the sale of the M-90 propellant charge for artillery to the UK and Denmark. In addition, October 2002 marked the signing of a multimillion-rand contract by
the Finnish Navy with Denel’s Kentron division for the supply of Umkhonto-IR surface-to-air missiles and associated fire-control equipment, and Grintek Communication Systems has been awarded an export order of more than R180-million to supply its locally-designed and developed Phoenix range of HF radio communication equipment.

Although these contracts have been signed with European countries, the majority of South Africa’s defence-related exports have been to the Middle East and Asia, and South Africa is, in fact, struggling to penetrate the North Atlantic Treaty Organisation (Nato) area.

In theory, the offset and industrial participation requirements for European defence companies involved in South Africa’s arms deal should boost the country’s sales to Nato but, to date, sales in this area have been small. Nonetheless, opportunities exist for improvement. For example, the UK government has an open defence market, and is committed to buying on a competitive basis, and the country has encouraged South Africa to compete for orders from the British ministry of defence.

Denel is convinced that its artillery systems can break into the Nato environment, and the company is also attempting to sell its recently-released rocket-assisted 155 mm rounds into the Nato area. A demonstration of this ammunition in the United States at the end of 2005 was met with enthusiasm.

There are those, however, that believe it will continue to remain difficult to enter the Nato market, as the organisation will not release its standard for data transfer. Without knowing this specification, which is a software protocol and communications standard, the ability to sell entire weapon systems into Nato is hampered.

Other than Nato, South Africa is also attempting to establish itself in markets along the Indian Ocean Rim, and the country is specifically targeting India.

In addition to pursuing new export markets, most local defence-related firms are actively pursuing international joint ventures and strategic alliances with foreign defence firms, to strengthen their chances of bidding for, and winning, new defence contracts in South Africa and foreign markets. For example, Grintek has two joint venture partners in its defence business – Saab, of Sweden, holds 49% of Grintron, which specialises in the communications systems and equipment markets and electronic self-protection devices; and the German Ewation division of EADS holds 45% of Grintek Ewation. Reutech Radar Systems, a division of Reunert, is 33%-owned by a division of European Aeronautic Defence and Space Company (EADS). Denel and Saab have teamed up to create a new aerostructures company in South Africa, which will initially be 20% owned by Saab and 80% by Denel.

Many of these relationships are concentrated in small niche markets, where South Africa has a competitive advantage.

Since the lifting of the UN arms embargoes, the country has also been able to import those defence-related products in which it does not have a competitive advantage. Interestingly, however, the share of imports in total procurement spending remained relatively constant at around 20% from the early 1990s until the SANDF procurement package.

In spite of the ability to participate in the international market, several small- and medium-sized companies in the local defence-related industries have found it increasingly difficult to sustain effective participation in the defence arena, and have gone out of business or have left the market. Others, however, have merged with, or have been acquired by, larger private sector companies, with the result that South Africa’s defence-related industry has become highly concentrated. As already mentioned, some 40% of the country’s defence-related activities are conducted by parastatal defence group Denel, and the 43 members of the South African Aerospace, Maritime and Defence Industries Association claim to represent over 97% of all defence-related business in South Africa.

**Employment**

The closure of many defence-related companies, and the concentration of the remainder, has had a negative effect on the ability of the defence-related industries to sustain employment. Between 1989 and 1996, total employment in the industry fell by almost 60 000 people, including the loss of 10 000 jobs in the public sector defence industry. Skilled workers such as engineers and scientists have borne the brunt of the retrenchments, and there is evidence to suggest that many have found it difficult
to work in the civilian sectors of the economy. By 2004, total employment in the defence-related industries currently stood at around 50 000, 15 000 of whom are involved in export production.

The Department of Defence is trying to improve its current gender balance, which stands at about 78% male and 22% female. The Minister of Defence aims to improve the 30% women represented at senior management level and reported that the entry level situation was improving, with 13% of young people joining the military being women.

Through the industrial participation commitments related to the arms deal, it was expected that the number of people employed in South Africa’s defence-related industries will be increased, although probably not by the 65 000 jobs predicted at the time the arms deal was announced. In September 2006, the Minister of Defence admitted that only 13 000 jobs had been created as a result of defence industrial participation, a shortfall of 52 000 jobs. This was met with mounting criticism against government, especially regarding the slow pace of delivery on industrial participation commitments by equipment suppliers.

Internationally, defence-related companies have shed large numbers of jobs, although the global trend seems to have been the retention of engineers and scientists, and the retrenchment of less-skilled workers, in line with companies moving away from production and more towards design. In addition, the abilities of skilled workers are becoming increasingly important in the development of new technologies, as new threats to security such as terrorism, the spreading of weapons and failed nation states emerge.

The loss of jobs in the industry internationally can also be linked to the international concentration of defence-related capabilities, particularly in the US where, in 1998, four large arms companies acquired more than 20 others, and in Western Europe, where concentration is taking on a cross-border dimension.

This is linked to the global trend towards the internationalisation of defence production, with weapons systems being increasingly developed collaboratively across national boundaries.

**International partnerships**

South African defence-related companies have been involved in the formation of several international partnerships, which could promote collaborative cross-border defence development initiatives. For example, British company BAE Systems has acquired a stake in South Africa’s largest defence company, Denel, and is also the majority shareholder in Paradigm Systems Technology, a Gauteng-based software company. In addition, BAE Systems has an equity share in ATE, an aerospace company. In February 1999, French company Thomson CSF (now known as Thales) acquired a share in Altech, and in March 1998, Swedish company Celsius acquired a stake in Grintek Avitronics.

These equity investments are linked to the proposed arms purchases from countries such as Germany, Sweden and Britain, but are also part of larger initiatives by European governments to promote increased trade between South Africa and themselves.

Many defence-related companies, locally and internationally, are evolving into systems integrators, rather than manufacturers. The 1999 White Paper on South African Defence-Related Industries identifies systems integration as a strategically essential defence capability that is gaining prominence.

Based on this, subcontracting has become increasingly prevalent, leading to the involvement of many nontraditional companies in defence-related production. In a paper entitled Defence industrial restructuring and economic growth in South Africa, Paul Dunne and Richard Haines name this phenomenon ‘spin-in’ in reference to the increasing use of civil technology and products in military goods. They identify this phenomenon as being a growth area.

Despite this observation, however, many companies involved in defence production in South Africa have attempted to survive the cuts in government defence spending, not by making use of civilian technology in their military goods, but by introducing military products to civilian markets, and by diversifying into civilian production and developing civilian products from existing military technologies.
Civilian technology

As a strategy to boost sales, the introduction of military products and technologies to civilian markets is difficult, and is only possible with dual-use products. Two significant successes in this area have been the production of mine-protected and armoured troop carriers, by Land Systems OMC, which, with little adaptation, have been marketed to police forces and private security companies. Further, African Exports Unlimited have acquired contracts to provide armoured vehicles to mines in Africa. The second success has been the aviation industry in general as, in many areas, aviation technology is identical for civil and military applications.

Regarding complete conversion to civilian production, an outstanding example has been UEC Projects, a subsidiary of the Altech group, which designed and manufactured the Digital Satellite Television (DSTV) decoder. The venture was successful due to UEC possessing certain specialised technological skills at a time when they did not yet exist in the television industry. Together with the skills and expertise of Multichoice and Panasonic, UEC was able to put its skills to work in the development of a technology.

Generally, however, complete conversion to civilian production has been found to be difficult, with many of the companies, which attempted to develop products for the commercial market having failed in this endeavour. Full conversion to civilian production has been especially difficult, with there being a number of barriers to leaving the defence market, such as expensive plant and equipment and the culture of the civilian market. A company that pursued a strategy of complete conversion, and failed, was one of Denel’s division’s, Houwteq, which moved from its involvement in military satellites to the development and marketing of low-earth-orbit satellites for civilian purposes. The company came up against a number of barriers, including political pressure from the US, and in 1994 the initiative was terminated.

Even companies that have pursued strategies of partial conversion have experienced great difficulties.

According to the Institute for Security Studies, reasons for companies failing in their conversion attempts include the absence of proper packaging for commercial consumption, a lack of knowledge on the part of the companies on how to position their products in civilian markets, inflated prices resulting from the heavy overhead structures of military contractors, and the difficulties experienced by managements accustomed to the military environment having to operate in a commercial market.

Diversification

Bearing in mind the challenges faced in attempts to convert to civilian production, larger defence firms have preferred to pursue diversification strategies involving the acquisition of civilian firms or civilian product lines, through licensing agreements with civilian firms, while smaller companies, lacking the resources to enter into such deals or to fund research into the development of new products, have found diversification more difficult.

In the private sector, the result of diversification can be seen by looking at Grintek, which has acquired shares in a number of small companies active in the telecommunications sector, in the belief that the acquired companies would stand a better chance of penetrating telecommunication utility Telkom’s market with Grintek’s backing, and that Grintek could offer top engineering skills, which would add value to the services offered to companies. On this basis, Grintek Telecom earned 39% of Grintek’s revenue in the year ended June 2004.

In the public sector, the success of diversification efforts is less obvious, as Denel’s turnover fell between 1992 and 1997. It has been noted, however, that during this period, the company was struggling against the legacy of uneconomic facilities inherited from Armscor, in addition to having to deal with cancelled orders due to cuts in defence spending and, without diversification into civilian production, the decreases in turnover would have been more severe.

In June 2001 Armscor established a technology exploitation centre, which has been mandated to commercialise military and technological expertise. The centre has a large number of technologies it is looking to commercialise in sectors such as aeronautics, chemicals, electronics, healthcare, information technology, logistics, optics and security – and several of these are suitable for civilian use. For example, in the healthcare sector, the technologies under commercialisation include a
cataract-detection device, a portable X-ray machine and a safety syringe, which helps to protect against accidental needlestick injuries. In the logistics sector, one of the technologies on offer is a runflat insert for tyres, and another device under commercialisation is a self-contained electronic shark repellent for use by divers.

This drive to diversify into the civilian sector is in line with international trends. However, government support may be required to allow diversification to be successful. For example, the Defence Diversification Agency, in the UK, was set up by the country’s Ministry of Defence and has assisted more than 6 000 companies across the UK.

Black Economic empowerment (BEE)

The South African defence-related industries have played a strategic role in the development of the country’s industrial structure, particularly in the manufacturing sector. They are also playing a role in furthering government’s black economic empowerment objective, with a number of empowerment deals having taken place.

For example, a black-empowerment group, Kunene Technology, has a 29,7% share Saab Grintek. In 2005, aircraft systems and aeromechanical solutions provider, Aerosud, concluded an empowerment deal with Phatsima Aviation, effectively raising black-owned equity in the company to 28%. In 1999, Reunert, in joint venture with DaimlerChrysler Aerospace and empowerment company Kgorong Investment Holdings, formed a new radar company known as Reutech Radar Systems. The empowerment group holds a 30% stake in this company. Other empowerment initiatives in the industry include Pimgro’s 25% share in Tellumat and empowerment company Dynamic Global Defence Technologies’ 25% stake in Vickers OMC, which is one of the world’s leading manufacturers of armoured defence and peacekeeping vehicles.

In 2006, Aerospace-industry tooling supplier Quad Precision Engineering sold 45% of its company to Levetec, headed by former Denel CEO Victor Moché. As a result of the transaction, Quad had many ambitious plans, including extending the company’s reach into new markets on the African continent. Aerospace companies, including Aerosud and BAE Systems, welcomed the transaction.

In the second half of 2006, the Ngwane Defence Group was formed. It is a majority black owned and controlled South African company that brings together a number of South African companies that are either majority black owned or contractually bound to the Ngwane Defence Group. The group brings together long-standing expertise drawn from former commanders of Umkhonto we Sizwe and the South African National Defence Force, including strong industry experience. The group’s main focus areas are in the fields of mine- and ballistic protected vehicles, small- and medium caliber infantry weapons, soft-skinned all-terrain vehicles and innovative supply chain solutions for defence, security and humanitarian aid clients. Some of their products include the latest generation 4x4 Armoured Personnel Carrier and the Armoured Personnel Carrier with flat-bottom mine protection technology. Both products were designed, developed and manufactured in South Africa.

However, transformation and BEE are proceeding slowly, and it is expected to be some time before racial imbalances in senior engineering and management posts disappear.
Strategic defence acquisition package

The Constitution of South Africa requires the existence of an effective national defence force. It is believed that such a body should be well-equipped in order to perform defence, deterrence, and diplomacy functions, as well as to manage risks, carry out duties as a member of the international community and provide aid to the civil power.

To ensure the presence of such a body, between 1996 and 1998 a defence review was conducted, determining the nature, structure and purpose of the SANDF and, in turn, establishing the nature of the equipment needed to develop that capacity.

As a result, government decided to undertake a strategic defence acquisition programme, to ensure that the defence force would be adequately equipped to face any threats to national security.

Armscor, the Department of Defence’s acquisition agency, issued a request for tenders to foreign suppliers to meet the new equipment requirements and, by November 1998, Cabinet had approved a list of preferred bidders for the contracts.

Since then, the contracts have been awarded, and the country is buying 28 Gripen fighters and 24 Hawk lead-in fighter trainers from BAE Systems, of the UK, and Saab, of Sweden; 30 light-utility helicopters (LUHs) from Agusta of Italy, which is part of AgustaWestland; four Meko A200 SAN corvettes from the German Frigate Consortium; three Type 209/1400MOD submarines from the German Submarine Consortium; and four Westland Super Lynx maritime patrol helicopters from Agusta Westland. All of the contracts, except for the maritime patrol helicopters, became effective in 2000. The contract for the maritime helicopters was only signed in August 2003, and served to establish the last of the six planned strategic defence package programmes.

The Special Defence Account programme provides for special defence activities and acquisitions, including procuring defence main equipment and strategic armaments, operating and maintaining defence main equipment, and financing intelligence-related defence activities. The account will continue to consume over a third of the defence budget, although it is set to decline by an average rate of 23% over the next three years, to 2008/9.

The majority of this programme’s expenditure is on the Strategic Defence Acquisition/Procurement package, which is expected to total R44,8-billion (2006 rand terms) over 12 years, with the final payment due in 2011/12. The Strategic Defence Procurement package is also sometimes referred to as the Arms Deal.

Further defence procurement activities include the South African government ordering eight Airbus A400M military aircrafts from Airbus Military, a subsidiary of Europe’s Airbus. In early 2005 at a cost of R6,5-billion. Although some have criticised the figure, the Minister of Public Enterprises reported that revenue through South Africa’s participation in the production process of the aircraft is expected to be in the region of R3,3-billion. Armscor reported that the aircraft were ordered for the SANDF, to be put to use to assist in peacekeeping activities in Africa.

South Africa’s participation will entail aerospace companies working together with Airbus Military to produce components and subcomponents for the Airbus A400M military transport aircraft. Denel and Aerosud have been contracted to manufacture the mainframe for the A400M. South Africa will be able to take delivery of the aircrafts between 2010 and 2014. In April 2005, South Africa joined the Airbus Military A400M military transport programme as a partner, thus enabling the South African industry to design and manufacture components for all A400Ms built. South Africa is one of two extra-European
partner countries in the A400M programme, the other being Malaysia, which joined in December 2005. South Africa is expected to reap benefits from the programme, which is expected to run for a minimum of 15 to 20 years. According to Aerosud, the country’s workshare is expected to be worth more than R6-billion over the next 20 years.

South Africa’s order, placed in April 2005, for eight, and the 180 ordered by seven European countries in May 2003, increases the A400M order book to 192 aircraft. Airbus Military expects to win many more orders for the aircraft in coming decades.

The contracts

The Gripen contract

The contract for the Gripens involves the acquisition of nine BAE/Saab JAS 39 dual-seat aircraft, and 19 single-seaters, customised to meet specific South African requirements to fulfil the role of an advanced light fighter aircraft. South Africa is the first export destination for the aircraft.

The nine dual-seat operational conversion aircraft will replace the current Cheetah D, while the 19 single-seaters will replace the South African Airforce’s (SAAF) current strike/interceptor fighter, the Cheetah C.

The structure of the Gripen contract has been phased, allowing South Africa two options to cancel parts of the contract if the economy fails to achieve predicted performance. Under Tranche 1 of the contract, nine dual-seater aircraft will be delivered with ground-training systems and initial logistical support. Tranche 2 covers the remaining ground support and spares for the initial batch of aircraft, while Tranche 3 covers the delivery of the 19 single-seater aircraft, with full mission functionality and associated logistical support.

The first South African Gripen was delivered in October 2005. Upon successful flight-testing, the aircraft is expected to be delivered to the SAAF by the beginning of 2008.

Delivery of the remaining eight dual-seat aircrafts is expected to continue until the third quarter of 2009, followed by delivery of the 19 single-seat aircraft, until the first quarter of 2012.

The Hawk contract

The Hawk component of the acquisition package involves the delivery of 24 dual-seat BAE Hawk 100 trainer aircraft to the South African Air Force, together will full logistical support and training systems. The Hawks will replace the Impala Mk I and will be used for jet and weapons-delivery training. The Hawks will provide a cost-effective bridge in the training gap between the Pilatus PC-7 Mk II Astra turboprop trainer and the front-line supersonic fighter aircraft, the Cheetah C.

The arrival of two Hawk aircraft in May 2006, marked the beginning of the delivery programme. The remaining 14 aircraft will first undergo engine modifications at Denel’s Kempton Park factory, before being delivered to Air Force Base Makhado, in Limpopo province, by September 2006.

The SAAF is already in the process of phasing the 24 Hawks into service, with several already flying with their operating unit, 85 Combat Flying School, at Air Force Base Makhado.

Together, the Hawk and Gripen contracts were valued at R15,77-billion in 1999 rands.

The light utility helicopter contract

The light utility helicopter contract, valued at R1,949-billion in 1999 rands, involves the acquisition of some 30 A-109 LUHs from Agusta, the Italian helicopter manufacturer. These will replace the South African Air Force’s existing fleet of 50 Alouette helicopters, which have been in service for over 40 years.

Denel will produce 25 of the 30 A109s for the SAAF in South Africa.

The first three of these helicopters, including one that was assembled locally by Denel Aviation, were unveiled at the 2004 Africa Aerospace and Defence show. The first of the South African-assembled helicopters made its maiden flight in September 2004.

The manufacturing and qualification of the South African configuration of the Augusta A109 LUH progressed well, to the extent that the European Civil Aviation Authority issued a new type certificate for this helicopter.
The project is at an advanced stage with the helicopters now entering into service. The SANDF has received eight of the helicopters with the balance to be delivered by the middle of 2007.

The Corvette contract

Under the corvette deal, valued at R6,917-billion in 1999 rands, the European South African Corvette Consortium (ESACC) was contracted to deliver four patrol corvettes of the type Meko A200-SAN to South Africa to replace the existing craft that were more than 30 years old. The ESACC consists of the German Frigate Consortium (GFC), Thales Naval France and its South African subsidiary African Defence Systems. However, after the recent consolidation in the German shipbuilding sector, the GFC is effectively synonymous with ThyssenKrupp Marine Systems.

The vessels, which are the size of a frigate but have the weapons and sensor fit of a corvette, are South Africa's first new naval warships in 16 years. All four of the corvettes have been built and are at in South Africa. The first of the corvettes, the SAS Amatola, was officially handed over to the South African Navy in September 2003, and the last vessel arrived in the country a year later, in September 2004. The SAS Amatola has been in service since February 2006, while the other three – the SAS Isandlwana, Spioenkop and Mendi – are in varying stages of being fitted with weapons and electronic systems, at the Simon's Town dockyard, near Cape Town. The SAS Isandlwana has already been commissioned, with the other two expected to be commissioned by the third quarter of 2006.

According to ThysenKrupp, with a new exterior design and water jet propulsion system, in addition to conventional diesel power plants, the corvettes are among the most modern navy vessels currently in service worldwide. Their unique stealth characteristics, derived from an innovative shape, make them extremely difficult to locate using radar. Their infrared emission signatures have been drastically reduced through an exhaust system, which emits the engines' very hot fumes at water level rather than through a funnel above deck.

The corvettes modern combat, surveillance and countermeasures systems, equip them for a number of defence, fisheries protection, and exclusion-zone patrol roles. The corvettes have also been specially designed for a number of additional tasks within the African context. Besides cargo-lifting cranes, they have large clinic areas, which include, fully-equipped operating theatres, both for use in peacekeeping and disaster-relief work.

The submarine contract

For the submarine component of the strategic acquisition programme, valued at R5,354-billion in 1999 rands, South Africa has elected to buy three modern class 209 type 1 400 MOD diesel-electric vessels from the German Submarine Consortium (GSC), which consists of Howaldtswerke Deutsche Werft, Thyssen Nordseewerke and Man Ferrostaal. The submarines will replace the aged French Daphne submarines, which have been in service since the 1960s and for which spares have become unobtainable.

The submarines are the most advanced version of the 209 class, and feature conventional, non-nuclear propulsion systems. To equip the submarines, STN Atlas will supply the ISUS 90-45 integrated sonar system, and has selected South African company Tellumat as its local partner.

The vessels have the potential for future upgrades, such as an independent propulsion fuel-cell system that could be incorporated as a plug-in hull section. Such a system would enhance the submarines’ operational capability dramatically, allowing for nearly three weeks diving operation.
The first of the new submarines – the SAS Manthatisi, which was previously known simply as the SAS S101 – arrived at the naval harbour in Simon’s Town in April 2006. The second submarine is undergoing the manufacturer’s harbour and sea acceptance trials in Germany, with a German crew, and is scheduled to be commissioned into the South African Navy by October 2006. The third submarine is still being built, in Emden.

To accelerate the entry into full operational service of its three new submarines, the South African Navy has been taking advantage of offers of training facilities and instructors from the German and Indian navies.

The maritime patrol helicopter contract

A contract for the delivery of four Westland Super Lynx maritime patrol helicopters, intended for operation from the corvettes, was signed with Agusta Westland Helicopters, UK, on August 14, 2003, establishing the last of the six planned strategic defence package programmes.

Subsequent to the conclusion of the contract, a joint project office was established in Sherbourne, in the UK, and a South African project team was relocated to the office.

The maritime helicopters will offer an all-weather ship-borne capability, which will provide the final operational component of the Corvettes.

The programme is at an advanced stage, and the helicopters should arrive in South Africa in 2007, where they will be integrated with the Corvettes.

Industrial participation requirements of the deal

Industrial participation programmes are relatively common in the global defence industry to offset the cost of unusually big arms deals by requiring a percentage of the contract value to be invested in the economy of the purchasing country.

The strategic defence package contracts, valued at $3.9-billion, or R30-billion at 1999 exchange rates, were signed on December 3, 1999, marking the largest arms procurement purchase in South Africa’s history. It has been estimated that the total figure will amount to R44.8-billion by the time the final payment is due in 2011/12.

Government has justified this expenditure, in part, on the basis of the economic benefits that can be derived from the deal’s inclusion, under guidelines that took effect in September 1996, in terms of which all government and parastatal purchases or lease contracts (including defence) with an import content exceeding $10-million, or the equivalent, are required to include a national industrial participation (Nip), or offset, component, valued at a minimum of 30% of the contract’s imported value. In addition, defence contracts specifically, require a defence industrial participation (Dip) obligation of up to 50% of the contract’s value is required if the value of the contract exceeds $2-million.

Thus defence purchases exceeding $2-million but less than $10-million require a Dip of up to 50%. Defence purchases exceeding $10-million require a Dip of at least 50% and a Nip of at least 30%. Usually in such cases, industrial participation of at least 100% is required, split equally between Nip and Dip.

Industrial participation is an instrument to bring about economic and industrial benefits and support for further development in the country.

The Dip and Nip obligations have to be fulfilled over a period of seven years. The supplier must file bi-annual progress reports, once the contract is awarded.

The stated objectives of Nip are sustainable economic growth, the establishment of new trading partners, the generation of inward foreign investment, increasing exports of value-added goods and services, research and development (R&D) collaboration, job creation, human resource development, technology transfer, and the creation of economic advantages for previously disadvantaged communities.

Credits in fulfilment of Nip obligations are earned over time, and are weighted to reflect government priorities by multiplying the economic value by an appropriate value. As a result, credits to the value of the obligation can be earned for a value of business considerably less than the value of the obligation.
Nondefence industrial participation proposals represent an attempt to use the defence acquisition programme to obtain substantial investment in the non-defence sectors of the South African economy. Government has attempted to direct this investment to particular sectors of the industrial economy, such as minerals and energy beneficiation, and to specific geographical locations, including KwaZulu-Natal, the Western Cape and the Eastern Cape. Nip proposals have ranged from investments in automotive components, manufacturing, telecommunications, stainless steel and speciality steel plants, to gold jewellery, plastics and high-quality textiles.

Nip activities fall under the DTI, which houses an industrial participation secretariat – to evaluate proposals, negotiate contracts and monitor projects – and an industrial participation control committee, which is made up of representatives from the Departments of Finance, Trade and Industry, Foreign Affairs and Defence.

The objects of Dip are focused on the defence-related industry, aiming to retain and create jobs, abilities and capabilities; allow a sustainable defence industrial capacity, with strategic logistic support capabilities; to promote value-added arms exports; to promote technology transfer and joint ventures; and to maintain skilled local manufacturing capabilities.

Dip offsets can be direct, involving goods and services for the equipment being procured, whereby the European supplier will buy certain locally-manufactured inputs, such as subsystems and components, from the domestic defence industry, which will then be integrated into the new weapons systems. Alternatively, Dip can be indirect, involving goods and services unrelated to the specific equipment being procured. Such activities may result in some of the European suppliers investing, through equity purchases, in certain local defence companies, and/or establishing new production and assembly facilities for other defence products and services. A number of European suppliers may also help South African defence firms to win export contracts, or to integrate South African inputs into weapons systems for sale in foreign markets.

A condition contained in the DIP obligations of foreign suppliers is that they must identify companies owned and managed by people from historically disadvantaged backgrounds, which have the ability to become part of the defence supply chain. As at March 2005, orders to the value of some R20-million had been placed with some of the 25 BEE companies identified, for which DIP credits have been awarded.

Direct Dip is required to make up at least 20%, and indirect Dip at least 70% of the total defence industrial participation obligation. Further, at least 45% of the Dip credits earned must be for products, excluding any exports; at least 25% must be from export credits; equity or capital equipment investment must comprise no more than 15% of the total Dip; loans must comprise no more than 2.5%; marketing support can generate credits up to a maximum of 2.5% of the export value; and technology, as defined in the Dip agreement, must comprise not more than 10% of the total Dip value.

Dip proposals, contracts and projects are managed and administered by Armscor on behalf of the Department of Defence.

Certain principles have been established to govern industrial participation, including requirements that there should be no increase in price due to Nip and Dip obligations. In addition, to qualify for credits, all industrial participation proposals submitted to the DTI must represent new business. Investments may be in new facilities or the expansion of existing facilities, but the additional benefit must be shown beyond doubt, besides the mere increase in

### Calculation of Nip credits

<table>
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<tr>
<th>Objective</th>
<th>Calculation for credits awarded</th>
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<tr>
<td>Sustainable economic growth</td>
<td>Revenue over fulfilment period</td>
</tr>
<tr>
<td>Export promotion</td>
<td>Export revenue $\times (1 + \text{local content})$</td>
</tr>
<tr>
<td>Job creation</td>
<td>Payroll costs over fulfilment period</td>
</tr>
<tr>
<td>Training &amp; development</td>
<td>Cost over the period</td>
</tr>
<tr>
<td>Small Medium and Micro Enterprise (SMME)</td>
<td>Value outsourced to SMME $\times 2$</td>
</tr>
<tr>
<td>promotion</td>
<td></td>
</tr>
<tr>
<td>Historically-disadvantaged individuals</td>
<td>Value outsourced to HDI SMME $\times 2$</td>
</tr>
<tr>
<td>Investment</td>
<td>Capital outlay or injection $\times 2$</td>
</tr>
<tr>
<td>R&amp;D expenses</td>
<td>All R&amp;D costs $\times 2$</td>
</tr>
<tr>
<td>Technology transfer</td>
<td>Calculated on a case-by-case basis</td>
</tr>
<tr>
<td>Export promotion (not from investment)</td>
<td>Value of exports $\times \text{LC}% \times 2$</td>
</tr>
<tr>
<td>R&amp;D collaboration with SA partners</td>
<td>All direct costs $\times 2$ or all revenues generated $\times 2$</td>
</tr>
</tbody>
</table>

Source: David Botha, Institute for Security Studies
output. Exports must be for new products or new markets. The projects must be economically and operationally sustainable, even after the seven-year discharge period, and must result directly from the purchase contract. Further, responsibility for the fulfilment of any industrial participation lies solely with the seller.

In the bidding for South Africa’s defence re-equipment package, interest among tenderers was so high that industrial participation became a key differentiating issue. The bidders that were eventually awarded the contracts committed to $2.4-billion, or 60% of the contract value, in Dip, and $14-billion, or 350% of the contract value, in Nip, totalling more than four times the value of the signed contracts, and far exceeding the requirements of the Nip and Dip policies.

The Finance Ministry and DTI were convinced that a good deal had been achieved. The anticipated export percentages of the projects well exceed the stipulated 50% level, and returns on the overall cost of the strategic defence packages are estimated to be in the region of 94.5% on investment. Further, exports are anticipated to be in the region of 280% of the original purchase price, for the duration of the deal.

The Nip and Dip agreements were signed at the same time as the equipment purchase agreements, and are denominated in the foreign currencies of the purchase agreements, thereby removing any impact the volatile rand may have on industrial participation benefits. Exchange rates at the time of signing the deals valued the Nip at R85-billion and the Dip at R15-billion. The contracts allow for a seven-year fulfilment period, except in the case of the Gripen, for which the industrial participation period extends over 11 years, and performance guarantees were set at 10% of the purchase price. Industrial participation delivery for the maritime helicopters is in its early stages, due to the contract only having been signed in 2003.

At March 2005 exchange rates, the Dip obligation was valued at R15.1-billion, and by the end of March 2005, R7.69-billion of this had been delivered, putting performance ahead of schedule. The actual performance of the companies in delivering on their Dip obligations was, in total, 101% of planned delivery. This amounted to 51% of the total obligations by March 2005.

On the Nip side, companies are lagging in delivering on their promises, although the Department of Trade and Industry has released a favourable report in this regard.

In September 2006, the Minister of Defence reported to Parliament a failure in the number of jobs that was to have been created by industrial participation. The original figure of 65 000 jobs was instead replaced by 13 000 jobs.

Hawk and Gripen offsets

The Hawk and Gripen are being supplied as a single package, jointly by UK-based aerospace and defence industrial group, BAE Systems, and Swedish company, Saab.

The Dip requirement for the Gripen contract stands at $808-million. By the end of March 2005, some 48% of this had been delivered, and industrial participation performance was ahead of the targeted performance level. Dip for the Hawk contract is valued at $680-million, with 52% of Hawk Dip obligations delivered by March 2005.

<table>
<thead>
<tr>
<th>Project</th>
<th>Obligation Rm</th>
<th>Planned performance Rm</th>
<th>Actual performance Rm</th>
<th>Actual vs planned %</th>
<th>Actual vs obligation %</th>
<th>Sales (local and export) Rm</th>
<th>Technology transfer Rm</th>
<th>Investments Rm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corvettes</td>
<td>2 941</td>
<td>1 632</td>
<td>1 595</td>
<td>97</td>
<td>54</td>
<td>1 241</td>
<td>348</td>
<td>6</td>
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<tr>
<td>Submarine</td>
<td>1 121</td>
<td>703</td>
<td>609</td>
<td>86</td>
<td>54</td>
<td>576</td>
<td>34</td>
<td>0</td>
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<tr>
<td>Light utility helicopter</td>
<td>1 194</td>
<td>943</td>
<td>710</td>
<td>75</td>
<td>59</td>
<td>356</td>
<td>324</td>
<td>30</td>
</tr>
<tr>
<td>Hawk</td>
<td>4 252</td>
<td>2 358</td>
<td>2 221</td>
<td>94</td>
<td>52</td>
<td>1 922</td>
<td>292</td>
<td>7</td>
</tr>
<tr>
<td>Gripen</td>
<td>5 050</td>
<td>1 864</td>
<td>2 459</td>
<td>131</td>
<td>48</td>
<td>932</td>
<td>1 385</td>
<td>141</td>
</tr>
<tr>
<td>Maritime helicopter</td>
<td>550 80</td>
<td>93</td>
<td>116</td>
<td>16</td>
<td>93</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>15 108</td>
<td>7 580</td>
<td>7 687</td>
<td>101</td>
<td>51</td>
<td>5 120</td>
<td>2 383</td>
<td>184</td>
</tr>
</tbody>
</table>

Source: Armscor
South African companies benefiting from the Gripen and Hawk Dip projects include various Denel and SAAB Grintek subsidiaries; ATE; Aerospace Monitoring & Systems (AMS), and Aerosud.

At Denel Aviation, a design and development centre has been established, and a transfer of skills and technology to this centre has been facilitated by Saab. As a result of this transfer, Denel Aviation has been contracted by Saab to manufacture rear fuselage sections and wing attachment bulkheads, and to design and manufacture Nato standard pylons, for use not only in the Gripen aircraft procured for South Africa, but also for export orders. Eastern Cape-based specialist engineering firm Comau-AIMS has been subcontracted to develop and prototype a series of pylons for flight testing.

Denel Aviation has also been contracted for the final assembly, equipping and testing of the Hawk. The company has manufactured wings and tailplanes for the South African Hawks, as well as for the export market. The division has also obtained a full book order to supply components for BAE Systems’ Hawks till 2008. Should the Hawk win further international orders, Denel will make more parts, provided it continues to meet the cost and quality requirements.

Denel Cumulus has been contracted to manufacture part of the helmet display system for the Gripen. Originally, the company was expected to develop the entire helmet-mounted display system for the aircraft, but due to the risks involved, this plan was altered. Instead, Denel Cumulus has been given the opportunity to expand its market, as its components will also be used in the helmet-mounted displays of the Tornado and Euro fighter aircraft.

Denel Optronics has been awarded a contract by BAE Systems for the supply of high-tech layers display and control units (LDCU) for incorporation onto a new BAE Systems light field artillery gun being marketed worldwide. Denel Optronics has also been awarded contracts for the design, development and series manufacture of LDCUs for BAE Systems’ new 105-mm light artillery gun.

Denel PMP has benefited from the Hawk Dip programme, having been contracted to manufacture various types of ammunition and ammunition components for the UK Ministry of Defence.

In 2006, Denel and Saab teamed up to create a new aerospace company in South Africa, that will be responsible for delivering on Denel's current contracts with a number of international aerospace manufacturers, including the Hawk and Gripen programme. The South African government has recognised the significance to the development of the country’s aerospace industry of the deployment of hard skills, technologies, and marketing expertise to the new company through industrial participation credits to Saab of up to $2.4-billion, based on the actual performance of the new aerostructures company.

In terms of BEE, the Hawk and Gripen programmes are assisting in the development and sustenance of BEE and medium-sized companies, such as Contactserve, Hartell, Tetech, and Vacuform, which supply items such as wiring harness and ground support equipment.

Turbomeca Africa, previously known as Denel Airmotive, has, through the Dip obligations of BAE/Saab, been the recipient of aircraft engine and gearbox technology and expertise. As a result, several major contracts have been awarded to the company, from BAE/Saab subcontractors such as Rolls-Royce, General Electric, Volvo and Snecma. Due to the enlarged workload, a shortage of capacity and capabilities is now envisaged and, to alleviate the problem, Rolls-Royce has donated two second-hand gear-cutting machines, which Turbomeca Africa has refurbished.

Grintek is benefiting from the Hawk and Gripen Dip as a result of Saab having taken up a 49% shareholding, and more recently a 70.36% shareholding in the company. As a result, the company will now be called Saab Grintek. This deal has seen Saab Grintek being awarded various export orders by foreign companies and defence forces, especially in the field of electronic warfare.

Saab Avitronics has been contracted to provide power-supply and display units for the Gripen aircraft, and has been the recipient of skills and technology transfers that have enabled the company to compete in the open civilian market with dual-use equipment. For example, the company has established a liquid-crystal display workshop that can cater for defence and civilian aviation requirements.
ATE has been involved in the design, development and integration of the mission system of the Hawk, and technology transfer to this company, valued at $20-million, has taken place.

ATE also led a R500-million Hawk avionics programme. The system was developed from scratch, to meet the SAAF contract, though BAE Systems. Although the programme was led by ATE, it also involved other South African defence electronics companies, including Saab Avitronics, Reutech Defence Industries (RDI), Tellumat, Thales Engineering, AMS and the Overberg Test Range. In addition, some systems had to be sourced from Europe, from Thales (France) and Thales Optronics (UK).

The electronic warfare system was subcontracted to Saab Avitronics, RDI was responsible for the radios, and Tellumat for the ‘identification, friend or foe’ system.

ATE itself developed the mission systems for the Hawks, namely the mission computers and the stores management system. ATE has also developed the complete operational flight-programme software for the Hawk avionics system.

AMS, which is in the process of being bought by Saab, has been contracted for the development and manufacture of the health and usage monitoring system for the Hawk, containing 90% local content. With the assistance of BAE Systems, AMS has also been able to secure contracts to export this system to Australia, India and the UK. Further, AMS has been awarded a R70-million contract by BAE Systems to supply black-box crash recorder and aircraft fatigue-measuring systems which will be fitted in the 116 new Hawk aircraft that are to be delivered to the Indian air force.

During the financial year ended March 2005, the execution of various technology transfer activities from Saab to the South African defence industry will allow the companies to become part of Saab’s supply chain, in some cases as the sole supplier, especially to Denel. Through the efforts of SAAB, one of the beneficiaries under the Dip programme has become the sole supplier of highly sophisticated electronic equipment to a European country. Further, major work packages have been placed on the local defence industry for the supply of electronic equipment.

The assistance of BAE Systems resulted in a South African company winning an export order from Bahrain, as well as additional orders from the UK Royal Air Force, Australia and India.

BAE Systems has entered into an alliance with Centurion-based aircraft and components and aerostructure maker Aerosud that will see the transfer of technology and skills to the local company. BAE Systems and its partners are committed to placing more than R500-million-worth of work with Aerosud and, as a first step, BAE Systems has contracted Aerosud as the exclusive supplier of wing leading-edge components for the Airbus A320 family of jetliners. Aerosud will supply 240 sets of wing components a year to meet Airbus’s current output, but this could increase as market demand for new aircraft continues to firm and grow.

A wider range of defence-related companies are in the process of being certified to aeronautical standards by BAE Systems, which will benefit the country in the future. As a result of this certification, companies that were not initially identified as possible beneficiaries under the Dip programme have already received major orders, which are currently under review for Dip credits.

Regarding the Nip obligation of some $7,2-billion related to the Hawk and Gripen contracts, BAE/Saab met its first contractual milestone in April 2004, achieving more than 100% of the investment milestone of $300-million, and approximately 95% of the sales milestone target of $2-billion. The DTI has reported that BAE/Saab continues to meet its milestones and is confident that the companies will meet the overall Nip commitment.

Some 37 projects have already been implemented by the companies, with specific emphasis being placed on facilitating the expansion of existing businesses rather than greenfields projects.

One such example is a joint venture project in which BAE Systems and Saab have teamed up with US-based Global Environment Fund and Mondi in a venture set to generate more than R5-billion over the next ten years. The new enterprise will rapidly overhaul and modernise one of the most important facilities within South Africa’s forestry and lumber industry. This will be accomplished through skills and technology transfers funded through a joint investment company, Global Forest Products, of which 51% is held by Global Environment Fund.
and BAE Systems/Saab, and in which Mondi holds 49%. BAE Systems/Saab has invested $6-million towards the project.

BAE Systems and Saab are also involved in the manufacture and export of passenger vehicle and truck tyres at Dunlop Africa, and are involved in two biotechnology ventures—one with AECI Bioproducts, in Umbogintwini, and one with Biological Control Products, in Durban— to enhance competitive skills in the sector.

BAE/Saab is also involved in various ventures aimed at supporting and developing the South African jewellery industry.

The Gold Advance Scheme was established by BAE/Saab, AngloGold Ashanti, Gold Fields and Standard Bank, in cooperation with the DTI, in order to facilitate the provision of secure and cost effective advances of gold to South African gold jewellery manufacturers. The scheme involves a ton of gold valued at $16-million. The four companies together have extended guarantees of $10,5-million to Standard Bank. This means that jewellery manufacturers will be able to obtain gold while providing only a third of the collateral requirement, as the other two-thirds will be provided by the four partner companies. The result will be to make South African jewellery more competitive in international markets and expand the local production base, as local companies, freed from having to provide 100% collateral on the advanced gold and having to pay the high local interest, will be able to invest in more gold and/or greater manufacturing capacity and/or increased marketing activities.

BAE/Saab is also involved in Silplat, a platinum jewellery manufacturing business involving a partnership with Impala Platinum and Italian jewellery manufacturer Silmar. BAE/Saab will provide the equity and loan financing as part of its Nip. Silplat expects to beneficiate more than three tons of platinum each year, generating approximately $100-million in annual sales.

As the first Gripen is only due in South Africa in 2007, and the last in 2012, BAE/Saab's offset obligation on this equipment runs until 2012. In total, the industrial participation requirement for the Hawks and Gripens is valued at $8,69-billion. Of this total, $2,3-billion has already been delivered by April 2006.

### Helicopter offsets

Under the $191-million Dip obligation for the A109 light-utility helicopters, 25 of the 30 machines on order will be built by Denel Aviation, and the South African company will then be responsible for the manufacture of all A109s and A119s for all African, and some Far Eastern, markets.

Also benefiting from the helicopter Dip programme is Saab Avitronics, a joint venture owned by Saab Grintek and Saab of Sweden, which has received an order of more than R150-million from AgustaWestland, for the provision of a multisensor warning system, which will be used as part of a helicopter self-protection electronic warfare suite.

Other companies benefiting from Agusta’s Dip include African Defence Systems (ADS), Chelton, Cumulus, Futuristic Business Solutions (FBS), Grinaker Electronic Systems (GES), Tellumat, AMS, Aerofoil, Turbomeca Africa, Saab Grintek and Denel Optronics.

ADS will provide the cockpit procedure trainer for the A109 LUH, Chelton will supply antennas and direction-finding equipment, Cumulus will supply the Argos 410 observation system, FBS will provide integrated logistics support, GES the communications subsystem and radio-navigation system, and Tellumat the identification friend-or-foe transponder. AMS, which is in the process of being acquired by Saab Grintek, has been contracted for the development and manufacture of the vehicle management module. Through the Dip programme, Aerofoil is involved in the design and manufacture of a new sand filter for the first prototype of the Agusta AB 139 helicopter, and Turbomeca Africa has been contracted to repair and overhaul Makila 1K2 engines, under licence to Agusta. Grintek has been contracted to supply avionics and electronic warfare systems, and Denel Optronics is supplying forward-looking infrared systems for the A109LUHs being produced for Sweden and Malaysia.

According to Armscor, major orders were placed with the industry during the 2005 financial year, but very few credits were awarded, due to the fact that Agusta only claims credits once delivery has taken place and an invoice has been paid. Dip highlights concerning orders placed include armoured vehicles for the Italian government, and electronic equipment for the United Arab Emirates.
By March 31, 2005, 59% of the total Dip obligation of the LUH component of the arms deal had been committed.

The Nip obligation linked to the LUH acquisition is valued at $767,9-million. Agusta achieved its first Nip milestone in August 2005. However, the company’s delivery against the second milestone stood at 68% and the DTI has expressed concern that Agusta may not be able to meet its commitment within the agreed timeframe. Agusta has indicated that it is aware of the shortfall and is working hard to find additional projects to rectify the situation.

Projects have seen transfer of state-of-the-art technology equipment to local companies, and have included the establishment of Filk Gold Chains – a joint venture between Filk SpA of Italy and Oro Africa, which employs 56 people and earns about $26-million a year from the manufacture and export of gold chains – and the introduction of a high-technology spinning and twisting line at Cape Mohair which, prior to Agusta’s intervention, had to undertake these activities overseas. Cape Mohair employs 70 people and generates revenues of $12-million a year. Augusta is also involved in the Mario Levy project, which makes leather seats for the automotive industry, exporting to Italy for Alfa Romeo, Fiat and Lancia, as well as supplying BMW. Italian Plastics employs about 69 people and the business involves the recycling of cables, sheeting and piping and various other materials for the mining industry.

The total industrial participation requirement linked to the helicopter acquisition deal is $958,9-million.

**Corvette offsets**

A Dip obligation valued at $471-million has been linked to the acquisition of the four Meko A-200 corvettes. By March 2005, 54% of this obligation had been committed.

Corvette Dip activities for the financial year ending March 2005 included project management, engineering services and hardware production for the delivery of electrical plant systems for the South African corvettes and for the export market. They also included the supply of automatic vehicle-transmission systems and components to customers abroad, and the supply of large-calibre ordnance systems for the export market, as well as the supply, installation and associated logistics support for the combat suites for the South African corvettes.

Companies that have benefited include MTU South Africa, Booyco Engineering, Alvis Gear Ratio, Denel, Saab Grintek, Reutech Radar Systems and African Defence Systems.

MTU South Africa has been contracted to assemble the main diesel engines and the diesel generator sets for the corvettes, while Booyco Engineering has been contracted to install air conditioners and refrigeration equipment in the vessels. Both companies have benefited from technology transfers. Alvis Gear Ratio has been contracted to provide Remat-type automatic vehicle transmissions.

Denel’s Kentron division is supplying surface-to-air and surface-to-surface missile systems for the vessels, and the LIW division is manufacturing the 35 mm dual-purpose gun. Work has also been allocated to the company’s Somchem division, and promising international opportunities are being investigated.

Saab Avitronics is responsible for the electronic warfare system for the vessels.

Reutech Radar Systems is supplying the Star tracking, surveillance and target acquisition system, and African Defence Systems is providing programme and production management services, and command and control, navigation and antisubmarine equipment.

The Nip obligation on the corvette contract is valued at $2,7-billion.

The first sales milestone for ThyssenKrupp on this commitment, $56,6-million, was met in 2003. However, it only achieved an aggregate of 65% in performance against the second contractual milestone, which was due in 2005.

As per the contract, ThyssenKrupp is being given the opportunity to remedy the situation. Although the 2005 DTI Nip report points out that the German group is working on a few strategic projects that have the DTI’s blessing, it states that the DTI is concerned that ThyssenKrupp may not be able to meet its milestone within the agreed timeframe.

The German Frigate Consortium obligations, through ThyssenKrupp, are being met through a number
of projects, although several of these have not yet been revealed. The most recently announced is the joint venture between ThyssenKrupp, the Royal Bafokeng Administration and African Dawn Capital (introduced by Absa Bank), to set up a plant at Phokeng, near Rustenburg in the North West Province, to build at least 15 000 high-tech low-cost houses a year. The project involves the joint investment of some R60-million, and the plant will produce 49 m2 two-bedroom, separate living, kitchen and bathroom area houses that will meet South African and German safety and quality standards and will qualify for government subsidies. It is expected that when production begins, 70 people will be employed at the factory at Phokeng, while 650 people will be employed in the erection of the houses.

Another significant Nip project has been ThyssenKrupp’s investment in SA Chrome & Alloys, with its associated guaranteed offtake of the South African company’s production for several years.

Yet another Nip initiative has been a $2,9-million investment in a Kwazulu-Natal factory that produces tubes used in the manufacture of radiators for the automotive industry. The company, known as Alltube, supplies flat welded aluminium tubes into both the local and export markets.

Separate Dip and Nip is also being undertaken in connection with the contract to provide combat suites for the corvettes. Dip examples include that AMS has been awarded a contract for the development of the vehicle-management module for the A109LUH and CSIR Defencetek has been contracted by Thales to supply the French Ministry of Defence with first-generation infrared countermeasures for aircraft. Nip projects linked to this contract include a joint venture with Total Energy and Tenesa to manufacture solar panels in the Western Cape; the upgrading of the furnaces of Polokwane Smelters, in joint venture with Pechiney and Inensil; and an investment in Evertrade, which manufactures medical waste containers and provides medical waste management services.

In 2005, Thales, now Thint, facilitated a $50-million financing package to the Industrial Development Corporation, which will be made available to small- and medium-sized enterprises (SMEs), particularly in historically poor and rural areas. This five-year lending facility will be used to promote and sustain SME development in South Africa’s poorer provinces, such as the Eastern Cape, North West, Limpopo and the Free State, through support for feasibility studies and investment projects. In addition, the facility will be used to fund enterprises that are adjacent to townships, and SME’s located in the rural area, and is expected to create at least 1 500 direct and permanent new jobs.

By August 2005, Thales, now Thint, had achieved almost 100% of the investment target and, overall, has achieved almost 93% of the contractual milestone. The DTI has expressed confidence in the company meeting its obligation.

**Submarine offsets**

The industrial participation obligation linked to the submarine component of the arms deal is heavily biased towards Nip, due to South Africa’s limited, and niche, expertise in submarine technology.

Man Ferrostaal, which is responsible for the GSC’s industrial participation commitments, was granted an extension period to meet its first milestone target, and the DTI expects the company to achieve 82% of this first contractual milestone. In terms of its Nip contract, Man Ferrostaal needs to achieve two thirds of the milestone target to prevent invoking the penalty clause.

Man Ferrostaal has been criticised for its failure to meet its investment milestones, and is therefore speeding up its investments to achieve its target of $4-billion in investments over the life of the offset programme which ends in 2007.

The company will be involved in the construction of a R1,1-billion stainless-steel precision strip-mill in the Coega Industrial Development Zone, in the Eastern Cape. The project, which forms part of Man Ferrostaal’s armsdeal offset obligations, experienced a few delays after being announced in 2005, but is now set to begin in early 2007. The construction of the mill will be undertaken in two phases at a cost of R500-million each. Some 800 construction-related jobs are expected to be created as well as 200 permanent operational jobs. A further 4 000 jobs are expected to result from upstream and downstream industries in the country. The plant will supply to first and second-tier vehicle component manufacturers and other thin-strip steel related industries, including telecommunications, electrical and medical sectors.
The German engineering company has also made investments totalling R1,7-billion in two offshore oil and gas fabrication and refurbishment facilities, at the ports of Saldanha and Cape Town.

Other projects embarked on, include a project initiative to rehabilitate and resurrect the Magwa tea plantation in the Eastern Cape. The tea estate covers around 2 500 hectares of land. This initiative will create 1 000 permanent jobs, and up to 2 500 seasonal positions, while creating an independent growers' programme for up to 1 000 new small farmers.

Another Nip project under development involves investment and skills and technology transfer to MAN Turbo SA, in order to expand exports of high-precision turbine and compressor equipment for the mining, petrochemical and energy industries. A R30-million production facility has been opened, and the new technology introduced is expected to increase the company's production by 15% to 20% a year. Over 50% of the turbine blades produced by the plant are to be exported, making MAN Turbo one of the most important players in the global machinery market.

Another project linked to the submarine Nip is a multimillion-rand plastic bottle recycling plant in Alrode on the East Rand. The GSC, Ferrostaal and Kap International's Hosaf Recycling project reduces the number of plastic cool drink bottles and other containers littering the countryside by giving them a value similar to empty cans and bottles. The state-of-the-art plant processes used polyethylene terephthalate bottles and produces synthetic pellets which are then turned into fibres for home textile and industrial uses, among others. Owing to the high quality of the recycled polyethylene terephthalate, markets will be pursued where there are high margins for the material, including applications for sheeting and strapping. Ferrostaal is expected to provide the start up capital for the project.

Man Ferrostraal is involved in the Welfit Oddy Tank container plant expansion project, which involves the expansion of the operation to increase production capacity by at least 1 000 tank containers a year, thereby increasing sales and exports. The expansion is expected to sustain the local industry and provide an economic boost for the Eastern Cape.

Funding has been made available to the Atlantis Economic Development Trust, by Man Ferrostraal, for the creation and initial operation of an industrial training centre in Atlantis, in the Western Cape. The training centre provides training and further qualifications in a variety of industrial, technical and other skills that are in short supply in the area.

On the Dip side, the GSC has a Dip obligation of $179-million. By March 2005, 54% of this had been committed. Companies benefiting from the submarine Dip include Saab Avitronics, Siemens and Denel Optronics.

Saab Avitronics has manufactured the optronic mast and electronic warfare system for the submarines, and has successfully exported these systems to other customers. Siemens delivered the main electrical switchboards for the submarines, and Denel Optronics has designed and manufactured, in partnership with Zeo Zeiss, high-precision periscopes. The periscope programme, considered the jewel in the submarine Dip crown, will see the high-tech components marketed internationally. Already seven, in addition to the three for the South African submarines, have been ordered – three each for Greece and South Korea, with one spare.

Other credited Dip activities include export orders for the delivery of forward-looking infrared systems, in cooperation with an overseas company, and the development of customer-specific software for the combat suites of the South African submarines.

Maritime helicopter offsets

The Dip commitment for the maritime helicopter contract is valued at R550-million. By March 2005, 16% of this had been delivered. The contract was signed four years later than for the other systems and is therefore less advanced in terms of Dip delivery.

Contracts for the Dip include orders being placed for the local supply of the direction finders, electro-optical sight systems and the Identification Friend or Foe systems for the helicopters for South Africa. In addition, there has been the delivery, for an overseas customer, of engineering services, infrared suppression systems and armoured crew seats. There has also been the export of electronic warfare systems, threat warning systems and countermeasure systems.

With regard to the Nip obligation, Westland Helicopters started developing Nip projects before
the industrial participation contract was signed as a sign of good faith.

The company’s three projects – Storm Rivers, Romox Timber Doors and St Lucia Sawmills – are all diverse in nature. These projects show growth and expansion potential both within South Africa and overseas.

Storm Rivers Adventures is a tourism initiative in the Storms River Area in the Eastern Cape. Westland Helicopters’ investment in this project is aimed at expanding the existing Cultural Kitchen, establishing a crafters workshop and market and constructing a new adventure-tourism activity – The Gorge Traverse. The project will be divided into two phases and the local community will be involved.

Romox manufactures internal pine doors for the local and international market. Westland Helicopters has provided the company with a low-cost loan for the funding of a new timber-drying kiln, which will increase the capacity of the timber-drying kilns at the Richmond factory. Westland has further assisted Romox with marketing in Europe and Australia.

St. Lucia Sawmills has identified opportunities for the sale of kiln-dried heat-treated timber in the various sectors. Westland intends to provide a low-cost loan to the company to enable the expansion of its operations in KwaZulu Natal and thereby exploit these market opportunities. Westland will further assist the company with promotion of its export products in countries such as the UK, Australia and New Zealand, in particular.

Evaluation of the offset deals

The DTI has reported that, with regard to the Nip programme, some companies have reached their milestones, although minor variances from milestone obligations exist for certain companies. The National Industrial Participation Programme Report, released in November 2005, indicates that the German Submarine Consortium and Agusta are lagging in their delivery on Nip objectives.

On the Dip side, some 51% of total defence obligations had been fulfilled by March 2005. These fulfilled obligations were worth R7,69-billion, while the required Dip milestone for March 31 was R7,56-billion, putting the OEMs collectively ahead of their Dip milestone obligation by one per cent.

While these figures seem to indicate that the industrial participation programmes will deliver on their obligations, concerns exist that the most achievable and high-value projects have already been started, and it will become progressively more difficult to find acceptable projects.

Further, concerns have been raised over the actual benefits that will accrue to the country as a result of the deals initiated under the countertrade requirements. While returns on investment on the overall cost of the procurement package are estimated to be approximately 94,5%, and the nature and scope of the industrial participation deals appear beneficial to the South African economy, international evidence indicates that offset agreements tend to have a much smaller impact on the local economy than expected.

Questions have been raised about the ability of offset agreements to lead to economic growth, technology transfer and job creation. Few countries have been successfully able to use defence offsets sufficiently and extend technology transfers. Domestic defence companies that are expected to benefit form the offset deals are often producing technologically sophisticated products, but have a reserved outlook and are used to a dependence on safe government orders.

Internationally, job creation resulting from offset deals has been found to be negligible, and far below the promises made. For example, a recent study of Saudi Arabia’s defence offset programmes revealed that instead of the proclaimed 75 000 jobs, the various programmes generated about 2 000 jobs. In South Africa, at the time of the announcement of the arms deal, estimates of job creation from industrial participation would be around 65 000.

Further, it has been suggested that many of the projects that are fulfilling the Dip obligations would have happened anyway, and were already in the pipeline. This goes against the principle that industrial participation initiatives must result from the purchase contract.

It is also thought that the prices of the systems being procured may have been inflated by the offset agreements, either due to attempts by the bidding company to cover some of the costs involved in establishing offset arrangements, or by including in its price the cost of reneging on the deal. The offset agreements carry only a five per cent penalty.
clause. One example quoted is that the nine Gripen fighters that make up the first tranche of the fighter aircraft deal come at a price that could have bought in the region of 24 American F-16 fighters. It has also been pointed out that the German corvettes that South Africa has chosen to buy are significantly more expensive than the Spanish-made ones originally considered.

Evidence has also suggested that work on Dip projects may have crowded out other potential aircraft projects, owing to the fact that many small parallel activities loaded the production facility abnormally and multi-task Dip labour was complex to handle logistically.

Further, it has been suggested that the strategic defence acquisition programme could possibly lead to more imports, placing pressure on the country’s balance of payments.

However, there is also an argument that the Dip components of the offset agreements have provided a lifeline to the South African defence industry, although the impact of this appears to be concentrated, specifically in the aerospace sector, while the electronics and maritime sectors are struggling somewhat. In addition, much of the Dip involvement of South African companies is in manufacturing operations that are not overly hi-tech, as compared to the technological abilities of South African firms.

Further, many question the viability of maintaining and growing the local defence industrial base.

Doubts also exist regarding the Nip proposals, some of which seem to focus on investment in areas of overcapacity, such as stainless steel, rather than genuine opportunities for economic growth and job creation.

Some commentators have gone so far as to suggest that offset agreements represent an attempt to justify foreign procurement rather than an economic argument in support of the benefits of import replacement, and that the move to justify the procurement of weapons by economic rather than security benefits is highly problematic.

The decisions taken in respect of South Africa’s strategic packages appear to have been guided to a large extent by the intention to develop long-term strategic alliances with the country’s main European trading partners. As a result, questions have been raised as to whether the best suppliers and the best equipment have been selected. For example, it has been pointed out that the South African Air Force has a number of Mirage C jet fighters that are in good condition, and that the Mirage C is adequate for South African conditions, calling into question the decision to buy new fighter aircraft. Also, the equipment chosen favours the air force and navy over the army, although the army is at the forefront of deployments into Africa.

Further, it has been suggested that rather than dismantle the arms industry in favour of more useful forms of production, government has decided to preserve it as an extension of European companies, as in the bigger picture of the arms deal, South Africa was also buying an admission to a corner of the Western-dominated international arms industry.

A further issue is the higher maintenance costs of the new equipment. For example, it has been argued that the highly-sophisticated nature of the German vessels will entail higher operating costs and an increased reliance on maintenance arrangements with overseas contractors.

Generally, concerns have been raised about the use of offset deals as a means to justify the acquisition of weapon systems by economic rather than systematic benefits, as it creates problems by disguising the true price of weapon systems by using offset deals. It provides a platform for corruption and policy confusion, and debates over alternative paths of security and development are compromised.

Strong allegations have been made that the South African procurement process was flawed, and that bribes influencing the awarding of contracts were taken by government officials. Such allegations prompted a joint investigation by the Auditor-General, the Public Protector and the National Director of Public Prosecutions.

Government welcomed the completion of this investigation, according to which, “No evidence was found of any improper or unlawful conduct by the government. The irregularities and improprieties point to the conduct of certain officials of the government departments involved and cannot be ascribed to the President or the Ministers involved in their capacity as members of the Ministers’ Committee or Cabinet. There are therefore no grounds to suggest that the government’s
contracting position is flawed”. The report details that the procedures in the acquisition process were in line with international best practice.

This joint investigation, which was controversial in its inception as it displaced a process including parliamentary oversight in the form of the Standing Committee on Public Accounts and the now-dismantled investigating unit headed by Judge Heath, may have lifted uncertainty regarding the deal as a whole, but has left a question mark regarding the conduct of certain government officials and arms contractors. Since then, there have been a few ‘high-profile’ arrests and prosecutions, and investigations continue.

Government has emphasised that countries such as Australia, Britain, Canada, Denmark, Finland, the Netherlands, Norway, Sweden and Switzerland all require offsets when they procure defence equipment from abroad. Further, the joint task team that investigated the strategic defence package on behalf of the Standing Committee on Public Accounts surveyed countertrade practice in a number of countries and found that South African policy compares favourably with international practice, although in most countries the threshold for requiring industrial participation is lower, in some cases as low as $1-million.

Beyond the criticisms and defence of the decision to include offset arrangements in the procurement of defence equipment, lies a body of complaint against the decision to procure defence equipment at all.

At the centre of these arguments lies the opportunity cost of spending upward of R30-billion on defence capacities when social services continue to be underfunded, and when poverty alleviation and development issues continue be neglected or ignored. It is anticipated that, despite payment for the procurement package being spread over a number of years, it will increase the share of the budget allocated to defence, and reduce the percentage allocated to infrastructural and public works programmes. This, in turn, will undercut the provision of more funds for poverty relief and will affect the more peripheral provinces, such as the Eastern Cape. In terms of regional development, there were promises of important contributions, but they were not joined into a clear policy framework. Despite the initiative being project driven, there is not much being done to provide public awareness of the investment possibilities on offer.

To some extent, it appears as if government has attempted to create the impression that, because of the offset deals, South Africa will not have to pay for the weapons. This is not the case, and for every decrease in the value of the South African rand, the cost of the package increases. Of course, for every such increase in the cost of the contract, the converse impact of the valuation of the industrial participation packages should be taken into account. While this sounds positive, however, it is dependent on whether the primary contractors deliver on their industrial participation commitments.

In defending its decision to procure defence equipment, however, government has emphasised the need for South Africa to be able to defend against threats to national security. Such threats include regional instability, cross-border banditry and coastal piracy, and affect the country’s ability to develop its economy and attract investment.

The Minister of Public Enterprises has also defended the arms deal and has stated that it will be vindicated. The Minister stated that, “We would not be able to dictate the political development of Africa, and you will not be able to prevent small military powers from accumulating weaponry, therefore to protect your own democracy…we have to be at the leading edge of military technology. That is why we went for the fourth generation fighters, submarines, Hawks, etc. As each year goes past, that strategic think gets vindicated. It would be silly to have Chinese low-calibre fighter, fighting Chinese low-calibre fighters. It is also why we have kept Denel, because no-one currently in our neighbourhood can match our abilities on detection, advanced communications, etc.”

Further, regardless of whether the contractors deliver on the industrial participation obligations, and regardless of whether the promised benefits to the country and the defence industry result, a number of significant indirect benefits to the defence industry can already be seen. For example, in the process of procuring the equipment for the strategic defence packages, the local defence industry was showcased to large numbers of senior representatives from the European defence sector that would otherwise not have been aware of South Africa’s defence capabilities. Also, during the selection and bidding process, gaps in local capabilities were identified and tackled. As a direct result of this, several South African companies increased their exports, much of which does not form part of Dip efforts.
There is also a growing need for additional purchases for the Army, which is demanding large quantities of armoured vehicles. It is expected that these needs should be met in the next decade or so, by a mix of imports and South African manufacturers.

The debate on the strategic defence acquisition package and its resultant offset package has caused much controversy, but has also provided some valuable lessons for South Africa to learn from. As the debate continues, it has yet to be seen whether the cost of the programme has had a positive or negative on the economy as a whole.
Main participants

Armscor

Armscor was first established in 1968 as the Armaments Development and Production Corporation of South Africa. In 1977, this body merged with the Armaments Board, retaining the name Armscor. At this stage, Armscor’s functions included the manufacture and acquisition of defence-related equipment, and arms control.

It was a powerful body, dictating the equipment that the then SADF was to buy, as well as the price that it would pay.

However, changing international, regional and local conditions led to a rethinking of the country’s defence priorities, and the separation of Armscor, in 1992, into two separate organisations, namely Armscor and Denel. Armscor remained part of the Department of Defence, and retained responsibility for arms control and acquisition management, while Denel took over the corporation’s research and development and production capabilities.

In 1995, Armscor’s arms control functions were transferred to the National Conventional Arms Control Committee, with the result that, in terms of the Armaments Development and Production Act of 1968, as amended, and the Armscor Act of 2003, which was assented to and signed by the President in April 2004, Armscor’s primary function is to acquire defence-related products for the SANDF, on behalf of the Department of Defence, and other security services, such as the South African Police Services and Correctional Services, effectively, efficiently and economically. Other responsibilities include defence technology, research, development, analysis, and test and evaluation requirements. The Minister of Defence is the executive authority responsible for Armscor.

In support of these primary functions, Armscor also disposes of defence matériel in accordance with the regulatory framework, supports and maintains strategic and essential defence industrial capabilities, resources and technologies identified by the department – such as Dip – and manages and maintains facilities identified as strategic by the department.

Armscor’s other functions include the comanagement, with the SANDF, of technology development for future weapons systems and products; defence-related quality assurance; and support of defence-related industries.

In performing its primary role of acquisition, Armscor conducts system acquisition management, procurement management, product system management, and technology acquisition management.

System acquisition management, representing the bulk of Armscor’s acquisition activities, involves a range of functions, from the translation of mission and related needs to the acquisition of operationally effective and supportable products and systems in accordance with the stated requirements of Armscor’s clients. Procurement management entails the procurement of existing commercial off-the-shelf or military off-the-shelf equipment. Product system management involves support to clients during the operating phase of products and systems, including the maintenance and logistical support of such products and systems. Technology acquisition management entails the contracting for and development of technology in support of future acquisition programmes.

South Africa’s strategic defence acquisition programmes form a significant part of the acquisition portfolio of Armscor, and project offices have been established and staffed in several different countries where the execution of the programmes is taking place.

The investigation into irregularities in the arms deal included an examination of Armscor’s role in the
acquisition. Findings were mostly positive, although the report on the investigations made a number of recommendations on how Armscor’s procedures and processes could be improved.

Following from these recommendations, an initiative was launched during December 2001 to review and update the joint Armscor/Department of Defence acquisition documentation. In this regard, a team from Armscor and the Departmental Acquisition and Procurement Division is compiling a joint overarching document to replace other policy documents regulating the acquisition process within Armscor and the Department. This document is intended to rectify the identified deficiencies and ambiguities of the present documents.

Regarding technology development, Armscor is responsible for ensuring that strategic technologies are maintained to meet the long-term needs of the South African security forces, as well as for ensuring that leading technologies are maintained and developed further to assure international competitiveness.

Armscor’s quality-assurance function sees the company acting as the Government Quality Assurance (GQA) Authority for the procurement of defence equipment for the South African Department of Defence. GQA activities – such as the provision of objective evidence on the quality of processes, systems and services to aid the identification of improvement opportunities, and the development and tailoring of quality technologies – are also rendered to other clients procuring defence equipment from the South African industry.

In providing support to South Africa’s defence-related industries, Armscor houses the South African Defence Export Support Organisation, the Defence Matériel Disposal Agency, a Dip division and a small-business development unit. Sadeso aims to grow South African defence-related exports, and the Defence Matériel Disposal Agency sells redundant or surplus defence material on behalf of the SANDF. The Dip division renders services – such as the compilation of general countertrade requirements and recommendations, negotiation and signing of Dip agreements, and monitoring and control of the execution of Dip agreements – to the Department of Defence as well as outside parties. The small-business development unit aims to encourage and facilitate the introduction of SMMEs to the defence sector. The unit is accumulating a database on SMMEs that will be shared with companies looking for SMME partners for development projects.

Armscor has a wholly-owned subsidiary, Armscor Business, which was formed in 2002 to house certain strategic Armscor facilities. Armscor Business also provides services for commercial clients and other defence forces abroad. The products and services that fall under Armscor Business are grouped into three divisions: Defence, Science & Technology Institute; Test & Evaluation; and Defence Support.

**Armscor Business Organisational Structure**

![Armscor Business Organisational Structure Diagram](Source: Armscor 2004–2005 annual report)

**Defence, Science & Technology Institute**

The Defence Science and Technology Institute focuses on defence research. It houses various divisions that provide specialised professional techno-military support in six distinct knowledge areas. These divisions include the Institute for Maritime Technology (IMT), Protechnik, Hazmat Protective Systems, Defence Institute, Ergonomics Technologies (Ergotech), Flamengro and Armour Development.

IMT is a multidisciplinary company that provides scientific and technology support to the South African Navy, allowing the best possible use of naval resources. The facilities at IMT include two large acoustic test tanks, an underwater tracking range, acoustic and magnetic measurement facilities, radar and infrared evaluation ranges, small survey vessels, mechanical and electronic laboratories, as well as information systems specialising in maritime
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subjects. The institute’s areas of expertise lie in naval mine warfare, including countermeasures; submarine warfare, including systems integration and doctrine development; target characterisation above water; subsurface target characterisation; battlespace characterisation; and decision support. In December 2004, an IMT/SA Navy advisory board was established by means of a constitution that was signed by both parties. This has opened the possibility of negotiating a service level agreement between IMT and the SA Navy.

Protechnik is a research and development institution which performs research and development work in the field of chemical and biological defence for the Department of Defence. It also provides technical support under contract to the South African Council for the Non-Proliferation of Weapons of Mass Destruction on technical aspects relating to the implementation of the Chemical Weapons Convention. Protechnik also performs synthetic and analytical work and evaluation of filters and activated carbon for non-Department of Defence customers, including overseas clients. It is also the first laboratory in Africa and the southern hemisphere to achieve the status of fulfilling the requirements of the Organisation for the Prohibition of Chemical Weapons, in terms of the organisations proficiency tests. The capabilities of the laboratory are being recognised by overseas chemical defence manufacturers.

Hazmat Protective Systems is a manufacturer and distributor of filter canisters, cartridges, gasmasks and impregnated carbon for local and international markets. Hazmat is the only manufacturer of impregnated carbon, a major component of canisters, in South Africa.

The Defence Institute assists the defence community in developing solutions for decision-making problems, and provides analytical support across a broad range of needs, including military strategy, policy studies, technology studies, acquisition, force preparation, and decommissioning of defence capabilities. It maintains a number of centres required to analyse problem areas and to act as advisors on short-, medium- and long-term decisions. This service is rendered over the full life cycle of defence capabilities, and is organised as three support centres: Decision Support Centre, Acquisition Support Centre and Operations Support Centre. During the operating phase of a products system, Operation Support Centre supports the engineering work on management level.

Ergotech is an ergonomics consultancy, providing services to the SANDF and commercial clients. Its services primarily include military ergonomics research in the areas of anthropometry, biomechanics and human functional performance, specification and design of human-machine systems and evaluation of environmental stressors, and specialised health and safety issues. Ergotech also maintains and manages the South African military anthropometric, biomechanic and human performance database on behalf of the SANDF.

Flamengro specialises in the numerical simulation of the dynamic behaviour of fluid flow, and the processing of experimental data to serve as inputs for improved simulations or to evaluate the accuracy of theoretical predictions.

The Armour Development Group provides armour protection services to the South African defence industry, as well as to international customers. Services include analysis of customer protection needs, development of armour, testing and qualification, vehicle hull and structural ballistic design, specification of bonding or welding, retrofitting of armour packages; and protection against landmines. Protection activities range from light armour to MBT protection, and the group has over 24 years’ experience in providing armour protection.

Test & Evaluation

The Test and Evaluation Group was established to provide an integrated test and evaluation service and is fast establishing an international client base.

Armscor’s Test & Evaluation facilities – Gerotek Test Facilities, including Gerotek Training and Gerotek Events, and the Alkantpan Test Range – provide services primarily to the international market.

Gerotek Test Facilities is a multidisciplinary organisation that was established to satisfy the need for an all-encompassing test facility at which vehicle design and development could be monitored in a typical South African environment. It also offers test and evaluation services for electrical, electronic and mechanical products and systems, in accordance with a wide range of commercial, industrial and military specifications. International business has
been sustained with tests for, amongst others, Nokian Tyres, from Finland; various German vehicle manufacturers (Smart, Audi, AMG); Ford from the USA; and Tata, from India.

Excess capacity at the test facilities is used by Gerotek Training, which provides defensive and advanced driver training courses to drivers of all codes and driver disciplines within the public and price sectors. Defence onroad driving, skidpan training, hijack prevention and 4x4 recovery are some of the courses offered by the facility.

Also at Gerotek, is the Sidibane conference facility, which is used by the local motor industry for promoting products and team-building activities. The defence-related industry uses this facility for conferences and the promotion of vehicles and services.

The Alkantpan Test Range is an all-purpose ballistic test range of international repute, with a comprehensive instrumentation capability such as tracking radar, velocity radars, in-flight recording systems, pressure measurement, high-speed video, and barrel stability analyses. Other services provided by the range include test management, logistical planning and specification development. Singapore is this division’s largest international client, although the country has been reducing its defence spending. Alkantpan has been experiencing financial difficulty and is attempting to increase its customer base.

Defence Support

Defence Support supports the SANDF and ARMSCOR in the management of intellectual property, freight handling, the management of assets and the disposal of redundant SANDF stock.

The Defence Support group includes the Defence Matériel Disposal Agency, AB Logistics, the Technology Exploitation Centre and the Armscor Defence Asset Management Centre.

The Defence Matériel Disposal Agency is responsible for selling excess and obsolete defence matériel on behalf of the Department of Defence. Stock that is sold includes ammunition, aircraft, spares, vessels, land- and air-based equipment. The division operates in the international arena and opens up the opportunity to sell the stock. The majority of the international sales are done on a government-to-government basis.

AB Logistics provides freight forwarding and travel agency services.

The Technology Exploitation Centre (TEC) was established in July 2001 to exploit defence technologies for commercial use, ensuring the Department of Defence’s substantial investment in the establishment of intellectual property rights over a number of good years is put to good use. In the 2004/5 financial year, however, Armscor decided to close the TEC as there were insufficient exploitable opportunities.

The Armscor Defence Asset Management Centre provides asset-management support to assist the defence environment in reaching its full potential. To render this service the division has developed and maintains the following capabilities: maintaining a database for the Department of Defence intellectual property, a document digitisation service for all Department of Defence programme related documents and data items in Armscor’s possession, an asset registration and management service for all Department of Defence assets related to Armscor acquisition programmes, a stock control service on programmes/weapon systems, ammunition marking and packaging design as well as codification consulting services, a disposal service to clear the asset register and the programme management environment of identified redundant, obsolete and unserviceable stock.

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Denel

Denel was established on April 1, 1992, when it separated from Armscor, as a private company incorporated in terms of the Companies Act, with the State as the primary shareholder. A board of directors, appointed by the Minister of Public Enterprises, manages the company, which is the largest in the South African defence-related industry. Denel employs almost 10,000 people, most of whom can be categorised as either skilled or highly-skilled, making the company the largest employer of highly-skilled people in the country.

Denel is a global player and original-equipment manufacturer in the aerospace, defence and ammunition sectors. Its core capabilities are in the manufacturing and marketing of systems and products for these sectors, including overhaul, maintenance, repair, refurbishing and upgrading of rotary- and fixed-wing aircraft and land systems. The organisation also has expertise in landmine clearance and other mine action services, surveillance electronics and commercial products based on plastics.

Denel’s financial performance has been relatively poor, with the company having posted a loss every year since 1997, except for the year ended March 2001, despite efforts to sell noncore assets and refocus the business.

In the year ended March 2005, Denel’s results reflected a decrease in gross revenue, from R4,44-billion the previous year to R3,78-billion, and a significant decrease in gross profit, from R1,29-billion to R230-million. However, the company’s net loss for the year also increased, from R377,5-million in the year to March 2004 to R1,604-billion in 2005. The poor financial performance was mainly attributable to the failure to achieve the sales target, an increased provision for contract losses, and the adverse impact of the exchange rate.

To ensure future growth and profitability, Denel underwent a comprehensive restructuring process, that took effect in April 2004. Previously the group was divided into three divisions, two major – Aerospace and Ordnance – and one minor – Commercial – and, while the company continues to be broadly grouped in three divisions, the divisions are now known as Aerospace, Land Systems and Commercial, and the structure of these divisions has been amended and rationalised.

Other restructuring that took place in the company involved the consolidation of Denel’s IT capabilities with those of State-owned Eskom and Transnet, to form a company known as Arivia.kom, and the closure of Denel Aviation Transport Aircraft Maintenance (Datam). Occupying a prominent place in government’s initiatives to restructure the country’s public enterprises, Denel has also seen the transfer of its Airmotive division, formerly part of Denel Aerospace, into a new company, Turbomeca Africa, in which Turbomeca of France, part of the Snecma group, holds 51%, and Denel a 49% share. Turbomeca is making a number of contributions to Turbomeca Africa, including the transfer of technology, the implementation of a training programme and access to new markets. It will also procure additional work to the value of R200-million over five years. Denel is providing the new company with specialised processes and services that were not included in the sale of Airmotive. These include services such as the foundry, heat and surface treatment, the paintshop and the technical library. Denel has retained the right to introduce a black economic empowerment partner at some stage in the future, without diluting Turbomeca’s shareholding, and the South African government has been issued with a golden share, allowing it to appoint at least one director.

The strengthening of the rand between 2002 and 2005 has reduced the commercial viability of many of the company’s exports, particularly those linked to the defence offset programme. The leadership of Denel has indicated that much of the offset work is being conducted at a loss and the Department of Public Enterprises has been called on to help remedy the situation.

Restructuring of Denel

In 2005, Denel announced that it was no longer viable under its current business model and was facing a funding crisis.

The company indicated that it no longer has a domestic market sufficiently large to support it as it is currently composed. Denel only gets about 40% of its income from its domestic market, against the international average of 70% for the defence industry. Furthermore, the company reported that it generally lacks political support in its international marketing efforts. Normally, worldwide, defence industries can rely on their home governments for
explicit marketing support in international markets. Often, this support is more important in winning contracts than the technological advances the product may possess.

Denel received a R2-billion cash injection from the South African government and is involved in a strategic refocus to bring the company back to profitability. It will shift its business model, which will result in the company moving from being a fully-fledged global prime systems developer to becoming a local prime systems integrator and a supplier of subsystems and components to the local market, in cooperation with other local industry players, global original-equipment manufacturers and suppliers.

The Department of Public Enterprises has been involved with Denel since it was called on to help remedy the situation, after Denel claimed that much of the offset work was being conducted at a loss. In June 2006, the Minister of Public Enterprises reported that Denel has identified four key measures for improving its profitability and long-term viability.

Firstly, Denel will consolidate its business units in order to reduce duplication and to focus on supplying niche capabilities. This process includes the assessment of the viability of each business unit and a decision to either fix or exit the particular business. The assessment of the businesses has largely been completed. Denel will consolidate and reduce the number of its product lines. In addition, Denel is in the process of disposing of its non-core business units and assets.

The second central measure of the strategy is the identification of global alliance partners and the conclusion of business partnerships at business unit level. Selective equity partnerships and alliances with global prime contractors will be established. These partnerships will result in Denel achieving greater market access, global supply chain integration and world-class capabilities and productivity. Denel’s first partnership deal in the aerospace sector with Saab is has been completed. The company is also actively seeking new partnerships in the emerging world.

As its third measure, Denel is seeking to secure at least 70% of local defence spend. Inter-departmental task teams involving the departments of Defence and Trade and Industry have been established to ensure further alignment of defence acquisition policy with the objective of further developing the local industry. This may require changes to the current Armscor Act and the alignment of Department of Defence requirements with the strategic capabilities of Denel, as indicated by the Minister of Defence.

Lastly, Denel will raise its capabilities and productivity to world standards. It will identify, initiate, coordinate and manage interventions to ensure capability and productivity gains. Where required, the alliance partners will inject new technology, processes and skills into Denel, resulting in a leading technological edge and improved efficiencies.

Denel will remain a 100% State-owned company, but will effectively become an investment-holding company, with investments in subsidiaries and associated companies.

Strategic relationships

The company has strategic relationships in Africa, Europe, the Middle East, Asia and the US. Export growth for the company is in developing regions, such as South America, the Middle East, India and Asia.

Denel is also considering the possibility of forming important strategic production alliances with companies in India and Brazil. Defence industry and technology form one of the agreed areas of cooperation in terms of the India, Brazil, South Africa (IBSA) Dialogue Forum, and significant parts of the Indian and Brazilian defence industries are also State-owned.

In 2006, a contract was signed between South Africa and Brazil for work on a missile programme. A team of specialists from the Aerospace Technical Centre of the Brazilian Air Force arrived in South Africa to participate in the further development of Denel’s A-Darter air-to-air missile (AAM). The A-Darter is a fifth-generation infrared homing AAM being developed by Denel Aero-space Systems, previously Kentron. The contract is actually between, on the one side, the Brazilian Ministry of Defence and the Brazilian Air Force and, on the other, South Africa’s defence procurement, disposal and research and development agency Armscor, part of the South African Department of Defence. It is, thus, a high-level agreement between government departments on both sides of the Atlantic.

A certain amount of development of the A-Darter has already taken place, funded entirely by South Africa. In terms of the agreement with Brazil, the
South American country will fund 50% of the costs of completing the missile’s development. So far, Brazil has allocated $52-million to the A-Darter programme, but some defence media sources in that country estimate that Brazil’s investment in the A-Darter could reach $100-million or even more. How far the development of the A-Darter has proceeded has not been revealed, but the Brazilian Air Force has stated that it expects the missile to enter service in 2015.

In the first partnership to emerge from its restructuring process, Denel teamed up with Saab AB of Sweden to create a new aerostructures company in South Africa, which will compete in international markets for design, manufacturing, and assembly orders in the civil and defence aerostructures fields. Denel Aviation’s aerostructures unit will contribute its new and existing capital equipment, current client base, and design and manufacturing skills to the partnership. Saab will be responsible for the running and performance of the new entity. Saab will provide an investment of R66-million over the first two years, ongoing skills and technology transfers, as well as management and market access. Denel will invest proportionately to its ownership. The new aerostructures company will initially be 20% owned by Saab and 80% by Denel. It will begin operations with about 600 staff from Denel Aviation and will be led through the transformation process by a team of specialists deployed from Saab Aerostructures, in Sweden. The turnover will initially be approximately R200-million and is expected to grow significantly over the first years.

At the beginning of 2006, Denel strengthened its existing business links in the Middle East, by forming a partnership with United Arab Emirates (UAE) commercial company, International Golden Group (IGG). The joint venture company will be called Denel Middle East, and will be based in Abu Dhabi. Denel has indicated that the partnership with IGG is a further demonstration of its macro strategy to turn around the company’s fortunes. Denel expects the joint venture company to become the hub for the promotion of its existing programmes and projects in the UAE. Denel’s business in the UAE covers both land systems products, notably artillery and aerospace systems. Apart from ammunition, it has a long-term contract with the UAE Armed Forces for the maintenance of artillery systems.

Denel is also a partner in the Airbus A400M military transport project. The project will entail South African aerospace companies working together with Airbus Military to produce components and subcomponents for every Airbus A400M military transport aircraft that is built. Denel and Aerosud have been contracted to manufacture the mainframe for the A400M. Denel is responsible for the top shells for the centre fuselage section – these can be thought of as being equivalent to roof panels. Denel is producing two top shells for each aircraft – one each in front and behind the wing box, which joins the wing to the fuselage. In addition, the company is making very large wing/fuselage fairings, manufactured mainly from composite materials but including aluminium parts. Each such fairing is 15 m long, 7 m wide, and nearly 3 m high. Denel is also set to shortly start contributing the ribs and spars for the tail fin, and centre wing box structural components. All these are classified as primary structures. Denel is expected to benefit from the programme, which is expected to continue for a few decades.

In the second half of 2006, Denel was awarded its biggest contract to date from BAE Systems. The R296-million contract is for the supply of precision brass ammunition components for a duration of three years.

**Denel subsidiaries**

**Denel Aerospace**

Denel Aerospace consists of the following units: Denel Aviation, which comprises Airframe Manufacture, Aircraft Logistics and Aerospace Engineering; Aerospace Systems; Denel Optronics; the Overberg Test Range (OTB, from its Afrikaans initials) and Denel Personnel Solutions (DPS).

Prior to the restructuring, Denel Aerospace comprised Denel Aviation, which has been split into two operating divisions – Airframe Manufacturing and Aircraft Logistics; Kentron, which is now known as Aerospace Systems; Eloptro, which is now part of Optronics; OTB and DPS.

**Denel Aviation:**

*Airframe Manufacturing*

This division, part of Denel Aviation, undertakes general manufacturing processes and high-volume, low-margin component manufacture for Denel and
third parties, aerostructure subassemblies, and the assembly and integration of airframes. The facility has comprehensive machine shops, a fabrication plant, assembly line and composite materials department.

**Aircraft Logistics**

Aircraft Logistics, formerly part of Denel Aviation, provides integrates system support and product support for fixed- and rotary-wing transport and tactical aircraft; maintenance, conversions and assembly services; component repair, laboratory and calibration services, aircraft painting and aircraft refurbishment and modernisation services.

Together, Airframe Manufacture and Aircraft Logistics, which formerly comprised Denel Aviation, have a number of contracts relating to South Africa’s strategic defence acquisition programme. For example, Denel Aviation was contracted to manufacture tailplanes for the Royal Air Force’s fleet of Hawk jet trainers; to produce main landing gear units; and to produce tooling for the Eurofighter-Typhoon programme production in the UK, Germany, Italy and Spain.

Also as part of an offset deal, Denel Aviation was awarded a multimillion-rand contract to produce fuselage sections for the Gripen fighter jets destined for the Swedish Air Force.

In addition, Denel Aviation was developing and manufacturing a Nato-interoperable set of underwing stores pylons for Gripen, in collaboration with Comau-Aims in Uitenhage.

Further, as part of the defence industrial participation linked to the helicopter contract, Agusta signed an agreement with Denel Aviation, in which the South African company will manufacture 25 of the 30 helicopters on order as part of the strategic defence acquisition programme. Denel Aviation was also given responsibility for the manufacture and maintenance of all A109s and A119s for all African, and some Far Eastern, markets. The potential worldwide market could be as high a 30 of these helicopters a year, which translates into potential annual sales of around $90-million in which South Africa – and Denel – will share with Agusta.

In another export deal, Denel Aviation was contracted to manufacture parts for the 747, 767 and other commercial planes manufactured by aerospace giant Boeing. Under the contract, Denel will manufacture about 400 parts a month for Boeing over nine years. The contract is valued at $35-million, and Boeing will also provide training and capital equipment for the project worth a further R50-million.

**Aerospace Engineering**

Aerospace Engineering provides structural and system design and testing services; subsystem design and integration services; aerodynamic design and analysis services; weapons and stores integration and clearance services; avionics system engineering and software development; electrical system design and analysis; mission planning and debriefing systems; test and integration services, including ground and full-flight testing.

This division has been established to eliminate the suboptimal situation where, previously, each division had an engineering department.

**Aerospace Systems**

This division controls Denel’s stable of missiles, unmanned aerial vehicles, the Rooivalk helicopter and the ground-based air-defence system. These functions formerly fell under Denel Aviation, Kentron and the defunct Denel Programme’s Group.

The division has revealed that it is entering the rapidly-developing, increasingly important market for medium altitude long endurance unmanned air vehicles.

Contracts that Aerospace Systems has taken over from Kentron include a multimillion-rand agreement for the supply of Umkhonto-IR surface-to-air missiles and associated fire-control equipment. The missiles will equip six vessels of the Finnish Navy’s Squadron 2000 project. The fact that Finland is a member of the European Union makes the selection of the Umkhonto-IR significant, as it creates a solid platform for future marketing and sales elsewhere in the world.

The South African Navy was the launch customer of the Umkhonto-IR missile system, with the system to be incorporated in its new Meko A-200 patrol corvettes, being constructed in Germany.

Typically the Umkhonto-IR surface-to-air missile system acts as a ship’s primary defensive weapon
against incoming sea-skimming missiles and other air threats, such as attack aircraft.

Kentron’s Ingwe anti-tank guided weapon has won some export orders from Africa and the Middle East, and Kentron’s Seeker II tactical unmanned aerial vehicle – described as one of the best in the world – has been sold in the Persian Gulf region, and is being looked at by South African security forces.

**Denel Optronics**

Denel Optronics is a world-class optronics business, established through the merger of the former Eloptro, Kentron’s Cumulus and the Kenis imaging infrared camera unit. The division designs and manufactures optical and laser products, such as laser range finders, target-acquisition systems, submarine periscopes, electro-optical stabilised observation and surveillance systems, and helmet-mounted sighting and tracking systems.

The helmet-mounted sighting and tracking system, produced by Denel Optronics, has attracted international interest and the unit has obtained major orders, including a development for the Rafale fighter aircraft by Sagem. Other orders include the Belgian Federal Police awarding the business unit a supply and maintenance contract for the LEO II A3 Observation System on their MD 900 helicopters.

As part of an industrial participation arrangement, Denel Optronics has a R62-million contract with Zeiss Optronik, of Germany, to design and produce periscopes for the South African Navy’s submarines, and for export to Greece and South Korea. The agreement was signed with Denel Eloptro and has, subsequently, been taken over by Denel Optronics. The division has the capacity to manufacture two periscopes a year, and the business provides about 40% of the company’s income, with laser rangefinders responsible for some 50%.

**DPS**

DPS is a labour supply brokerage for contract work within the aviation industry, ranging from recruitment, corporate security, HR consulting to cleaning services. In certain instances DPS has provided payroll administration services to external companies.

**Denel Land Systems**

Denel Land Systems was previously known as Denel Ordnance, which consisted of eight units – LIW, LaForge, Mechem, Naschem, PMP, Somchem, Swartklip Products and Vektor.

Under the new organisation of Denel, however, Denel Land Systems consists of five units – Denel Systems, a merger between LIW and Vektor; Large Calibre Ammunition, a combination of LaForge and Naschem; Small and Medium Calibre Ammunition, formerly PMP; Explosives and Pyrotechnic Ammunition, formed from Somchem and Swartklip; and Mine Action, also known as Mechem.

**Denel Systems**

This unit comprises the merged operations of LIW and Vektor. Its core competences include the design, development, assembly and support of weapon systems and a spectrum of turrets for diverse military applications.

The former LIW had an agreement, which will be honoured by Denel Systems, with the government of Malaysia for the supply of 22 units of LIW-developed 155 mm 45-calibre G5 mark 3 towed artillery systems, along with accessories, fire control systems, ammunition, modular charges, logistic support and training.

**Large Calibre Ammunition**

Large Calibre Ammunition is the amalgamation of the Naschem and LaForge operations. The company is involved in the design, development, manufacture and supply of large-calibre ammunition products, military detonators and explosives plants.

The division has world acclaimed expertise in the setting up of turnkey ammunition-filling plants,
particularly in Europe, the Middle East and the Asia-Pacific region.

At a demonstration in the United States in November 2005, Denel scored favourably with its 105 mm light artillery ammunition demonstration and turret mounted on the LAV III (Stryker) vehicle, built by US company General Dynamics Land Systems (GDLS). This programme started with a teaming agreement with GDLS in July 2003 to customise the Denel Land Systems Light Experimental Ordnance (LEO) 105 mm artillery ballistic system for various requirements in the USA and Canadian Armies, the USA Marine Corps, and other potential customers. With this demonstration Denel and GDLS proved the success of the prototype Self Propelled (SP) 105 mm artillery system and Denel’s pre-formed fragmentation ammunition.

In December 2005, Denel received a R30-million multi-year order from the SANDF for the upgrading of the defence force’s mortar ammunition in stock.

Small/Medium Calibre Ammunition

This plant, formerly known as PMP, is one of the largest small-arms ammunition manufacturers in the world and an internationally-established manufacturer of military and sporting ammunition products and components. It also manufactures ammunition primers, boosters and detonators. Industrial products include mining detonators, aircraft escape systems and cutting charges.

In December 2005, the division received a R36-million order from BAE Land Systems for the delivery of 129-million brass cups. These cups are the first process in the manufacturing of ammunition. In September 2001, the division achieved a breakthrough by clinching a five-year rolling contract with BAE Systems. This order is the fifth annual one under the main contract.

Explosive and Pyrotechnic Ammunition

This unit, incorporating the former Somchem and Swartklip operations, specialises in solid fuel propulsion products, energetic material applications, pyrotechnic and high-explosive products for military, law-enforcement and commercial use.

Contracts held by the unit include the supply of modular propellant charges for artillery rounds to the British army, and 35 mm cannon shells to the Swiss army – contracts that were signed by Somchem.

Mine Action

This unit, also known as Mechem, is an acknowledged world leader in cost-effective humanitarian mine action services, including landmine humanitarian mine action services, including landmine removal, mine awareness training, victim assistance and mine stockpile destruction.


Denel Commercial

Denel Commercial provides engineering services and specific products to industry, including manufacturing and maintenance anodes for the aluminium industry.

The unit consists of Dendustri, the Properties Group and Other Business. However, as part of the group strategy to focus on core business and competencies, decisions have been made to dispose of some of the commercial businesses. These will include Dendustri, Irenco, and Bonero Park.

Dendustri

This unit provides engineering services and specific products to industry, including manufacturing and maintenance of anodes for the aluminium industry.

Properties Group

Bonaero Park

This company manages a commercial property portfolio in the retail, office and industrial property sectors.
Denel Properties

This company undertakes speculative property development in the residential, office and commercial sectors.

Aero Properties

This company holds valuable vacant and developed land adjacent to the Johannesburg International Airport.

Other Business

Densecure is the captive insurance company of the Denel Group.

Irenco is a third-party manufacturer of electronic and plastic injection-moulding products, as well as manufacturer of its own product range of security products, dynamic weigh-in-motion systems, onboard computers and a vehicle monitor systems.

Specialised Protein Products is a unit that specialises in the production of soy-based, human-grade protein-rich foodstuffs.

Saab Grintek

Saab Grintek is a partnership between Swedish technology group Saab AB (70.3%) and BEE company Kunene Bros Holdings (29.7%). The group specialises in three main market segments, namely telecommunications and selected niche opportunities within industrial and defence electronics. Grintek is a business unit of Saab, whose operations focus on defence, aviation and space.

Saab’s involvement with Grintek came about as a result of the industrial participation obligations that stem from the strategic acquisition package for the SANDF. In 2005, Saab raised its interest in Grintek and became the majority owner the company.

Saab’s acquisition of the majority of Grintek also created the opportunity for a merger of the two groups businesses, including Grintek’s avitronics division, forming a new business unit, Saab Avitronics.

Saab Avitronics

Saab Avitronics offers a broad product range in electronic warfare for air, land and naval applications; complete self-protection systems and a range of countermeasures-dispensing systems, missile approach, laser and radar warning systems, jammers and systems for electronic intelligence. Saab Avitronics also offers safety-critical utility and control systems, mission systems, such as reconnaissance and display systems, and a wide range of modular avionics, for fighters, helicopters, transport and commercial aircraft.

Saab Avitronics has facilities in Sweden and South Africa, where its primary focus is on electronic warfare systems and associated products for air- and land-based applications. It also has a maritime facility, situated in Muizenberg in the Cape, where it focuses on naval systems.

International interest in the company’s systems continues to grow, with many of its export deals linked to the industrial participation requirements of the strategic acquisition package, through which...
Saab Avitronics has formed several agreements with strategic foreign defence system suppliers.

For example, the company is currently supplying locally-designed, developed and manufactured equipment and components to Saab for installation on the 28 Gripen aircraft South Africa is in the process of acquiring, as well as for several Gripen fighters bought by Hungary. The company is also providing Saab with some equipment and components that will be retrofitted to about 200 Gripen aircraft in use in Sweden. Saab Avitronics’ systems will also be incorporated into the new Hawk lead-in fighter trainers and AgustaWestland light-utility helicopters.

The company has embarked on shared research and development opportunities, as well as export orders from Europe and South Korea and, in Malaysia, Saab Avitronics has been awarded the first phase of a contract to supply 18 multi-sensor warning systems to the government for its recently-acquired fleet of Sukhoi fighter aircraft.

Systems have also been delivered to Middle East, South and South East Asia, Africa, several European air forces and to the US.

In South Africa, Saab Avitronics’ main customer is the South African Air Force, which uses the company’s systems on its Oryx, Rooivalk and C130 aircraft, among others.

At the African Aerospace and Defence 2004 exhibition, Saab Avitronics launched a new combat vehicle self-protection system which, when installed in full configuration, will offer main vehicle battle tanks comparable protection against engagement by weapons like RPG-7, anti-tank guns, missiles and artillery shells.

At the end of 2005, Saab Grintek signed an R30-million deal for the acquisition of AMS. AMS focuses on proprietary aircraft monitoring and recording systems for the global aerospace and defence market. On completion of the deal, which is subject to approval by the regulatory authorities, AMS will form part of Saab Avitronics.

Saab Grintek Divisions

Saab Grintek Communications

Saab Grintek Communications specialises in tactical defence communications and customised telecommunication systems. It supplies its own high technology products in radio communications, aircraft communications, management systems and networking products.

It also specialises in the integration of communication products utilising its own equipment and that of other suppliers to deliver turnkey communication systems

Grintek Ewation

Grintek Ewation (GEW), with 35 years’ market experience, supplies high technology system solutions and products to customers in the business areas of communication intelligence and management, spectrum monitoring, perimeter security and electronic maintenance and logistic support.

EADS holds a 45% stake in GEW, and the two companies have an agreement to jointly develop and market signal intelligence systems under a common trademark.

GEW Security Systems has been involved in the design, development, implementation and maintenance of major security systems for the past ten years. Installation and integration projects include border systems, airports, government and civilian buildings and air force bases. The perimeter security systems include infrared sensor systems, camera surveillance, intelligent fence systems, taut wire systems, fibre optic systems and ground pressure sensor systems. GEW also specialises in building management systems that integrate access control, camera surveillance and asset management.
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<th><strong>Saab Logtronics</strong></th>
<th><strong>Enterprise</strong></th>
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<td>Saab Logtronics provides integrated logistics support services and products to suppliers and users of high technology equipment in selected aerospace, defence and commercial markets. The division also produces internationally accepted Generic Test Stations, which employ user friendly data base technology. The division is a Civil Aviation Authority-approved maintenance organization and holds accreditations from various original equipment manufacturers for third party maintenance. Saab Logtronics has facilities in Centurion near Pretoria and in Cape Town.</td>
<td>The Enterprise division offers voice and data integration as well as the integration of call centres and Managed Support Services, TCO Modelling, hospitality sectors, etc.</td>
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<th><strong>Carrier</strong></th>
<th><strong>Grinpal</strong></th>
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<td>Carrier offers fixed and mobile service providers a comprehensive range of telecommunication value added services, including voice over internet protocol (Voip), transmission, applications, satellite and wireless solutions.</td>
<td>Grinpal is an empowered joint venture offering integrated energy management systems incorporating pre-payment meters and load management systems. Grinpal is the result of Saab selling 50% of the Saab Grintek Energy Technologies business unit to Palace Consulting Engineering.</td>
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<th><strong>Power Division</strong></th>
<th><strong>Aviation Systems</strong></th>
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<td>The Power division specialises in DC power and standby battery solutions for telecommunication applications. Its modern switch mode equipment has been well proven in the African market with a dominant footprint within large telecommunication operators in South Africa as well as several African networks. All systems are fully assembled at manufacturing facilities in South Africa.</td>
<td>This division supplies, installs, commissions and supports ground-based infrastructure for optimal air traffic management for both the commercial and military environment. The unit also represents a number of well-respected international suppliers whose products are supported locally by a highly trained and globally certified technical support team.</td>
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<th><strong>Antennas</strong></th>
<th><strong>Syrinx Communications</strong></th>
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<td>The Antennas division focuses on the design, development and customisation of antennas, RF components and sub-systems, as well as cell enhancement solutions. This division also addresses the fixed and mobile service providers’ needs in South Africa and the African market.</td>
<td>The company was established in January 1999 as the services arm of Saab Grintek Technologies. Syrinx provides a range of managed value added interconnectivity services. These include global connectivity, Wide Area Network solutions, Internet services, corporate mobility, broadband connectivity, converged voice and data architectures and international voice services.</td>
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<th><strong>Africa</strong></th>
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<td>Based in Nigeria, this division provides direct access to major African markets for Saab Grintek’s technology solutions.</td>
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Reunert, a JSE Securities Exchange-listed company, operates in the electronics and electrical equipment sector. The company has some 5,000 employees, many of whom are highly-qualified, and generated turnover of R7-billion in 2005.

Reunert manages a number of businesses focused on electronics and low-voltage electrical engineering.

On the electronics side, the company has four divisions – Office Automation, Consumer Products & Services, Telecommunications and Reutech.


The electrical engineering division consists of Circuit Breaker Industries, which is wholly-owned by Reunert, and African Cables, in which Reunert has a 75% shareholding. The office automation division contains Nashua and Nashua Finance, both wholly-owned subsidiaries, and Nashua Kopano (74%), while the consumer products and services division holds Nashua Mobile and RC&C Holdings, which are also wholly-owned. The telecommunications division contains Auco Technologies, wholly-owned, and Siemens Telecommunications, in which Reunert has a 40% stake.

Reutech Defence Industries, a wholly-owned subsidiary of Reunert, is located in New Germany in Kwazulu-Natal, and develops and manufactures state-of-the-art, very-high-frequency and ultra-high-frequency tactical airborne and ground-based radio communication systems and innovative air weapons systems, specialising in high-tech fusing.

Fuchs Electronics, based in Alberton, Gauteng, is a wholly-owned Reunert subsidiary. The company supplies electronic fuze ordnance, electronic air weapon fuzes and pre-fragmented air weapons. Its capabilities include design, development and manufacture of electronic fuze ordnance and associated setting devices for all medium and large calibre tube launched ammunition; and electronic air weapon fuzes and pre-fragmented air weapons. Products include those used for naval, artillery, mortar and rocket applications. More than 90% of this company’s revenue is generated through exports to areas including Asia, Europe, South America and the Middle East. Fuchs Electronics owns the intellectual property of all the products it manufactures and markets.

Reutech Defence Logistics (RDL), in which Reunert holds a 70% stake, with the remainder being held by black empowerment company Kgorong Investment Holdings, is a system engineering and support company. Its services cover the entire spectrum of logistic support and management; the development and manufacture of gun and fire-control systems for armoured vehicles and naval guns; and the supply and support of Alcatel carrier Internet working equipment. The company’s services cover the entire spectrum of installation, logistic support and support of electronic equipment with specific emphasis on telecommunication and radar systems. RDL is based in Midrand, and has support facilities throughout South Africa.

Reutech Radar Systems (RRS), in which Reunert holds a 57% stake, is based in Stellenbosch, in the Western Cape. The company specialises in ground-based and ship-borne radar systems and is active in the air defence, air space control, air traffic control markets and mining markets. RRS supplies products to local and international markets.

A 10% stake in the company is held by BEE company Kgorong, and the remaining 33% is held by European defence company EADS. This relationship has assisted RRS’s penetration of international markets.
An example of this international work has been RRS’s development of antenna rotor pedestals for a number of large European radar suppliers. These units, of which more than 20 have been ordered, are for several different international naval programmes, and further orders are expected. Another foreign order has been for air-surveillance signal processors to be fitted in radars employed by a European country in a coastal surveillance system. Also the company is developing a stabilised platform for a radar antenna to be mounted on a corvette. RRS’s radar technology has also been specified for the South African defence acquisition programme, where the systems will be fitted to the corvettes being supplied by the German Frigate Consortium.

RDI Communications, located at Pinetown in KwaZulu-Natal, specialises in technologically advanced tactical V/UHF communication systems for the defence environment. The company has also been a strategic supplier for communication products to the SANDF for almost 40 years. The company is also an approved supplier to many international customers.

In 2006, Reunert announced that it was considering the disposal of its defence companies. Although Reutech recovered from its loss position in 2004 to record an operating profit of R3,8-million in 2005, Reunert announced that it the defence operations would not have a material effect on the company even if they performed at optimal levels.

Advanced Technologies & Engineering (ATE)

ATE is a private company involved in aeronautical engineering, from the design and development stages, through to production and support. The company customises aircraft and defence systems. BAE previously had a 20% stake in ATE, but this was later sold back to the company.

In the last few years the company has successfully upgraded French-designed and-built Dassault Mirage F1 supersonic fighters for the Spanish air force, Russian-designed Mil Mi-24 attack helicopters for an unnamed customer, and was responsible for the integration and installation of the avionics system for the South African Air Force’s new Hawk lead-in fighter trainer. The Hawk contract was worth more than R520-million to the firm, and involved integrating various avionics units manufactured by ATE itself, other South African companies, and some foreign firms, into a single system and then integrating that system into the Hawk airframe. The company is also involved in the development of the Vulture tactical unmanned air vehicle for the SANDF, for use as an artillery airborne forward observer. The SANDF placed an order for the first batch of Vultures, with first delivery having taking place in 2005.

Further, ATE also provides upgrades to various armoured vehicles, including the BMP range of armoured vehicles and the T-72 tank.

It has been reported that ATE is actively marketing its success in integrating advanced avionics systems in aircraft to international customers.

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African Defence Systems (ADS)

ADS, part of the Thales Group International, is involved in the design, development, integration and support of high-technology electronics for defence applications. The company is involved in the strategic defence acquisition programme, providing the combat management system and systems management system for the new corvettes.

ADS has clients in both the local and international arena, and is a member of both the Aerospace, Maritime and Defence Industries Association and Armscor.

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Land Systems OMC (formerly known as Alvis OMC)

Land Systems OMC is a leading armoured and peacekeeping vehicle manufacturer, covering all disciplines of the military vehicle spectrum, from conceptualisation through design and development, manufacture and production and in-service support.

The company is a business unit of BAE Systems Land Systems of the United Kingdom. BAE Systems owns 75% of the company, with the remaining shares belonging to DGD Technologies, a black-owned company.

Although Land Systems OMC is the main supplier and maintainer of armoured vehicles for the SANDF (primarily the SA Army), the South African Police Service, and local security companies, it is also has international clients. Locally, it operates countrywide dealer network, which supports its vehicles in 40 different areas, including remote parts of South Africa. The network supports about 3 500 OMC vehicles that are in active service with the SANDF and SAPS in urban areas, as well as in smaller towns. The company procures 22% of suppliers from black business and intends to increase this to 25% by the end of 2006. The dealers are responsible for the maintenance of the army’s military and armoured vehicles on behalf of Land Systems OMC.

At the end of 2005, Land Systems OMC was awarded a follow-on contract worth about R171-million by Armscor for the upgrade of Olifant MK2 main battle tanks (MBTs). It is the single largest order awarded by Armscor to Land Systems OMC in over 12 years, and follows an initial R124-million order received in September 2003. The scope of work includes upgrading the powerpack to 1040 horsepower, new gun control equipment, and new target detection and engagement systems with all-weather day/night fighting capability, and other operational modifications required by the South African Army. Delivery of the upgraded MBTs is scheduled for 2006/2007. The company will also supply the logistic support for the MBT system.

Land Systems OMC, directly and through BAE Systems, has links to several major foreign companies and groups in its field through partnerships, teaming arrangements and other agreements.

In September 2004 it was reported that Land Systems OMC had been named as the preferred supplier of 200 specialist patrol vehicles to Sweden. Further, the company, in partnership with Italy’s Iveco Defence Vehicles Division, has been selected to supply specialised RG-12 public order vehicles to Italy’s Carabinieri and police.

The company has been awarded an upgrade and refurbishment contract by Armscor, valued at R164-million, for the upgrade of Casspir MKII mine protected vehicles for the SANDF, and has completed a two-year upgrade programme of 80 Rooikat combat vehicles, also for the SANDF.
Through its partnership with North American company General Dynamics Land Systems, Land Systems OMC has sold 148 of the RG-31 mine-protected armoured vehicles to the US Army in a R468-million deal, and has also sold 50 of the same vehicles to the Canadian Army in a deal worth R115-million. The US order was completed in December 2005.

Land Systems OMC also confirmed an $11-million order from the United Arab Emirates Armed Forces for a number of RG-31 vehicles, with further orders already under discussion. The RG-31 has received numerous accolades from users who have survived attacks by mines and other Improvised Explosive Devices in Afghanistan and elsewhere.

The company’s products are deployed in more than 20 countries worldwide and are involved in peacekeeping and humanitarian roles, including mine clearing.

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**Tellumat**

Tellumat, formerly part of Plessey, is a player in the South African telecommunications and electronics industries. The company, which reported turnover of R270-million in 2003, has five divisions – Communications, Defence, Contract Manufacturing, Technology and Quality Assurance.

The company’s defence division has three business units – Radar, Navigational Systems and Tactical Communication and Identification Systems – and is involved in supplying and supporting advanced radar, navigational, avionics and naval systems for defence and civil systems integrators, platform suppliers and end-users.

The radar business unit specialises in long-range mobile air defence radar systems, and enjoys a strong association with Alenia Marconi Systems in respect of a variety of air defence and naval radar systems. The unit – which undertakes all installation, flight tests and after-sales support – has completed the development of six significant upgrades to the South African Air Force’s AR3D radar systems originally supplied by Plessey. This upgrade has been successfully applied to export markets. An example of the technology produced by Tellumat engineers was first utilised by the US Airforce during the Mozambique flood rescue mission in 2000.

The navigational systems business unit provides ground-based navigation systems for civil military aviation requirements. It has been involved in countrywide contracts for the civil and military aviation authorities, and is capable of providing value-added services such as site surveys, calibration services and upgrades that will facilitate the use of imported systems by local and foreign customers.

A 40% share in this business unit has recently been sold to black economic empowerment company Harambe Technologies. Together, Tellumat and Harambe own SIA Solutions, a new company which supplies, installs, commissions and supports various ground-based navigation systems. It has contracts to supply navigation and airport systems and services to Airports Company South Africa, Air Traffic and Navigation Services and the South African Air Force.

The tactical communication and identification systems business unit provides internationally competitive communications and identification products and systems, and support services, to defence system suppliers and users. Services provided include product development, manufacture, support, project management and quality assurance. The company designs, manufactures, supplies and supports identification friend-or-foe (IFF) transponders and integrated IFF interrogator/transponder systems for use on fighter and trainer aircraft, helicopters, naval ships and submarines and air defence systems. The IFF transponders are capable of supporting civilian reply modes. Tellumat is the prime contractor to the
Defence

November 2006

Tellumat's defence division has been awarded several multimillion-rand contracts for the SANDF strategic acquisition package.

The company was awarded four contracts to supply the SANDF with radar and other electronic equipment for the submarines and aircraft. The company will supply the South African Navy with the IFF system for the four new corvettes. The system consists of a Tellumat transponder and a Thales interrogator integrated in a navalised cabinet with interfaces to the external antennas and the below-deck combat system elements.

Tellumat has also been selected by STN Atlas Elektronik, of Bremen, Germany, as its local partner on the ISUS 90 integrated submarine sonar system for the submarines being bought as part of the defence acquisition package. The first two subcontracts, namely engineering services by Tellumat personnel in Germany and management services in South Africa on behalf of STN Atlas, are already in place. In addition, Tellumat will deliver the indigenous PT-2000 identification friend-or-foe transponder for the submarines.

For the South African Air Force, the company will supply the identification transponders for the BAE Systems Hawk 100 lead-in fighter trainer and the Agusta A109 light utility helicopter.
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