Having been unveiled in model form at AAD two years ago, the SARA (Small African Regional Aircraft) project returns to AAD as a full-scale fuselage mock-up.

Led by Denel, but involving many other government, academic and industrial stakeholders, the SARA programme is a candidate for a National Aerospace Flagship Programme. Not only does the SARA aim to provide an affordable ‘community’ airliner tailored to African transport requirements of the future, but also to act as a catalyst for the development of the local aerospace industry by creating a new pool of engineers and technicians.

SARA’s concept is for a twin-engined, 24-seat pressurised airliner that can operate point-to-point services between small, semi-prepared regional runways. The fuselage’s shape, with maximum diameter placed well forward, is a result of employing laminar flow design for maximum aerodynamic efficiency. At the same time, the ‘flattened’ shape of the fuselage allows four-abreast seating to be accommodated – unique for this class of aircraft – while still permitting standing in the central aisle.

Following laboratory confirmation of the aerodynamic principles, the SARA concept definition got under way in June 2012. In April 2014 construction of a full-scale fuselage mock-up began in three sections, which were brought together in May this year.

In the meantime, Denel and government partners funded an independent study by Lufthansa Consulting, which concluded that the aircraft would not only be best in class in terms of performance and capacity, but would also offer the lowest seat-kilometre costs.

Furthermore, the study concluded that the programme could create more than 2,000 technical jobs sustained over 15 years, develop skills of 300 engineering jobs, permit the development of an aerospace special economic zone, and generate significant export revenue.

The report calculated a break-even at 360 aircraft within the first 10 years of production. Initially the SARA mock-up is being used for a range of studies, including those by PhD students. Areas to be assessed include emergency escape door and environmental control system concepts, cockpit and cabin ergonomics, and a wide-seat option in the front two rows.

A second phase of studies will include investigation of various seating options (12-, 20- and 24-seater layouts), cargo and combi layouts with rollers, cabin lighting, lavatory installation, and a cabin crew jump seat.
Vehicle Supplier providing solutions for your defence and security

Denel Vehicle Systems is a global leader in the design, development and manufacture of wheeled armoured mine and ballistic protected vehicles. This includes upgrades and retrofit of military vehicles. The company is the Original Equipment Manufacturer (OEM) of a wide range of highly effective armoured vehicles.

AFRICA TRUCK - The Africa Truck (AT) is a 6x6 armoured vehicle with a maximum Gross Vehicle Mass (GVM) of 28 tons.

AFRICA TRUCK - The Africa Truck (AT) has been designed in a modular fashion to allow for many different top structures (e.g. roll-on/roll-off systems).
Military forces and civilians often fall victim to unconventional attacks perpetrated by militias and terrorist groups. Denel and associate company Rheinmetall Denel Munition (RDM) collaborated on developing an offensive missile to be deployed against RAM projectiles – rockets, artillery and mortars.

Named after the fastest land animal on earth, the Cheetah C-RAM missile is integrated with the Oerlikon Skyshield gun-based air defence system from Rheinmetall Air Defence (RAD). “This combination provides an enhanced and very effective force protection system for unconventional and terrorist attacks,” said Denel Dynamics chief executive Tsepo Monaheng. Both the Cheetah C-RAM and the Oerlikon Skyshield are on display on Stand W7 in Hangar 4.

The Cheetah C-RAM missile system is seamlessly integrated into the Oerlikon Skyshield for a very powerful, layered air defence system, comprising a command post, one Skyshield sensor unit, two Oerlikon twin guns and up to two Cheetah missile launchers containing up to 60 missiles each. The system has a high level of automation and requires only a handful of operators for deployment. It provides area protection for forward bases at a 2.5km radius and can engage targets at a range of up to 6km.

“This combination provides an enhanced and very effective force protection system for unconventional and terrorist attacks,” said Denel Dynamics chief executive Tsepo Monaheng. Both the Cheetah C-RAM and the Oerlikon Skyshield are on display on Stand W7 in Hangar 4.

The Oerlikon Skyshield gun system is already in operational use by the SANDF, identical to the C-RAM system used by the German Air Force, dubbed MANTIS. According to Monaheng, the SANDF and other customers have a need to counter the threat of RAM and will contribute to the full-scale development and production of the C-RAM missile system. Denel Dynamics and RDM, in conjunction with RAD, have concluded a feasibility study and performance demonstrator to confirm the technological capability of such a missile solution.

On Tuesday, the day before AAD opened, the South African Air Force held its annual Airpower Capability Demonstration (ACD) at the Roodewal Weapons Range near Makhado. The demonstration involved most types of the SAAF and included live weapons firing, such as Rooivalks firing rockets and both Hawks and Gripen releasing Mk 81 250 lb bombs. Firefighting capability was displayed by Oryx helicopters, and the demonstration included a combat search and rescue scenario.

ACD is part of the SAAF’s force preparation efforts as the South African government focuses increasingly on peace and security in the wider continent. That has required the SAAF to be increasingly prepared for deployed operations. The policy of greater engagement in stabilisation processes outside South Africa has seen Oryx and Rooivalk helicopters perform with distinction on UN duties in the Democratic Republic of Congo.

Speaking to guests at the ACD, SAAF deputy chief Maj Gen Gerald Malings paid tribute to the soldiers and airmen who have been “performing their duties internally and externally with honour”.

Super quick C-RAM missile

BY SAM J BASCH

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The focus of the Council for Scientific and Industrial Research (CSIR, Hangar 4, Stand W16) is on critical strategic defence domains and projects that offer opportunities for the establishment of technology-based enterprises and industry partnerships, writes Don Henning. Technology transfer is one of the CSIR’s mechanisms to create joint centres and new enterprises.

It works in domains such as maritime research, aerospace technologies, trans-border crime and counter poaching, soldier safety, advanced manufacturing, modelling and simulation platforms, cyber defence and industry development programmes. These are all presented at AAD.

Furthermore, the CSIR exhibition displays technologies used for integrated surveillance, soldier mobility, health services, unmanned aerial vehicle design and evaluation, platform protection, aviation propulsion and fingerprint recognition, sonar systems, radar, lasers and photonics, information communications technology and smart systems and optronics.

The CSIR presence also includes live feeds to a big screen, integrated systems view to demonstrate real-time awareness such as that in command centres or ‘war rooms’. A new technology demonstrator vehicle is being exhibited in an outside display and an airborne radar and electronic warfare evaluation pod attached to a Hawk fighter trainer aircraft is visible within the static display park adjacent to the display hangars.

The CSIR works closely with government and industry and therefore its contributions in science, engineering and technology are also represented at AAD, together with the various armed forces and partners such as Denel and Armscor.

Saving lives on the

BY SAM J BASCH

A live demonstration to South African Army officials ahead of AAD 2016 highlighted the vehicle-mounted mine-clearance capabilities of DCD Protected Mobility and its global partners (Hangar 7, Stands CW19 and ON2).

Several Husky vehicles at Armscor’s Gerotek test range, north of Pretoria, sported a host of peripheral technologies, all of which form the ‘toolkit’ to counter the ever-increasing sophistication of asymmetric warfare. Military minds seem to agree that mines and IEDs have already become entrenched on the battlefield, with the attendant threat to personnel and civilians.

“A key driver for us is to save lives, while assuring mobility of military forces and civilians on the battlefield and in the aftermath of conflict situations,” explained DCD general manager Cornelius Grundling. “More than 1,500 of our Husky VMMs [vehicle-mounted mine detection] now operating around the world, on five continents, undoubtedly point to a winner.”

With the Husky in various guises, DCD and its partners – Critical Solutions International (CSI), TORC Robotics and TUb – have become world leaders in route clearance. “To date the Husky has endured more than 7,000 landmine hits without direct casualties, including a massive 100kg blast recently in Turkey. The two occupants of the Husky 2G survived and the vehicle was made operational in one day,” Grundling said.

A first for South Africa – in fact, for Africa – was DCD this week demonstrating the Husky Autonomous, developed in line with the ‘saving lives’ philosophy. The user required a safe stand-off or remote capability, with the vehicle to be operated in manned, tele-operated or full-autonomous mode. The specifications for the

Teaming for air

BY DAVID DONALD

Saab and Denel are exhibiting an air defence solution at this year’s AAD after a period of trials. Saab’s Giraffe AMB radar is partnered with Denel’s Umkhonto vertical-launch surface-to-air missile. The Giraffe radar was deployed to South Africa around six months ago, and has completed a number of successful firings with the Umkhonto system.

Representing another step in the ongoing collaboration between the two companies, which has included integrating the A-Darter missile on to the Gripen fighter, the air defence system brings together the agile multi-beam Giraffe, which is in use with many operators, including Sweden, with the missile system that was initially developed for South Africa’s MEKO A200/
**Husky Autonomous driving in full-autonomous mode**

A Husky fitted with the proven step-frequency 3D-Radar GPR (ground-penetrating radar) was shown to detect both metallic and non-metallic buried threats, in real-time, with 3D sub-surface visualisation. The radar is ideal for both route and area clearance, according to Juan Hernandez, vice president business development at Chemring North America. “It can penetrate to a depth of 1.4m, and although mines are not planted that deep, unexploded artillery or weapons caches are sometimes found at that depth,” Hernandez explained. “It is optimised for uneven terrain, with a high probability of detection, low false alarm rate, and importantly, a commercially available ITAR-free [International Traffic in Arms Regulations] system.”

DCD and its partners also introduced the Husky interrogation system, an articulating manipulator arm to provide safe stand-off capability in the interrogation process. It extends beyond 3m and is able to lift up to 70kg.

Two of the company’s Springbuck Mine Resistant Ambush Protected (MRAP) vehicles – the standard SD and extra-duty XD variant with added protection, payload and performance – are on display.

**Gripens for Botswana?**

South Africa’s northern neighbour has confirmed that it is seeking to purchase a batch of new fighters to replace its ageing Canadair/ Northrop CF-5A/B Freedom Fighters, with the Gripen C/D considered the favourite. The commander of the Botswana Defence Force, Lieutenant General Gaolathe Galebotswe, confirmed that the Gripen had the lowest operating costs of the various candidates, which include F-16s, MiGs, Chinese aircraft and the KAI F/A-50. The Swedish defence material agency, FMV, noted that negotiations concerned approximately eight aircraft.

Saab has had an office in Gaborone since early 2014, and is pursuing a number of opportunities in the country. “There’s a need for greater security as the economy grows,” remarked Saab’s head of market area EMEA, Magnus Lewis-Olsson. “The economy is also diversifying, with tourism growing. Air transport is important in a sparsely populated country, and there’s a growing need for airspace control.”

Regarding the potential Gripen sale, Lewis-Olsson commented that although it would be some time before any deal could be concluded, “there is a healthy discussion with them – it’s well within our radar.” Any deal would almost certainly be made between the Swedish and Botswana governments.

In the meantime, Saab is also discussing a follow-on support contract for South Africa’s Gripen fleet.
BY MORNÉ BOOIJ-LIEWES

The Sukhoi Superjet 100 regional passenger jet (pictured) has made its African debut at AAD as part of a demonstration tour of the continent. JSC Sukhoi Civil Aircraft (SCAC) is targeting Africa as part of its sales campaign for this 100-seat regional passenger jet. Seen on display in the static park is the Sukhoi Business Jet (SBJ) with a bespoke 19-seat corporate interior. Seven of these aircraft have been delivered to customers since 2015. SCAC is also developing a stretched Superjet with a 125-seat capacity that will be certified by 2019, while the SBJ will be certified with an increased range of 3200nm by the end of this year. The manufacturer says it is well positioned to take advantage of

BY DAVID DONALD

Atlantis Aviation is leading a consortium to offer the Dornier Do 328 TP to provide an interim solution to South Africa’s outstanding requirements for maritime surveillance and search and rescue cover. To highlight the proposal, AeroRescue has brought one of its five Do 328s to AAD from Australia to demonstrate the aircraft’s capabilities as a multimission maritime platform and its suitability for South Africa’s needs.
the increase in demand for 100- to 120-seat jet airliners and offers a mature and economical solution to this market.

The manufacturer disclosed that it is in talks with a number of African carriers and sees the continent as an important market for its regional jet. The manufacturer is also in negotiations with a number of independent MROs in Europe, Asia, Latin America and Africa to provide technical support to clients in these regions.

SCAC has secured a number of recent orders for the Superjet 100, including from Irish regional carrier CityJet, which took delivery of the first of a 31-aircraft order in May this year, and four from Iraero, formerly Red Wings Airlines of Russia. SCAC also revealed it is close to securing a follow-on order for Russian carrier Aeroflot for an additional 20 Superjets.

SCAC is also promoting its new Sukhoi Sports Jet, which is a unique concept aimed at the specific air transport requirements of major league sports teams. A mock-up of this jet was unveiled at the recent Olympic Games in Rio, Brazil. This 42-seat aircraft will be equipped with diagnostic equipment, training and planning space for the coach and their technical advisers, featuring multimedia sport analysis solutions. Each seat will have an integrated bioimpedance sensor, pulse oximeter, data recording and processing unit. The Sports Jet will provide sports teams with a safe, comfortable air transport solution that enables the management team to use the flying time productively.

Jet has landed

outfitted to a very high standard with military-spec equipment for the rescue mission. In Australia they have also been undertaking broad area maritime surveillance missions in support of border protection.

Search capabilities include a FLIR Systems Star SAFIRE III electro-optic turret, mounted under the port undercarriage fairing, and an Elta search radar that provides the ability to spot very small targets while doubling as a weather radar. Aero Data’s mission console in the cabin can display imagery from both, plus other information, on a tactical display. The system can stream information back to a ground station. The flight deck is equipped with Honeywell Primus 2000 avionics, and has an extra multifunction display at each pilot station for radar/sensor display. A typical crew comprises five: two pilots, sensor operator and two observers, with room for additional crew members if required. The observers are provided with side-facing seats and enlarged windows for visual searches. One of the aircraft’s assets is an inflight-openable rear cabin door, for which AeroRescue holds an STC. This allows the dropping of many items, from parachutists to liferafts and another survival equipment. The Do 328 can carry sufficient large liferafts to accommodate all those onboard a large airliner.

A total of 107 of four turboprop versions and one jet model were produced following its first flight in 1991.
Growing to help build South Africa

South Africa-based Rheinmetall Denel Munition (Hangar 4, Stand W7) has announced significant growth in sales and profits. RDM is a strategic equity partnership between state-owned Denel and Germany’s Rheinmetall Waffe Munition GmbH. “Major export contracts have enabled us to realise continued growth in sales to R2.14 billion in 2015,” said CEO Norbert Schulze at AAD this week. “Our order book stood at R4 billion at year-end.”

The company’s export drive has also provided a consistent flow of income for the modernisation of its facilities in the Western Cape and the North West province. Capital investments saw upgrading of factories and equipment, such as the refurbishment of the chemical plant at Wellington.

An investment of R550 million is planned for all four of the company’s operations in South Africa that will ensure quality commitments to clients and the safety of employees. The introduction of new technologies derived from international customer requirements enables RDM to provide the SANDF with the most modern ammunition at no extra cost.

“RDM is also investing in education and training,” Schulze said. “Last year we established the RDM Academy with a focus on mentoring and coaching young engineering graduates. To date 25 graduates have served internships in the company.”

Unmanned and unmatched

BY GÜNTER ENDRES

Austrian specialist in the production of unmanned systems, mine detection systems and composite technology, Schiebel (Hangar 5, Stand CW6) arrived at AAD fresh from celebrating the tenth anniversary of its award-winning Camcopter S-100 unmanned helicopter. Since the first delivery to the UAE Armed forces in 2006, the Camcopter has undergone continuous improvement in order to meet the ever-growing demand for new capabilities from its worldwide customers, in line with the company’s philosophy of progressive performance enhancement.

Camcopter has undertaken missions on five continents and oceans and in every environment from the tropics to the Arctic, where its multisensor capability and outstanding operational performance has been demonstrated across a wide spectrum of applications, from peacekeeping and humanitarian assistance to industrial, maritime and military support.

With missions completed on 30 different vessels, Schiebel takes pride in its ability to deliver exceptional capability from remote and austere operating sites, including ‘single-spot’ vessels. The latter explains the popularity of the system among naval customers such as the French Navy, which deployed the S-100 during its EU NAVFOR anti-piracy operation in the Arabian Sea, or the Italian Navy, for whose Mare Nostrum Operation in the Mediterranean the S-100 has proven essential.

Camcopter S-100 was the first UAS to be operated in the Russian and the Canadian Arctic, and Schiebel is also assisting the OSCE Special Monitoring Mission to Ukraine and the NGO Migrant Offshore Aid Station, whose operation has saved the lives of thousands of migrants in the Mediterranean Sea.

Camcopter S-100 has been in operation for 10 years

The Czech Republic has ordered 100 Mimid miniature mine detectors

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Tethered surveillance

BY DAVID DONALD

Paramount Advanced Technologies (PAT, Hangar 4, Stand W14) is showing a new tethered drone for the first time at AAD. The system is currently under development. The use of a tether, which provides both a means of powering the drone and relaying sensor imagery, allows the drone to stay airborne indefinitely, in turn providing persistent surveillance and freeing the drone from the restrictions of battery life. It also does not require a flight-qualified operator.

Based on a quadcopter drone, the new system is targeted at a variety of operations where persistence is a significant advantage. They include border control, anti-poaching, battlefield surveillance and area security.

Other missions include surveillance of buildings and crowds, and the detection of pollution and chemicals. A variety of sensor payloads is being considered, as well as communications equipment.

PAT was created out of Advanced Technologies and Engineering (ATE), which supplied the Vulture UAV to the South African Army, and PAT continues to support the system. It has also developed additional UAVs, including the 15kg petrol-powered RoadRunner, which offers a two-hour endurance and 120km/h cruising speed. The runway-operated 25kg Mwewe offers four hours of endurance and a speed of 80km/h, while the 5kg Civet is an electric-powered UAV with an endurance of one hour.

Other specialities of PAT include mission systems and systems integration. As well as supplying avionics for South Africa’s Hawk trainers, the company has upgraded Mi-24 ‘Hind’ helicopters and fitted weapons and sensors to the Mi-24 and Airbus Helicopters H135M (EC635). The FLASH weapons/sensor suite is available for various helicopter types and is installed on a Gazelle in the static display.
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Scorpion shows off its sting

BY CHRISTOPHER F FOSS

The Scorpion Mobile Mortar System (MMS) has been developed by Thales South Africa to provide rapid reaction and special forces units with their own integrated indirect fire support capability.

Development of Scorpion is complete and in addition to the prototype that has been built for qualification purposes, three pre-production systems have been built and production can commence when orders are placed.

The example being shown at AAD is on the outside display area and is based on a Toyota Land Cruiser (4x4) light vehicle platform. This is fitted with a Denel 81mm mortar system on a special platform in the rear of the vehicle, which has been designed to absorb the shock of the mortar being fired without the need for deploying stabilisers.

Scorpion has electric traverse through a full 360° and is laid onto the target using a Thales South Africa computerised fire control system (FCS), which is installed in the two-person cab. The 81mm mortar is laid onto the target by remote control. The FCS also includes a power interface to the power supply of the platform and in addition there is an interface data communication unit, which is the link between the Scorpion and the onboard communication system.

Target information can be supplied to the Scorpion by a dismounted mortar fire control team or using a mast-mounted sight integrated onto the platform. On the example shown, this is installed on the left side of the rear platform and includes a Thales Sophie binocular/thermal imager, which also includes a laser rangefinder. This enables targets to be rapidly detected and engaged under almost all weather conditions.

Scorpion would typically carry 22 rounds of 81mm mortar ammunition and use shoot-and-scoot methods of target engagement so as to avoid counter battery fire. Other mortars could be installed, including a Russian 82mm mortar or a 60mm mortar. This would typically be supplied by the end user as government furnished equipment.

A 107mm (12-round) multiple rocket launcher could also be installed in place of the mortar.

While the first example of the Scorpion is mounted on the rear of a Toyota Land Cruiser (4x4) light vehicle, the system can be integrated onto the rear of similar 4x4 light vehicles.

Terrorist response

BY DAVID DONALD

Paramount Advanced Technologies (PAT) is demonstrating a simulated joint command post that has been developed to provide a base from which commanders can effectively respond to a crisis and asymmetric threats such as a terrorist attack. The command post draws in technology from 10 different domestic and international companies.

PAT’s joint command post has been engineered to extract the maximum benefit from limited resources, allowing many countries in the region to better exploit their assets. Integrating a range of systems, the command post displays tactical pictures in either 2D or 3D, with friendly assets and enemy positions. The demonstration at AAD shows how the system can present tracking information for air, sea and land vehicles, and real-time video and still imagery from various sensors. Command plans can be overlaid, which can be updated in real time as events dictate.

Together these displays provide commanders with the information they require to react decisively and rapidly to stabilise situations and effect a suitable response. The demonstration at AAD aims to show how the analytics embedded in the system can be a true force-multiplier by facilitating the most advantageous deployment of friendly assets.
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GLOBAL SOLUTIONS FOR LOCAL NEEDS
BY DAVID DONALD

South African simulation and training specialist TMI Dynamatics (Hangar 4, Stand E11) is developing a technology demonstrator of a full-mission bridge simulator to train and assess marine pilots. The initiative was taken by the company as part of Operation Phakisa, which was launched by the government in 2014 as a fast-results programme to implement the National Development Plan (NDP). The NDP identified the ocean economy as an important stimulant for growth. As part of Operation Phakisa, TMI Dynamatics undertook a detailed analysis of the port of Durban, in which it identified that there were major skills gaps in both port workers and marine pilots. The company then received research funding to develop a bridge simulator in a programme that also involves the National Aerospace Centre, Wits Enterprises and Walter Sisulu University. The Technical University in Delft, the Netherlands, is providing hydrodynamic and vessel dynamics research. Transnet’s Maritime School of Excellence is involved to test and evaluate the simulator, the school’s instructors advising the research team on the effectiveness of training modules, and the quality of the immersion in the technology demonstrator compared with that experienced in the current imported simulators.
Poly Technologies (Hangar 2) of China is now marketing a number of precision-guided weapons that allow targets to be engaged beyond the range of conventional tube artillery systems. These are the CM-501GA and FT-10A multi-purpose tactical precision strike weapon systems.

A typical launch platform for the CM-501A is an armoured personnel carrier (6x6), which has a 12-round launcher integrated into the rear. When travelling, this is retracted into the hull of the vehicle under armour protection and is elevated prior to missiles being launched.

Poly Technologies is quoting a maximum launch weight of around 100kg, a missile diameter of 180mm and a length of about 2m. Maximum range is currently being quoted as 40km and it is fitted with a 20kg penetrating warhead. This would be very useful when engaging bunkers as well as when being used in the anti-shipping role, which is one of its potential applications.

The CM-501A is understood to use a mid-flight guidance system that comprises an inertial navigation system (INS) and a satellite link. For the terminal attack phase it uses a nose-mounted electro-optical infrared seeker with a claimed circular error of probability (CEP) of 2m. There is however some flexibility in the type of seeker fitted and another possibility is a radar/infrared combined seeker.

A typical platform for the FT-10A is the Poly Technologies 07PD (8x8) armoured fighting vehicle, but it can also be air launched. Mounted on the roof of the 07PD is a remote-controlled turret (RCT) with the day/night sensor package in the middle and two CM-501GA missiles in their launch boxes either side. According to Poly Technologies, the FT-10A has both a lock on before launch and a lock on after launch capability, which allows other platforms to designate the target that is not in direct line of sight to the launch platform. The 152mm diameter and 2,190mm long missile is propelled by a two-stage solid propellant rocket motor, has a launch weight of 42.5kg, a maximum speed of 280m/s, and a maximum range of 10km.

The missile has a nose-mounted infrared imaging/charge-coupled device plus a semi-active laser seeker. It is fitted with a tandem high-explosive anti-tank (HEAT) warhead that is claimed to be able to penetrate up to 900mm of steel armour protected by explosive reactive armour.
Training is provided through the company’s High Level Aviation Academy, which operates a fleet of Tecnam trainers, and a range of simulators to provide training for civilian and military aircrew. Ground crew training courses are also undertaken, along with those for parachuting, aircraft services and academic instruction. The academy provides training to other nations, and currently has students from Libya, South Sudan and Yemen, in addition to domestic students.

From its experience as an MRO organisation, SAG has now grown to become an aircraft producer. The SAFAT 02 on display at AAD is a light helicopter manufactured as a joint venture with the rotorcraft’s designer, Aerokopter of Ukraine. Based on that company’s AK1-3 helicopter, the SAFAT 02 can be used for a range of light duties. SAG has built about 30, of which 20 are in use with the Sudanese police.

For basic fixed-wing training and activities such as glider towing, SAG has produced the SAFAT 03, which has basic aerobatic capability. The company has built about 45 aircraft, with an annual production capacity of 50.

Other activities include research and development for defence applications. Here at AAD the company is displaying the Burkan glide bomb with precision guidance. The weapon was developed to meet a Sudanese air force requirement, and is apparently in the inventory.

Another product being shown at AAD is a powered parachute.
The AK-47 assault rifle is the most famous and mass-produced small arms brand in the World's history. One can hear hundreds of stories extolling amazing robustness, simplicity and reliability of its design. A soldier is always confident, even in most critical situations, that his AK will not fail him. It is worthy of noting that during its life the Kalashnikov assault rifle has been continuously upgraded. Today’s heirs to the legendary weapon are the AK assault rifles of the hundredth series. The new family comprises the AK-101, AK-103 and AK-105 models and small-size AK-102 and AK-104. They all retain the best qualities of their predecessors, and boast new advantages allowing them to meet requirements of modern-time armed conflicts.

Rosoboronexport is the sole state company in Russia authorized to export the full range of defense and dual-use products, technologies and services. Rosoboronexport accounts for over 85% of Russia’s annual arms sales and maintains military-technical cooperation with over 70 countries worldwide.
China Aerospace Long-March International is marketing two versions of its LY-80 medium-range air defence missile system, and scale models of both of these are being shown at AAD.

The land-based LY-80 would typically consist of a command post vehicle and a vehicle fitted with long-range phased array search radar. This would control three fire units, with each of these having one guidance vehicle and two to four launchers with six missiles each. When travelling, the missiles are in the horizontal position and when the launcher comes into action the hydraulic stabilisers are lowered to the ground and the launcher is elevated into the vertical position.

According to the prime contractor, the solid propellant missile can engage targets at a range of 3.5 to 50km, with interception altitude up to a maximum of 20km. The missiles are cold launched and a single shot kill probability of between 0.9 and 0.95 is being claimed.

A complete LY-80 system can be deployed in 12 minutes and out of action time is about six minutes. Method of guidance is inertial...
Apart from the command post vehicle, all the elements are based on 8x8 cross-country truck chassis for a high level of cross-country and strategic mobility.

The naval version is designated the LY-80N, has similar capabilities and is also launched vertically, with each cell having eight missiles in the ready-to-launch position.

The Herstal Group, under the brands FN Herstal (Hangar 3, Stand CE23), Browning and Winchester Firearms, designs, manufactures and distributes a full range of firearms and associated products for defence, law enforcement, hunting and shooting.

The group has its headquarters in Herstal, a suburb of Liege in Belgium, and it also has manufacturing locations in Belgium, the USA, the UK, Portugal, Japan and Finland.

A large number of developments have been launched by FN Herstal since 2010, including the Medium Vehicle Pintle (FN MVP), a lightweight, compact weapon system designed for land or naval applications. The FN MVP houses the unique .50 cal FN M3M (GAU-21) machine gun, to provide an unparalleled firing rate of 1,100 rounds per minute.

These new products have been joined by the FN SCAR H PR Precision Rifle, launched in 2011, and in 2014 by its FN e-novation line. This provides innovative solutions integrating modern technology with state-of-the-art weapons to provide enhanced combat, logistical, maintenance and communication capabilities.

FN Herstal also unveiled the third member of the deFNder RWS: the Sea deFNder. A variant of the land deFNder Medium, it is specifically designed for use by naval and coastguard forces to gain the upper hand in countering smugglers and pirates.
A South African giant

BY DON HENNING

South Africa’s privately owned Reutech Group, part of Reunert Ltd, has a diversified portfolio of businesses specialising in electronics and defence, supplying local and export customers with advanced OEM products and services in the land, sea and air defence domains, as well as in the industrial and mining sectors. The group is exhibiting in Hangar 4, Stand E4, and also occupies an outside stand where various products are on display. The company has four divisions: Reutech Solutions, Reutech Radar Systems, Reutech Communications and Fuchs Electronics, and products of all four divisions are on show demonstrating its wide range of capabilities.

The Fuchs brand remains one of the trusted names for the supply of electronic fuzes that meet the ISO 9001:2008, STANAG design and safety requirements and comply with international military standards. This division of the company is displaying its range of artillery, mortar, artillery rocket, naval and air weapon fuzes, along with the MK80 series PFF bombs.

Reutech Communications was contracted by Armscor to develop and manufacture the new-generation range of military secure software defined Combat Net Radios (CNR) to modernise the communication needs of the South African National Defence Force (SANDF). On display are the latest manpack, vehicle and fixed installation transceivers, as well as dismounted soldier intercom system and vehicle harness system. The CNRs operate in HF, VHF and UHF frequency bands, providing the layered communication link. There will be live demonstration of the CNRs at AAD.

Reutech Radar Systems is exhibiting a range of ground and naval radar systems, including the RTS 3200 FMCW Optronics Radar Tracker (FORT) on the outside stand. This is a lightweight combined radar and electro-optic tracker ideally suited for operation on smaller naval combat vessels. Also on the outside stand is the tripod-mounted RSR 904 NGADA short-range ground, sea and air surveillance radar suitable for detection of dismounted personnel or vehicles in a ground surveillance role, or for the detection of watercraft or aircraft. Scale models of the RSR 210N naval X-band air/sea surveillance radar and the RSR 906 coastal surveillance radar, as well as the RSR 150 staring sensor developed for use in the vehicle active protection system market, are also shown.

Reutech Solutions is displaying its landward and naval Rogue remote control weapon platforms and the 20mm Super Sea Rogue. Other Rogue platforms are being presented with strategic partners Denel and Paramount at their display areas.

In addition, the divisions’ customised remote site monitoring tool (Adroit), a Windows-based remote site management tool developed by a South African company, will be explained. Adroit has different interfaces available to communicate with databases from all major suppliers. A locally developed and manufactured Automatic Test Interface Unit (Generic ATE) used by the SANDF to ‘field test’ various radios for serviceability ensures that only repairable radios are backloaded for intermediate or depot-level repair.

Communication empowerment

Founded in 1973, Accutronics (Pty) Ltd (Hangar 6, Stand CE2) has become a key supplier of electronic communications equipment to the South African communications, broadcast and defence industries. The company can customise communications solutions to suit customers’ specific needs, with systems that will guarantee the effective operation of their businesses.

As well as offering system design and integration services, Accutronics is committed to its social and environmental responsibilities and supports various conservation projects. Accutronics also supports the ideals of Broad-Based Black Economic Empowerment (B-BBEE) and achieves high scores for socio-economic development, enterprise development, preferential procurement and skills development. As a result Accutronics is certified and proudly carries a Level 3 rating.
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G6-52 – The latest G6 version with a 52 calibre weapon, improved firepower and automation, on the proven, highly mobile, G6 platform. A fully protected gun.

T5-52 – A mounted gun system with long range and excellent mobility.
Integrated Convoy Protection (ICP, Hangar 7, Stand W15) has unveiled its latest REVA (Reliable Effective Versatile Affordable) Protection vehicle. The first one was completed just before the show opened.

The vehicle is aimed at the internal security vehicle (ISV) and police markets that require a non-aggressive vehicle that is not only cost-effective to procure but also easy to operate and maintain.

It consists of a chassis developed by ICP on which is fitted an all-welded steel body that provides ballistic protection from small arms fire, and windows with a similar level of ballistic protection. It has 4x2 drive and is powered by a diesel engine coupled to a manual transmission with a typical gross vehicle weight of around 6 tonnes. The first example of the REVA Protection is in right-hand drive configuration, but it would also be available in left-hand drive.

In the basic troop/police version it has seats for the commander and driver at the front and six dismounts in the rear. There is an additional bench seat at the rear of the troop compartment that could be removed to allow equipment to be carried, for example riot control equipment.

The crew and dismounts can rapidly enter and leave via a door in either side and there are also roof hatches.

An ICP spokesman told the AAD Show Daily “the REVA Protection is very affordable and is of modular design so that it can be rapidly reconfigured for a different role such as cash in transit”.

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ATM for Africa

The Minister of Defence, the Hon Ms Nosiviwe Noluthando Mapisa-Nqakula, in her media briefing at AAD spoke about “Unleashing Africa’s Defence and Aerospace Potential”, South Africa’s Tellumat Air Traffic Management (Hangar 4, Stand CE14) has indicated that there is plenty of room for up-and-coming technology suppliers to differentiate themselves in the emerging African aviation market.

The company is mounting a challenge to industry incumbents with a mature service portfolio that is uniquely suited to the continent’s diverse needs. Tellumat itself has been awarded a Tanzanian Civil Aviation Authority contract for the maintenance of navigation aids at four of the country’s airports, training of airport personnel and a host of other services.

“With robust tourism-driven economic growth and improving regional connectivity, African airports must handle ever more traffic volumes safely,” said Bennie Langenhoven, managing executive at Tellumat ATM. In 2012, passenger air traffic increased by 7.5 per cent south of the Sahara to a total of 163 million journeys. Growth of 16.7 per cent is expected between 2013 and 2018.

“To a degree, the World Bank and selected nations are meeting current industry needs with various air safety and capacity investment programmes,” said Langenhoven. “Tellumat ATM supports these programmes where we can. But a significant portion of the market needs different help, including ongoing maintenance and support programmes.”

Tellumat ATM is expanding its presence in the civilian market. “Tellumat boasts 35 years’ experience in the supply, installation, maintenance and upgrade of radar and instrument landing systems (ILS),” Langenhoven added.

Tellumat has cultivated supplier relations with leading manufacturers of navigational aid systems, including ILS and airfield ground lighting systems, precision approach systems, direction finders and weather observation systems.

Power generation

Barloworld Power (Hangar 4, Stand CW3) has been the Caterpillar dealer since 1927 for southern Africa. The company supplies diesel and gas generators, industrial, marine and diesel engines, as well as allied Cat components and pumps.

Barloworld Power provides quality generators for sale and commercial engine solutions to equipment manufacturers in southern Africa. The company also offers engines and generators for sale to the mining, construction, telecommunications, agricultural and manufacturing industries and to the municipal, commercial and residential property development sectors.

Barloworld Power supplies effective energy management solutions to the private and public sector, both locally and internationally.

“With the rising cost of electricity, organisations are looking for cost-effective power alternatives,” said the company. “As Africans, we are privileged to live on a continent that receives sunlight all year round, making it the place to go solar! More and more organisations are starting to use the under-utilised real estate on their rooftops to install solar PV panels. As the price of solar installation continues to decrease, we expect to see an even steadier increase in solar installation across the continent.”

Simulating reality

BY SAM J BASCH

Training in a simulated environment is not only more practical but also cost-effective and safer, provided the systems mimic reality as closely as possible. Cybicom, a joint venture of the companies, is focusing on marine and helicopter pilots. The system combines custom-developed gesture recognition software and commercial off-the-shelf motion tracking hardware, as well as modelling and simulation software, a scenario generation tool and interactive graphical interfaces. The system can be configured for the helicopter to respond automatically to signals given by the FDC or used with a basic helicopter model controlled by an instructor or helicopter pilot.

According to Cybicom, the HFDT can be integrated with existing helicopters for higher fidelity, or the company can develop a custom solution.

Cybicom Atlas Defence is a joint company of Cybicom (Africa) Technologies (Pty) Ltd and Atlas Elektronik GmbH.
Seek and ye shall find

BY DAVID DONALD

Eye-catching in the AAD display is the Seeker Aircraft SBL-360A Seeker, a high-wing light observation aircraft. Its unusual layout, with a large glazed cabin and high-mounted pusher engine, makes it an ideal platform for a range of observation missions, such as border surveillance, security operations and anti-poaching patrols.

As well as the excellent visibility from the side-by-side two-seat cockpit, which rivals that offered by helicopters, the aircraft can carry electro-optical sensors under the cabin, and also has hardpoints. The Seeker’s ease of maintenance and short-field capability make it highly applicable to observation missions away from traditional runways. The aircraft has recently been made available with a normal category cockpit approved by the US FAA and Australian CASA.

Seeker Aircraft manufactures the SBL-360A at Hervey Bay in Queensland, Australia, having acquired the Seabird Aviation Australia factory in March 2014. The company is headquartered in Albuquerque in the USA and is a subsidiary of CSI Aviation. Earlier this year it was announced that Seeker production would also be undertaken in the USA by Erickson. Seekers have undertaken operations in countries including Australia, Azerbaijan, Ghana, Iraq, Jordan, South Africa, Tanzania, the UAE and the USA. In December 2012 the Paramount Group donated a Seeker to the South African national parks to help combat poaching.
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Building partnerships to protect

BY DAVID DONALD

UK technology company QinetiQ is at AAD as part of the UKTI stand to explore opportunities in Africa where it can partner with governments and local industries, bringing its technological expertise to bear with analysis and advice, as well as the provision of advanced hardware. One sector that is of particular interest is border security.

Rather than proceed straight to the acquisition of systems, QinetiQ aims to analyse the customer’s requirements and then propose a solution that answers the needs in an efficient manner, while also ensuring the ability to meet evolving requirements throughout the system’s life.

A range of high-fidelity sensors is available from QinetiQ that can be employed to build security networks. One is OptaSense, a fibre-optic acoustic detector that can be deployed along entire borders. The system uses pulsed laser signals, with interrogator boxes every 40km. Analysis of noise signals allows the detection of anomalies once the noise signatures of regular events and permitted vehicle types have been filtered out.

SPO-NX is another ‘smart’ sensor that can be employed in scenarios such as at border crossing points, at large events and at transport hubs. This passive detector scans people to detect anomalies in the body’s normal radiation pattern, in turn alerting security forces to potential hidden weapons or bombs. With an effective range of about 21m, the SPO-NX can be deployed to effectively push back the threat boundary, allowing potential threats to be intercepted or halted before they approach too close.

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Bloodhound seeks land speed record

The fastest car ever built and some of the largest airlifters yet seen in the African skies are among the main attractions at this year’s AAD. Apart from the spectacular aerobatics of the SA Air Force’s Silver Falcons and regular flypasts of fighter planes, helicopters and executive jets, one of the top attention-grabbers is a full-scale replica of the Bloodhound supersonic car, which has been designed to break the 1,000mph speed barrier for the first time ever. The pencil-shaped car powered by jet and rocket engines will attempt to break the world land speed record at Hakskeenpan in the Northern Cape next year. The model forms part of the Youth Development Pavilion at AAD, but is accessible to all visitors. Students from all provinces will attend the show to get hands-on experience working with sophisticated technology and learn more about careers in the modern, high-tech defence sector.
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Emerging enterprises in the defence and technology sectors will have ample opportunities to showcase their capabilities at Africa’s largest defence show – AAD 2016.

The Africa Aerospace and Defence Exhibition 2016 is attracting global industry leaders such as Airbus, Thales, Saab and BAE Systems, but there is also ample space for local companies to showcase their capabilities to decision-makers.

“We are pulling out all the stops to ensure local emerging enterprises get ample exposure to wider audiences at AAD 2016,” says Kevin Wakeford, CEO of Armscor, of the five-day event, which takes place at the Waterkloof Air Force Base.

A special national pavilion is being hosted by the Department of Trade and Industry with exhibition space that has been made available at greatly reduced costs for SMMEs. Fifteen companies in the aerospace and defence industries have a prominent presence through financial and logistical support of the DTI, while six SMME companies are exhibiting under the auspices of Armscor.

The Gauteng Growth and Development Agency (GGDA) supports eight companies in the province by offering them free space. The Agency and the Gautrain last month signed a partnership agreement with AAD for the joint marketing of the event, which is estimated to inject more than R800 million into the regional economy through the retail, transport and hospitality sectors.

The organising partners of AAD have been offering 16m² of exhibition space to emerging enterprises at greatly reduced rates.

Thami Kubheka, the financial director of Kutleng Engineering Technologies, says his company is ready to generate business from the national and industry delegations of 30 countries who will visit the exhibition during the trade days from 14-16 September.

The Rivonia-based company specialises in software solutions in the advanced engineering and technology environments and has already worked with companies such as Denel to develop fire control systems on armoured vehicles.

“Defence technology is a strategic capability for South Africa and it is important that we have local companies that are able to offer these solutions,” he says. “It contributes to South Africa’s security and makes our country less dependent on foreign suppliers of technology.”

Kubheka is of the firm opinion that the skills and the capacity are already available in the country – but emerging companies need greater exposure to larger players in the defence industry and to be integrated into their supply chain networks.

This is why AAD is such a great opportunity. Enterprises such as Kutleng Engineering Technologies will gain exposure on the larger industry stage, make connections with other companies and establish networks that will lead to the growth of their businesses.

Wakeford says AAD is another platform for enterprise development and helps to link emerging and black-owned companies to the broader defence and aerospace environments.

“The bigger players will get the opportunity to see the skills and professionalism that are already available among emerging enterprises and, hopefully, this will lead to productive partnerships and the further transformation of the defence industry,” he says.
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