



# AAD2022

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# Hensoldt South Africa launches new Quadome Land radar

Truvelo back with  
a bang

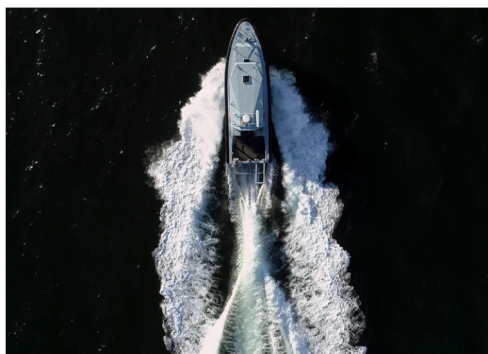
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# SEA

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# Hensoldt South Africa launches new Quadome Land radar

*The Quadome Land is the latest version of Hensoldt South Africa's new radar series*

**H**ensoldt South Africa (AAD Static Park) has launched the latest version of its flagship Quadome radar, the Quadome Land, designed for air and surface surveillance and targeting.

The three-dimensional multi-mission radar was officially launched at Air Force Base Waterkloof on 22 September and goes a long way towards Hensoldt South Africa's goal to become the leading manufacturer and exporter of air-surveillance and defence radars on the African continent.

The Quadome Land ground-based air and surface surveillance radar follows the launch of its naval Quadome counterpart at DSEi in September 2021, and supports the further internationalisation of the Hensoldt Group's radar business.

Quadome Land is aimed at the global market for tactical ground-based air defence radar systems,

deployed in the air defence or coastal surveillance roles. Because of its compact size, relatively low mass and good price-performance ratio, the radar offers 3D air surveillance and air defence capabilities that are highly mobile and easily deployable, Hensoldt South Africa said.

The entire radar system, including two-man operators' console, can fit inside a standard 20 foot ISO shipping container, making it highly portable. Programme Manager of Hensoldt South Africa's radar business unit, Jaco Botha, said Quadome Land offers a 'radar in a box' capability as it is completely self-contained, and it can be transported in a C-130 Hercules or similar aircraft. It has its own electric and hydraulic power for self-deployment, which takes 15 minutes.

The active electronically scanned array (AESA) C band radar has two main modes of engagement: air

surveillance, and air defence for target engagement. Instrumented tracking range is up to 200 km and the radar can track 1 000 targets simultaneously. It features frequency hopping within its band.

“Quadome is a result of many man-years of engineering effort to develop a world-class product that will revolutionise the radar landscape worldwide,” said Rynier van der Watt, Managing Director of Hensoldt South Africa.

“Quadome is designed to maximise system performance, while minimising acquisition and life-cycle costs,” said Bennie Langenhoven, Chief Executive of the Radar Business Unit. As Quadome is a software-defined radar, it can easily be upgraded in the future as technology develops.

The development of Quadome has been undertaken in South Africa through a close collaboration





*The Quadome Land*

between Hensoldt South Africa and the Council for Scientific and Industrial Research (CSIR), with over 40 engineers collectively working on this product since 2018. It is currently the largest defence radar development programme in South Africa.

“Not only is a Quadome a world-class product that will revolutionise the radar landscape worldwide, it also makes a significant contribution to the technology available to detect and protect our own borders and seas in the South African defence landscape,” said van der Watt.

*The Quadome Land is a proudly South African development that offers a ‘radar in a box’ capability*





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# Back with a bang

*Firearms manufacturer Truvelo is finding its feet again under the direction of its new owner, African Defence Group*

**T**ruvelo, South Africa's largest privately owned small arms manufacturer, is back at AAD 2022 with a full range of its acclaimed range of rifles – and there are more to come.

The biggest story though is that the company (Hangar 1, W4) almost didn't make it – at all after AAD 2018. It was in business rescue when South African based entrepreneur Heine van Niekerk stepped in to buy the company in December 2020 on behalf of his own Africa Defence Group, renaming it Truvelo Specialised Manufacturing.

Truvelo, which began by making speed cameras almost 50 years ago, began forging its name as a designer and manufacturer of high precision and highly accurate rifle barrels as a passion project of its founding CEO Joe Gebert. This developed into the manufacturing of high accuracy custom rifles, initially for hunters and ultimately countermeasure sniper (CMS) rifles all the way through to 20mm anti-materiel rifles capable of firing SAPHEI (semi-armour piercing high explosive incendiary) rounds into vehicles and infrastructure targets.

It was this kind of typical South African innovation and excellence that Van Niekerk could not see lost,

said Truvelo spokesperson Tandy Botha. "Heine had a vision of trying to save this proud heritage and indeed the last authentic South African small arms manufacturer."

Through Van Niekerk's intervention, Truvelo managed to honour its pre-existing contract to supply sniper rifles to the South African National Defence Force (SANDF) through Armscor, for which Truvelo remains a preferred supplier. The final consignment of these rifles is about to be handed over.

Truvelo offers a range of large calibre weapons, including in 14.5x114 mm, 20x42 mm; 20x82 mm; and, 20x110 mm. The company also produces a complete range of assault rifles from a 9 mm machine pistol all the way past 5.56 mm to 7.62 mm, as well as 60 mm patrol mortars and the 81 mm support mortar.

## GROWING FIREARMS

### RANGE

Truvelo is currently working on its eponymous Truvelo 700 range, said engineer and project manager Chris Naude, inspired by the Remington 700 series, but greatly improved.

"We kept the Remington 700 footprint with its incredible variety of triggers and butts, but improved the extractor and the bolt, making the entire rifle stronger and resistant to pressure. It comes chambered in 6 mm, 6.5 mm or .308 fully machined and fitted, included picatinny rails, with no need for any customisation by the end user, they can just drop on optics onto the rail and go into the veld.

"The way we machine it, means it's already blueprinted; everything is 100% accurate, true and square from the word go, which is the Truvelo DNA: precision accuracy."

The first ten Truvelo 700 series have been pre-ordered. The company has also developed a bespoke ranger rifle, based on the Truvelo 700 receiver to very constrained specifications: weight less than 3.5 kg, overall length less than 1 metre, with a collapsible butt for ease of carry, yet adjustable for small or tall users. It is constructed on an aluminium chassis with a ten-round detachable magazine. It is chambered for .308 Winchester or 7.62x51 mm.

"It was designed specifically for game rangers," Naude said. "There is no wood that can buckle under intense periods of exposure to wet



weather; it can be carried for days without discomfort and it can fire and reload rapidly. It's made to withstand the kind of hard use that you would expect for game rangers patrolling in the wild.

"We have covered a lot of ground since Heine acquired the company and there's a lot more in the pipeline," said Botha.

## “ IN ADDITION TO ITS ACCLAIMED SNIPER AND ANTI-MATERIEL RANGE, TRUVELO IS LAUNCHING NEW FIREARM PROJECTS



*Truvelo engineer and project manager Chris Naude next to the company's acclaimed CMS 20x110mm anti-materiel rifle*



# Paramount positions Mbombe 8 as Hoefyster alternative

*Paramount believes its Mbombe 8 is a more affordable and immediately accessible alternative to the SA Army's Project Hoefyster*



**P**aramount Group (Hangar 4 outside stand OS3 and Chalet 8-9) has achieved major export successes with its Mbombe range of infantry combat vehicles and is now turning towards the domestic market, offering the 8x8 Mbombe 8 as an immediately available and affordable alternative to the long-delayed Badger vehicle.

Under Project Hoefyster, the South African Army was due to receive 242 Badger vehicles in a number of different variants from Denel Land Systems, to replace some

of the Ratels in the mechanised infantry. Deliveries were scheduled to take place between 2019 and 2022 but this has slipped due to development issues, technical challenges and financial difficulties experienced by Denel. Armscor was at one point so concerned about Project Hoefyster that it recommended cancelling the programme and diverting funds to upgrading Ratels as an interim solution.

Paramount Group believes that a better alternative is to supply its Mbombe 8 infantry fighting vehicle,

which was launched in mid-2016 and as such is a mature design. It has also been further developed by Kazakhstan Paramount Engineering (KPE) as the Barys 8 and last year concluded a four-year series of trials conducted by the Ministry of Defence of Kazakhstan.

## SIMILAR

## SPECIFICATIONS

The Mbombe 8 has a gross weight of 28 tonnes, kerb weight of 19 tonnes and payload of 9 tonnes which covers weapon system, ammunition, crew and supplies. It is powered by a 6 cylinder turbo charged diesel engine driving a six speed automatic transmission and giving a top speed of 110km/h. Range is 800 km. Eight dismounts can be accommodated in addition to three crewmembers. Ballistic protection is to STANAG 4569 Level 3+ and blast protection is to STANAG 4569 Level 4a and 4b.

These specifications, Paramount points out, closely match the Badger, which also has a top speed of nearly 110 km/h and range of

800 km, and which also features flat-floor mine protection.

A wide range of turrets and weapon stations can be integrated onto the Mbombe 8, such as a dual feed 30 mm cannon and 7.62 mm machinegun turret. Turrets that have been fitted include those developed by South Africa's Comenius, and a Russian AU-220M remote turret armed with 57 mm cannon and a 7.62 mm machine gun. The installation of anti-tank

guided missile (ATGM) launchers can also be provided.

The Badger was meant to be delivered in five main variants for the South African Army: the Section variant with 30 mm CamGun; the Mortar variant with a 60 mm mortar; the Fire Support variant with 30 mm CamGun; the Anti-tank variant with Ingwe missiles; and the Command Variant which enables Command and Control from company level.

“While Denel Land Systems is still finalising production baseline of the initial Section variant of the Badger, Paramount can put the Mbombe 8 into production right away, and, the company says, at a lower cost – a single Mbombe 8 costs under \$2 million



As the Mbombe 8 has a payload of 9 tonnes, it has plenty of room to add the necessary missiles, mortars, cannons and other items to match the Badger's different variants. Production of 30 mm CamGuns, 60 mm long range mortars and turrets has started, meaning they could be

retrofitted to the Mbombe 8.

The Mbombe family (Mbombé 4, Mbombé 6, and Mbombé 8) share an 80% parts commonality, giving cost benefits to armed forces due to greater efficiencies and significant savings in maintenance and logistical support.

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# Armcor continues with efforts to exploit defence IP

*Armcor is looking at commercialising potentially billions of rands worth of defence intellectual property*

**A**rmcor (Hangar 1, CW18 and ON1 and Chalets 13-14 & 27-28) is slowly moving forward with efforts to commercialise South African defence industry intellectual property (IP), with the industry able to submit expressions of interest at the end of the financial year.

The state defence materiel organisation explained that the Department of Defence (DoD), through the National Defence Industry Council (NDIC) is

committed to supporting the revival of the local defence industry by granting access to non-sensitive DoD IP for exploitation.

“Armcor is currently developing a model to be followed for providing access to DOD IP,” it stated. “As part of the development of the DoD IP exploitation model for Industry, Armcor has commenced with the process of identifying and classifying DoD IP into a number of categories i.e. sovereign, strategic and non-sensitive IP. Due consideration is given to national

security imperatives, therefore sovereign and secret technologies will be excluded from this exercise.”

## EXPRESSIONS OF INTEREST COMING

Armcor said it is envisaged that upon approval, the industry will be invited to participate by submitting an Expression of Interest (EOI).

“The approval process will also be developed with the DoD being the final approving authority. Once approved industry will be invited to express interest at the end of the financial year.”

Armcor is mandated to hold and manage all Department of Defence IP rights on its behalf. “The Armcor Act empowers Armcor to exploit such commercial opportunities as may arise out of Armcor’s duty to acquire defence materiel or manage technology projects, subject to the approval of the Minister of Defence and Military Veterans....Armcor has in the



execution of its legislated mandate developed an IP Policy and IP Exploitation Strategy which were approved by the Armscor Board of Directors,” the entity stated.

Armscor’s IP Policy and IP Exploitation Strategy target both local and international entities in exploiting DoD IP. Local collaborators include the local defence industry, defence evaluation and research institutes, Exempted Micro Enterprise (EMEs) and Qualifying Small Enterprise (QSEs).

The South African defence industry made a presentation to the National Defence Industry Council in October 2021 on the need for DoD IP commercialisation. Armscor was then tasked with developing a commercial exploitation process for the industry. More than five years ago Armscor announced plans to increase the income earned from the commercialisation of intellectual property as part of its revenue generation strategy. Armscor is also working with Denel on commercialising IP, namely its data packs, and Denel has been auditing this with Armscor.

“ *Armscor will increase the income earned from the commercialisation of intellectual property as part of its revenue generation strategy*







**ARMSCOR**  
Armaments Corporation of South Africa SOC Ltd

# Facilities & Capabilities

South Africa's defence industry is recognised as being among the most technologically advanced in the world. At the forefront is Armscor - The Armaments Corporation of South Africa SOC Limited, the acquisition agency for the South African Department of Defence (DOD), and other state organs and entities. The organisation manages the strategic capabilities of the DOD, producing research and vanguard technological solutions through its facilities and capabilities functions.

## Acquisition

A core business function, Armscor's Acquisition Division specialises in analysis of DOD requirements, technology development and the design and development of defence products and systems. This includes, the industrialisation and manufacturing of mature defence products and product systems that fully meet the DOD user requirements. The function also entails procurement of existing and qualified defence products, as well as the acquisition of product system support during the operational lifetime of these defence systems. Armscor has a capability to perform independent or centralised coordination of the acquisition function and play a management role in technology acquisition and technology commercialisation undertakings.



## Alkantpan Test Range

The Alkantpan Test Range is an all-purpose ballistic test range for all kinds of weaponry ranging in caliber from 5.56mm to 155mm to large caliber weapons and ammunition. An ISO 9001 and ISO 14001 accredited facility, this 85000ha facility is equipped for testing of artillery, mortars, armour, rockets, short range missiles, insensitive munitions, sequential environmental testing, unmanned aerial vehicles and provides customised ordnance testing and related services to local and international clients.



## Armour Development

The Armour Development facility has more than 40 years' experience in conducting research and development and the testing of armour protection systems and technologies, for the DOD and the entire defence industry. Services provided include analysis of customer protection needs, development of armour, testing, and qualification of vehicle hull ballistic resistance. Expertise also includes designing and fitting of armour packages on lightweight vehicles and main battle tanks.



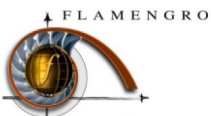
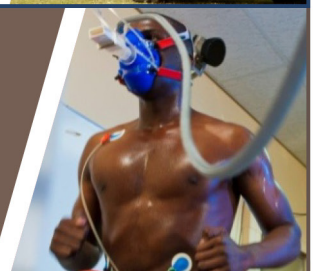
## Defence Decision Support Institute (DDSI)

The Defence Decision Support Institute (DDSI) has more than 30 years' experience in defence support; focused on enabling the DOD, state organs and commercial entities in developing insights and holistic solutions to decision-making challenges over the full-cycle of defence capabilities and systems. This facility also offers a range of services that include policy and weapon systems analysis, war conflict studies, defence capability analysis and engineering support.



## Ergonomics Technologies (Ergotech)

Ergonomics Technologies (Ergotech) is Armscor's leading research institute, providing military defence and commercial ergonomics research, design, and development of human-machine systems and evaluation of environmental stressors. The broad range of services it offers in ergonomics and occupational health and safety, is with intent to optimise human performance and efficiency, reduce work-related risks, and improve overall safety and productivity.



## Fluid and Mechanical Engineering Group (Flamengro)

The Fluid and Mechanical Engineering Group (Flamengro) provides integrated modelling and simulation support on the design, development and operations of the DOD and broader engineering and software sector. The centre provides cost-effective holistic solutions in the areas of computational mechanics, test and measurement, software development and small scale manufacturing.



## CONTACT DETAILS

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# Armcor excited to have AAD return

*Armcor is leveraging to the max the opportunities that AAD 2022 is offering*

**A**dvocate Solomizi Mbada is excited by the return of Africa Aerospace and Defence after COVID-19 forced a two-year delay – and his diary reflects it.

He's been in meetings with different countries since the three-day trade fair began and on Thursday had six meetings alone scheduled before launch.

"It's been four years since AAD 2018 and this limited our opportunities to showcase our defence capabilities as well as look at opportunities to collaborate and forge partnerships with rest of the defence family. AAD 2022 has presented us with that opportunity," he said.

What has become clear from the meetings he has had already is that it's not only south Africa that faces cuts in defence spending.

## COLLABORATION IS KEY

"The way forward for all of us is going to collaborations; for countries to maintain their own independence they're going to need this sort of technology transfer. Many are companies and



countries are keen to partner in manufacturing to ensure they meet their own defence requirements."

It's potentially good news for South Africa, to use its own defence companies and manufacturing facilities to make defence products for other companies, while doing the same in reverse; licencing its IP to other countries.

"The emphasis now is not just about selling, but about building long term relationships that have a win/win outcome."

Mbada is in his second year at the helm of Armcor (Hangar 1, CW18 and ON1 and Chalets 13-14 & 27-28) after acting as CEO in 2019 after Kevin Wakeford left. He hopes he

can rebuild Armcor so that it can solve its main client's challenges quickly and capably, while being innovative. That client is the South African National Defence force, but now also the South African Police Service and the Department of Correctional Services.

"I think we are beginning to deliver a satisfactory service to SAPS," he said, but the reality is that Armcor has already begun making meaningful changes to the South African National Defence Force (SANDF) too; from water purification equipment to tented field hospitals and field mess solutions.





“What is critical for me is to deliver a quality service and quality products within the shortest space of time. We will do this by calling on the network of companies and people in the countries that we collaborate with.”

It’s not enough, he said, to only try to fix the immediate problems; Armscor has to start thinking about

tomorrow’s challenges to meet the SANDF and other clients’ needs. The future is technological.

“If we talk in terms of where the battle space is, we see the increasing use of autonomous technologies used as a force multiplier and artificial intelligence in the form of drones. So, we will see the deployment of technology

as opposed to warm bodies in resolving and addressing the issues of border control management, among other issues.”

It is clear from walking around the exhibits that the SANDF has a lot more brand-new equipment than public opinion allows. But, Mbada blames the defence establishment for not effectively dispelling the perception.



“I think it’s the fault of the DoD family and how we project ourselves. I think we are often too hard on ourselves and we sometimes miss the opportunity of showcasing our capabilities and our equipment, which is why AAD is so critical and the public days add another dimension where you can bring in the public, but especially the opportunity to bring in the youth too.”

# Multiple new projects for Cape Aerospace Technologies

Guy Martin

*A growing range of more powerful gas turbines and rockets are on the cards for Cape Aerospace Technologies.*

**M**icro- and small gas turbine engine specialist Cape Aerospace

Technologies (CAT) is developing an ambitious range of new products, including more powerful turbojets, and a rocket, with some of its products on display at AAD 2022 (Hangar 1, Stand CW14).

Cape Aerospace Technologies has established itself with the manufacture of three small gas turbines producing 12, 25 and 46 kg of thrust for use in model aircraft, high speed target drones, unmanned aerial vehicles, experimental aircraft and full-size gliders.

The CAT 120 develops 120 N (12 kg) of thrust; the CAT 250 produces 250 N, and the CAT 400 produces 460 N of thrust. CAT 120 and CAT 250 engines have been delivered to international customers, including in the Middle East and Europe, such as the United Arab Emirates and Turkey. The latest CAT 400 engine,

which develops more thrust than the rated specification, is also in production for clients.

All these engines are light, weighing 1.4, 1.9 and 3.6 kg respectively. All can operate between -25 and 50 degrees Celsius and at altitudes of up to 8 000 metres. They are intended for sub-sonic applications and can operate on diesel, kerosene or Jet A1 fuel.

David Krige, Managing Director at Cape Aerospace Technologies, explained in addition to

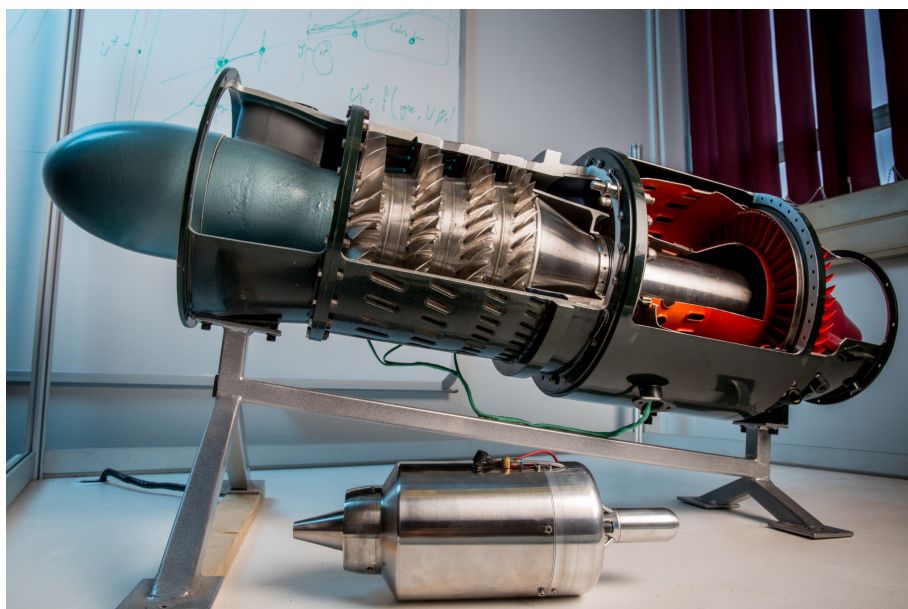
manufacturing engines, CAT also has the ability to design and manufacture composite airframes, mainly for the hobby industry. In the 2000s it built a target drone for the South African Navy, and the composite airframe as well as telemetry, comms and turbines were designed and manufactured in-house.

## NEW PROJECTS

Not content to rest on its laurels, Cape Aerospace Technologies is now working on the CAT 800, developing 800 N of thrust, and







## *Cape Aerospace Technologies is the only micro to small turbojet manufacturer in Africa*

the CAT 1400, developing 1 400 N of thrust. It is also working on a 1 kN rocket. The idea is to scale the rocket up so that it will eventually be capable of reaching low earth orbit (LEO).

Various future projects and ambitions include a vertical takeoff and landing passenger aircraft (air taxi), auxiliary power units (APUs), turboshafts, turboprops, turbofans and range extenders. Some of this is in response to the many requests for gas turbines for power generation rather than propulsion.

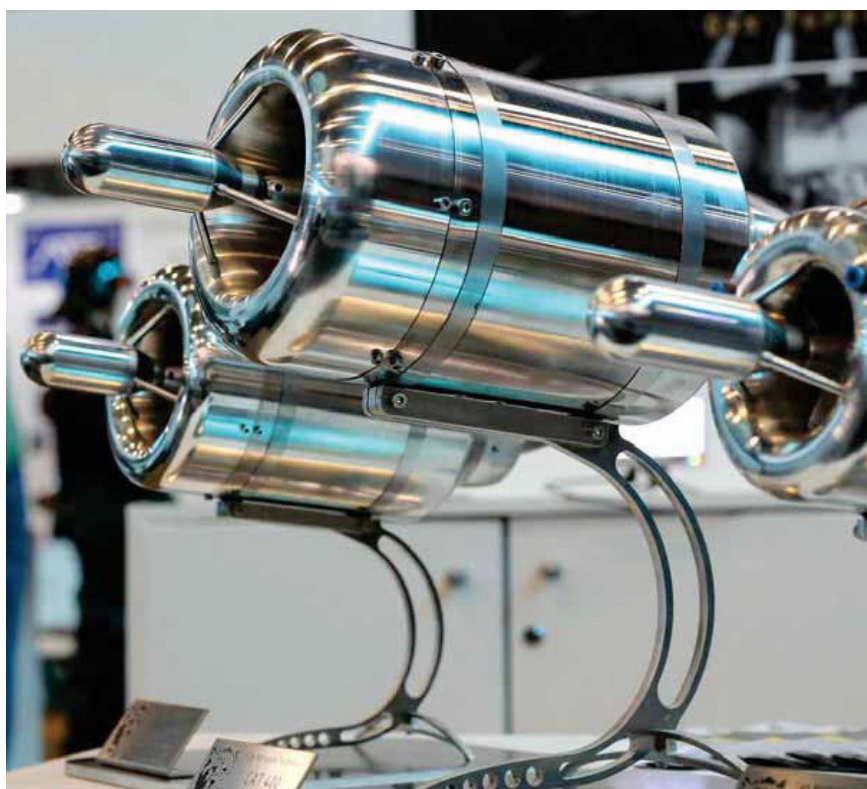
Another project is for a twin 250 N mount, intended for a jetwing (such as flown by Jetmen like Yves Rossy). With a twin mount under each wing, total thrust is 1 000 N. CAT is developing the jetwing's propulsion system for a client and hopes to carry out a launch from Swellendam. The client intends to scale the twin configuration to using 400 N engines.

Krige said Cape Aerospace Technologies is the only micro to small turbojet manufacturer in Africa – all design, manufacture

and testing is done in-house. The company saw a gap in the African market for small gas turbines and has cornered this market. Its successes have seen multiple export sales, including an exclusive sales agreement with an international client.

Cape Aerospace Technologies has recorded a number of highlights over the years, and these include developing a target drone for the

South African Navy in the 2000s, developing the first single fuel electric start system for micro gas turbines in the world in 1999, developing the world's first plasma ignition system for micro gas turbines (outperforming standard glowplugs), and developing the first fully web-enabled gas turbine user interface with over-the-air update capability.



# CSIR upgrades Meerkat with new lighter camera

Jonathan Katzenellenbogen

*The CSIR's Meerkat wide area surveillance system has proven to be phenomenally successful in anti-poaching efforts in the Kruger National Park*

**M**eerkat, the wide area surveillance system that is used in the Kruger National Park to detect poachers, has been recently upgraded with a new and lighter camera. This has eased the logistical burden around its use in the Park, increased its reliability and reduced the system's power consumption.

The system was developed by the Council for Scientific and Industrial Research (CSIR – Hangar 4, stand W9 and outside stand OS1, and Chalet 19) to amongst others detect and capture rhino poachers in the Kruger National Park before they attack. Since Meerkat was first placed in the Park five years ago, it

has helped reduce rhino poaching and provided better results than unmanned aerial vehicles (UAVs).

Problems with UAVs in anti-poaching roles include that they are not persistently in the air over fixed positions and have high operating costs.

The Meerkat radar detects multiple moving targets, does a first order classification, and then offers a human operator the opportunity to designate the camera to determine if the object is a human or an animal.

## **LIGHTER AND MORE PORTABLE**

Under the upgrade, the weight of the entire camera unit has been

reduced from more than 100 kg to a little over 20 kg. Hendrik Theron, the CSIR Research Group Leader in Optronic Sensor Systems, said the upgrade allows a Meerkat operator from South African National Parks to easily lift the camera system in the set-up process. The previous camera had to be transported in a special transport case and then lifted into place by either four people or by a crane.

An additional benefit of the new camera is its lower power consumption, reduced system complexity and easier maintenance. Theron said the new camera provides approximately the same quality as the old one.

Meerkat allows continuous coverage of large areas requiring protection. While it has, to date, only been used in the Kruger National Park, Meerkat could also be used for border protection, open cast mining operations, and in industrial and farm security roles.



**A lighter camera makes the Meerkat highly portable and easy to deploy**

*Meerkat in the Kruger (Peace Parks)*



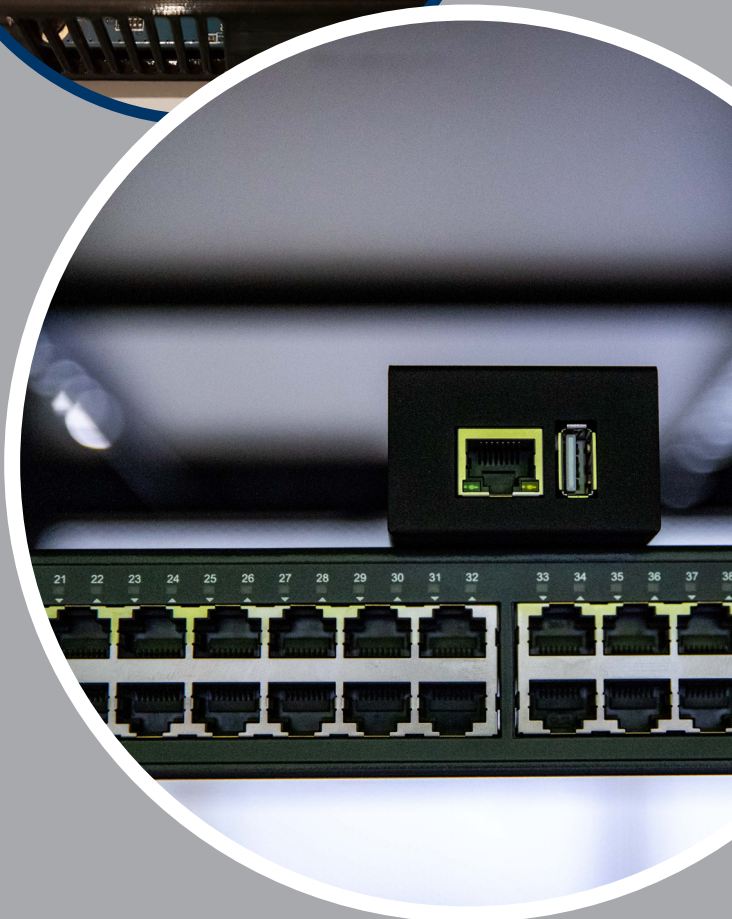
# CYBERSECURITY EARLY WARNING SYSTEM

**The Cybersecurity Early Warning System is a device with embedded software that detects east-west cyberattacks in an intranet and creates a window of opportunity for response by warning a network administrator.**

Cybercrime is a growing problem in South Africa. Modern cyberattacks can breach a network boundary and cause a service disruption and exfiltrate information. There is a need for cyberattack detection technology that addresses domestic challenges.

## **Technical advantages of the Cybersecurity Early Warning System:**

- Low total cost of ownership;
- Ease of management;
- Able to detect slow reconnaissance scans at a low false positive rate;
- Not vulnerable to circumvention by impersonation of legitimate hosts; and
- Computationally efficient.



**Contact:** Andre McDonald | **E:** [amcdonald@csir.co.za](mailto:amcdonald@csir.co.za) | **www.csir.co.za**



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# Kill that fire – instantly

*Military vehicles are particularly at risk from fire due to the hostile environments they operate in*

**M**ilitary and other specialised purpose-built vehicles (SPBV) that operate in volatile environments are often at high risk due to the threat of fire and explosives. Fogmaker South Africa (Hangar 2 Outside Display OS1) is demonstrating its automatic fire suppression system at AAD 2022 this week.

and (c) by covering all surfaces with a foam preventing any fuel from being available for combustion.” The ability to cool surfaces below the flash point of the fuel reduces the likelihood of re-ignition.

He said vehicles used by the military and other forces could get stranded in the event of a fire occurring inside the engine

temperatures and explosive attacks increase the risk of fire. Therefore, the Fogmaker system is now much sought after.”

According to Khoza, it is easy to install, easy to clean and recharge, and has a low lifecycle cost.

In a demonstration at AAD 2022, Khoza ignited diesel fuel in several trays to simulate a pool fire in a mock engine compartment. A spray fire was then added through the injection of diesel under pressure to simulate a ruptured hydraulic or diesel hose. As the flames engulfed the engine compartment, the burnt gas temperature rose to 800°C before the Fogmaker was manually activated. Within 10 seconds the temperature of the burnt gas decreased to around 130°C, then cooled down even further. In addition to the rapid extinguishing, the risk of re-ignition was minimised.



“The Fogmaker system is based on the fire triangle, which we call ‘Triple Action’,” explained Desmond Khoza, sales representative. “The Triple Action refers to the fire suppression system’s ability to address all three sides of the Fire Triangle by (a) depriving the fire of oxygen, (b) removing heat by cooling the gases and hot surfaces,

compartment or around the tyres. If the fire is not extinguished in seconds, the occupants could be in danger.

“Engine compartments of armoured vehicles are enclosed and encapsulated against ballistic and explosive attacks, which can generate high temperatures,” Khoza stated. “Such high

He further explained that the mechanical system comprises a pressurised piston accumulator containing water (H<sub>2</sub>O) and nitrogen (N<sub>2</sub>). This is coupled to the 8 mm stainless steel piping with patented nozzles installed within the engine compartment. In the event of a fire, the system automatically activates, or if detected early, it can be manually activated by the occupants.



## Reignition prevention

The existing suppressant system is water-based, with a 3% aqueous film forming foam (AFFF) that creates a protective barrier on the surface of any flammable material or fuel. The latter prevents the fuel from combusting again.

According to Khoza, the Fogmaker is mechanical, which precludes electrical wiring to enable the system. “It activates simply through the pressurisation of the system. A trip line in the engine compartment burns through, resulting in pressure dropping and activating the fire suppressant,” he stated.

More than 250 000 Fogmaker units, designed and manufactured in Sweden, have been installed in 50 countries around the world since 1995. Fogmaker South Africa is the sole distributor for Southern Africa, with representative offices in several cities in South Africa, Zambia and Botswana, as well as distributor partners in Ghana, Nigeria and Togo.

Besides the military environment, the Fogmaster fire suppression system is used in the transport sector, maritime, commercial and civil spheres.

Fogmaker is numerous global certifications and approvals, including the Fire Protection Association of Southern Africa, the United Nations UN R-107 Vehicle Registration, the Australian AS-5062 standards, Sweden’s PCR 197/183 Swedish Fire Protection Association and the SMA, Swedish Maritime Administration. It also

holds approval from SAMSA, the South African Maritime Safety Authority.

The Worldwide Standards for Manufacturers, the FM approval, is pending.

***Fogmaker South Africa is demonstrating an innovative fire suppression system at AAD 2022***



# UN tenders an untapped market

**T**he South African aerospace and defence industry offers its products and services to customers around the world, but often forgets that the United Nations is a massive untapped market right on its doorstep.

At the end of June, the United Nations hosted peacekeeping technology and procurement summits in Pretoria, where officials from the United Nations Procurement Division urged South African companies to register and bid for billions of dollars worth of tenders issued each year by the organisation, especially as South Africa is ideally located to be a supplier to UN missions on the

continent.

Delivering the opening address at the UN Procurement Summit, South Africa's defence minister Thandi Modise urged the industry to come together and pursue the opportunities the UN is offering.

Atul Khare, the UN's Under Secretary General for Operational Support, said global challenges to supply chain operations coupled with ever-diminishing resources have led to the UN seeking new technologies to create greater efficiency, and the UN wants to learn from suppliers about innovative solutions, particularly in responding to the challenges of maintaining peace and security

and also achieving sustainable development goals.

Khare believes that more collaboration and cooperation with service providers in South Africa will improve peacekeeping operations. Some of the goods and services the UN is looking for include fixed and rotary wing airlift, telemedicine providers, information technology solutions, and peacekeeper protection technologies.

Christian Saunders, Assistance Secretary-General for Supply Chain Management at the Department of Operational Support, pointed out that in 2021 the UN Secretariat spent \$2.7 billion on goods and services globally, out of which \$41 million was procured in South Africa. The aviation industry took most of that, with aviation services accounting for \$38 million, and professional services \$1.2 million, with pharmaceuticals and health, ICT, transport and storage amounting to half a million dollars.

“I believe South Africa and the business community has much much more to offer the UN,” Saunders told delegates.

However, he cautioned that to work with the UN requires







patience and persistence, as the Procurement Division is “a large bureau and are not as quick and agile as we would like, but we are striving to streamline and simplify. We are a good partner, an ethical partner, a long term partner, and most importantly, we pay our bills.”

One area the UN is strongly encouraging South African suppliers to bid for is air transport – with Covid-19 supply chain disruptions and the war in Ukraine, the cost of transport has gone up dramatically and since the majority of UN missions are in Africa, the UN is pushing to buy more locally, Saunders said.

“There is huge opportunity for South African businesses, not just in the defence industry but across the board,” he explained, as the UN literally buys tens of thousands of different goods and services.

While the UN Secretariat spends nearly \$3 billion, procurement across all UN divisions amounts to \$18 billion a year. The different divisions, such as the Secretariat, UNHCR etc. are all active on the UN

Global Marketplace – to do business with the United Nations, companies have to register there ([ungm.org](http://ungm.org)), where tender opportunities can also be viewed.

Greg Kuchler, Acting Chief of Service, UN Procurement Division, highlighted the fact that the majority of UN peacekeeping operations are in Africa, and South Africa’s proximity to these does help.

Giving a breakdown of UN spend, he said the biggest single Secretariat spend item in 2021 was ICT (\$418 million), followed closely by air transport (\$394 million), with building and construction coming

in third at \$331 million. Food and catering amounted to \$288 million while fuels, including aviation fuel, was number five at \$234 million.

Some of the solicitations to look out for in 2022/23 cover fuel, medicine, ICT, security and energy. Next year the UN will rebid its fuel requirements for UNMISS (South Sudan), UNISFA (Abyei), UNAMA (Afghanistan), UNIFIL (Lebanon) and UNMHA (Yemen). Medical requirements will cover oxygen generation, trauma bags, pharmaceuticals, and imaging equipment.

ICT solicitations are vast and range from servers to audio-visual equipment, computers and tablets, ICT security systems to VHF/UHF trunked radio systems. On the energy side, the UN will be looking for efficient generators and turnkey renewable energy supplies. Other requirements include prefabricated buildings, ISR data management, green power generation, camp/perimeter security, and counter-IED technology (security is a big focus, especially with the rise in attacks against peacekeepers).



# Daily Show Bulletin

## Day 1



## Day 2





# The route clearance solution

Sam J Basch

*The DCD Protected Mobility Husky Mine Detection Vehicle has detonated over 7 000 explosives without loss of life*

**D**CD Protected Mobility (Hangar 4 outside display ON1) has a long history of saving lives through the innovative design and high-quality build standards of its Husky landmine detection vehicle and proven Springbuck armoured personnel carrier (APC).

As its theme for AAD 2022, the company chose “Route Clearance Turnkey Solution” that is closely identified with its Husky landmine detection vehicle.

“As DCD Protected Mobility’s flagship product, the Husky – also known as the Vehicle Mounted Mine Detector (VMMD) – is in service in 17 countries around the world, including NATO nations,” general manager Cornelius Grundling explained. “From its early beginnings 42 years ago, our third generation Husky 3G has now been released.”

According to Grundling, the new Husky 3G was developed with more emphasis on crew ergonomics, field maintenance, reducing exterior noise levels, as well as ease of manufacturing, single steer axle and reduced total lifecycle costs.



*DCD’s Husky at AAD*

These improvements are based on years of operational experience and end-user feedback.

“It is undoubtedly the world’s leading landmine detection system, which has been tested to international standards in the USA, France, and South Africa,” Grundling stated.

The Husky is certified for Level 4a and 4b for blast and Level 3 for ballistic and artillery fragmentation protection in accordance with STANAG 4569 and AEP-55 (Volume 2, Edition 2) and AEP-55 (Volume 1, Edition 1).

As a versatile sensor platform,

the Husky can detect, mark, and interrogate landmines and IED threats. In the event of a detonation, the components have been engineered to break apart in a predictable manner. This facilitates fast in-field repairs; any damage to the system can usually be repaired in the field, thus increasing uptime and system availability.

The metal detector and GPR (ground penetrator radar) sensor fitted to the Husky can detect a 3 metre wide path during route clearance missions. Besides an Interrogation Arm, the roof-mounted Remote Weapon Station ensures protection against sniper attacks or ambushes.



*Husky 3G fitted with the Interrogation Arm*

“DCD Protected Mobility has a long-standing partnership with the United States based AirBoss Defense Group (ADG), through which we market and support the Husky Mine Detection System,” Grundling said.

Prominent at AAD2022 is DCD Protected Mobility’s Springbuck family of tactical wheeled vehicles.

“The Springbuck vehicles also play a significant role in our Route Clearance Missions as support vehicles in the Infantry, Command and Control, EOD, Fire Support and Emergency Evacuation applications,” Grundling explained. “Springbuck vehicles are operating in seven African countries; the customer base ranges from the United Nations, Army, Police, Gendarmerie, and Special Forces.”

Thanks to its innovative design and high-quality manufacturing standards, along with significant blast and ballistic protection features, the Springbuck vehicles have saved countless lives of soldiers on the African continent.

“In terms of mobility, our vehicles meet tactical, critical, and strategic mobility requirements, and all vehicles meet International

road regulation requirements,” Grundling noted. “Durability testing is performed to ensure reliable and available products to end-users.”

The Springbuck vehicles are built with simplicity, crew comfort, protection, and cost-effectiveness in mind, making use of internationally available drive-line components for assured performance and parts availability.

With permanent 4x4 engaged, the Springbuck is powered by a turbo-charged diesel engine and carries a driver and 10 personnel.

The Springbuck vehicle family comprises Standard (SD), Heavy-Duty (HD), and Extra-Duty (XD) versions. Their performance, payload, and protection increase with each successive model.

## SHERP VEHICLES

As the official distributor of the SHERP vehicles in Africa, DCD Protected Mobility is demonstrating the SHERP-N variant on the mobility track at AAD 2022.

The SHERP amphibious utility vehicle can move on any surface and overcome the most difficult natural obstacles in its way. This makes it ideal for use by specialists such as geologists, oil workers and rescue agencies. It is also useful for fishermen, hunters, extreme drivers, and travellers.

The United Nations World Food Program (WFP) utilises SHERP vehicles in its fight against hunger in several countries around the world.

SHERP vehicles are powered by a Doosan 1.8 litre diesel engine, giving a maximum speed of 40 km/h on hard surfaces and 6 km/h on water. The SHERP carries just over 300 litres of fuel in cannisters located inside the wheel rims, allowing an endurance of 61 hours. The vehicle carries up to nine occupants including the driver and has 1 200 kg payload capacity.

The SHERP is available in three variants, from the first SHERP Pro that evolved into the SHERP N, which is bigger and more capable. In turn the SHERP ARK evolved from the Pro model, and carries 22 passengers with a 3 000 kg payload capacity.

The company also offers an Unmanned Ground Vehicle (UGV) SHERP model.



*Springbuck vehicles*





# Saving lives



## Route Clearance Turnkey Solutions

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Visit us at stand 4 ON 1

# Sudan markets long range 122 mm rockets

By Christopher Foss

*Sudan's Military Industry Corporation is offering its 122 mm artillery rocket system*



The Military Industry Corporation (MIC) of the Sudan (Hangar 2, CW4) are showcasing at African Aerospace and Defence 2022 part of their wide range of capability in the land and air sectors.

For many years the MIC has been manufacturing the 122 mm solid propellant rockets for the widely deployed Russian 122 mm (40 round) BM-21 artillery rocket system (ARS) which is normally based on a 6x6 cross-country platform.

This is the most widely deployed ARS in the world and has been copied or manufactured under licence by many other countries.

The standard 122 mm unguided rocket has a maximum range of around 20 km but the MIC has developed and placed in production a new extended range rocket called the TAKA-03/ GRL02 which is claimed to have a minimum range of 20 km and a maximum range of 40 km.

It is fitted with a high explosive blast fragmentation warhead (HE) which is activated by a nose mounted impact fuze to give a claimed lethal radius of 70 m.

In addition to manufacturing 122 mm rockets, the MIC has also produced the TAKA MRL-01 122 mm (8-round) pedestal mounted rocket launcher which owing to its weight of 920 kg in unloaded configuration can be installed on a variety of land platforms and is also being marketed for naval applications such as coastal bombardment.

This has manual traverse of 45 degrees left and right and has elevation from minus 6 to plus 52 degrees and fires standard 122 mm rockets with a maximum range of 20 m plus the previous mention extended range rocket with a maximum range of 40 km.



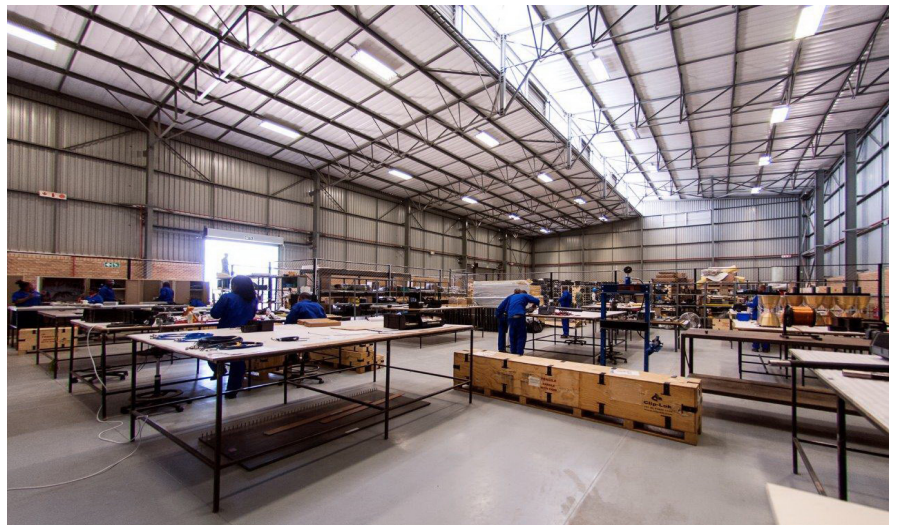
# Aerospace and defence top GGDA priority

**G**auteng is the aerospace and defence hub of South Africa and the Gauteng Growth and Development Agency (GGDA – Hangar 1, stand E8) is working hard to grow the sector further through business incubation and development initiatives, innovation hubs and other support.

Simphiwe Hamilton, Group CEO of the GGDA, pointed out that Gauteng is endowed with the biggest defence footprint in the country. “Our support to industrial players is more than just defence. The province has an economic development strategy called Growing Gauteng Together: Our Roadmap to 2030. Aerospace and defence have been identified as one of ten high growth sectors we are working on...as it is one of the key sectorial focus areas we have as a province.

“Gauteng being the economic powerhouse didn’t happen by default or a fluke. The province has good infrastructure, brilliant research institutes, universities that are world class,” he explained. “Gauteng as a province is working quite closely with different

roleplayers nationally, particularly the Department of Trade and Industry to increase investments into the province. There is a plethora of projects that are being rolled out to create investment-ready



opportunities for investors that want to come into the province. We are working on various industrial hubs that we are beginning to refurbish, re-establish and revitalise.”

A success story Hamilton underlined is the Tshwane Automotive Special Economic Zone (SEZ), which has attracted billions of rands in investment



*Gauteng is endowed with the biggest defence footprint in the country*



from Ford, amongst others. These SEZs are a sign of Gauteng's commitment to attract investors, and Gauteng has ambitious plans to develop multiple SEZs to grow the province's economy. SEZs are specifically designated areas that offer incentives to attract businesses to them. Incentives can potentially include VAT and customs relief, employment tax incentives, reduced corporate income rates and building allowances.

Apart from the automotive industry, other focus areas include aerospace and defence, agri-processing, ICT, energy, tourism and hospitality, and the green economy.

"We need to go out there and grow

this economy," Hamilton said. "If Gauteng is not growing, the whole country is not growing. We need to push hard for Gauteng to grow and the province is working hard on that," especially as Gauteng is the gateway to the rest of the continent.

Hamilton is pleased that Gauteng is hosting the 2022 edition of the Africa Aerospace and Defence exhibition. "It is the biggest aerospace and defence expo on the continent," he said, and possibly the single biggest exhibition in South Africa.

Although there will be a lot of direct benefit to the local economy through travel, accommodation, catering etc., trade deals arising from the exhibition will positively

impact on Gauteng in the medium to long term. Hamilton believes the lifting of Covid-19 restrictions will have a positive effect on the show, with more visitors attending.

## “ TRADE DEALS ARISING FROM AAD 2022 WILL POSITIVELY IMPACT GAUTENG IN THE MEDIUM TO LONG TERM







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# New AI solution for ISR

By Jonathan Katzenellenbogen

*AAD is witnessing the launch of an artificial intelligence solution to analyse and present data from navigation and information gathering sensors*

**K**achila and Hercules Dynamics, two Canadian based technology companies, are launching a new artificial intelligence (AI) solution, Athena Core Engine (ACE), at the Africa Aerospace and Defence exhibition (Chalet 31).

The solution provides tools for the analysis and presentation of data from navigation and information gathering sensors. ACE can identify threats and objects of interest in real time from multiple types of

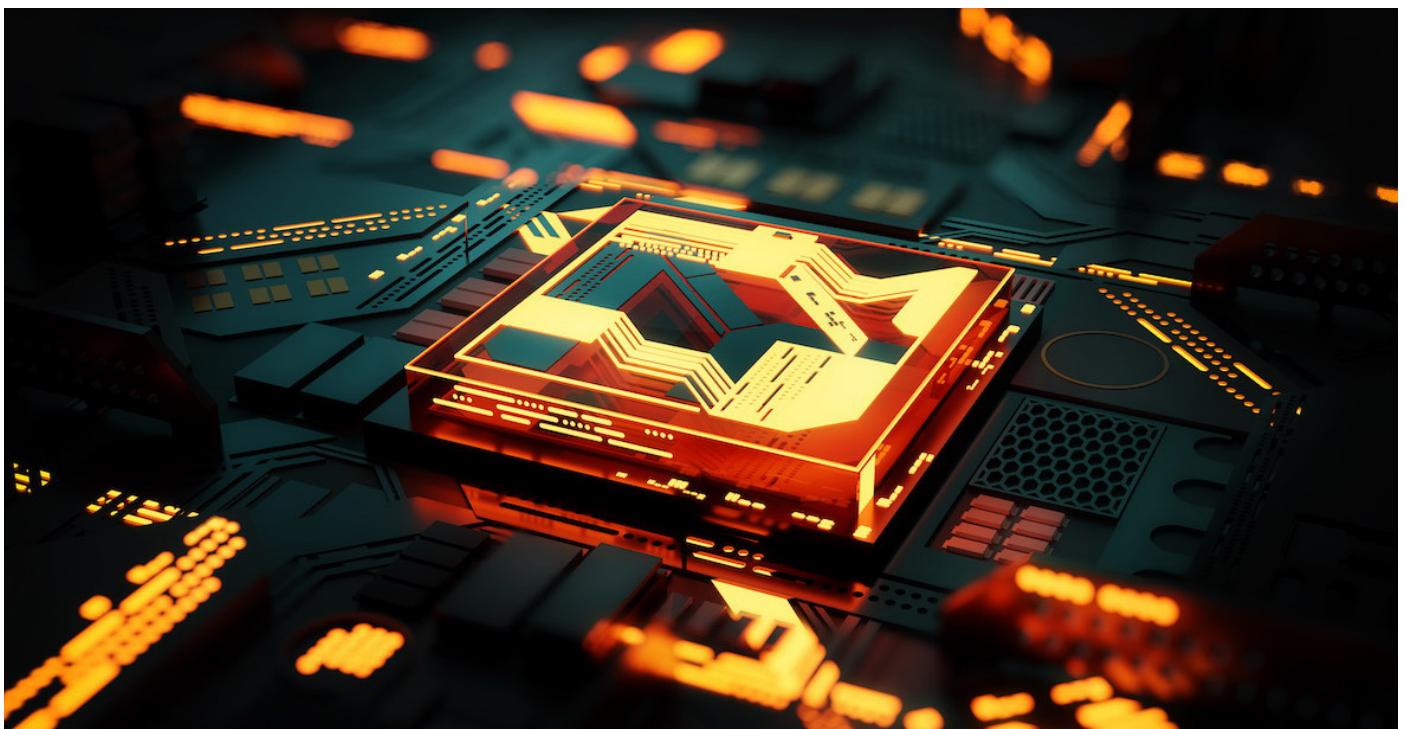
sensors.

Kachila was established in Cape Town, where it continues to have a presence, but now operates out of Canada, and is in the process of setting up an office in Finland. It focuses on creating and marketing the intellectual property of technologies with military as well as civilian uses. Hercules Dynamics started off by providing software for driver improvement in the motorsports industry, but has since expanded into other sectors.

## COST EFFECTIVE

### SOLUTION

Hercules Dynamics is marketing Athena as a cost effective solution for many African militaries and security agencies. It allows operators to get more out of sensors and improves the accuracy of decisions on threats. The company says the acquisitions and operational costs of ACE are substantially below other similar systems. The software can be





customised and scaled to the requirements of clients.

Shamendran Pillay, Vice President of Kachila, said the AI engine is well suited to countries which cannot afford top-end solutions and need to ensure substantial capability enhancements at a competitive price.

Athena allows navigation and intelligence, surveillance, and reconnaissance data to be drawn from multiple sensors and then analysed for key information to be presented to the human in the loop. A reduced workload for humans in the loop results in less fatigue and stress and allows them to operate with greater efficiency. This AI solution can deliver information to human operators that they might otherwise not be able to respond to in real time, the company said. Pillay said ACE sifts through data and allows the human operator to make faster and better

decisions.

Athena allows access at a far lower price to technology that was once the preserve of the world's most advanced militaries, said Pillay.

### RAPIDLY LEARNING AI

Athena is built around the transformer model that is currently driving many advances in machine learning. Transformer models, first developed by Google engineers five years ago, can learn far more rapidly as they rely on fewer data sets than traditional AI models. Instead of reliance on large data sets, transformer models rely more on context and relationships for analysis. Kaizer Poonawalla from Hercules Dynamics said ACE needs as little as a three-by-three pixel grid of data from a camera to identify an object. This he says allows the use of more affordable and lower

weight cameras and sighting systems to be carried on platforms.

Another advantage of ACE for African users is that it does not require a large data downlink to operate. To prevent interception of data, the AI engine encrypts the data streams from the platform to the ground. It also has a component that performs a health usage and monitoring function on aircraft systems. Apart from defence and security use cases, Kachila said the system could also find a role in healthcare, infrastructure monitoring, and secure logistics.

As it falls under Canadian regulation, ACE is free from the US International Traffic in Arms Regulations (ITAR) regulatory regime on military and related technologies, and can therefore be exported to more markets.

**HERCULES  
DYNAMICS IS  
MARKETING  
ATHENA AS A  
COST EFFECTIVE  
SOLUTION FOR  
MANY AFRICAN  
MILITARIES  
AND SECURITY  
AGENCIES.**



# Recovery vehicle aims at military market

By Christopher Foss

*Miller Africa has sold recovery vehicles to Botswana, Kenya and Namibia, amongst others*

**S**outh African company Miller Africa Towing Equipment (Hangar 5 CW17) is showing two examples of its extensive range of wheeled recovery vehicles for civil and military applications at Africa Aerospace and Defence 2022.

The largest recovery vehicle being shown is based on a MAN TGS 26.480 forward control (6x4) chassis with the recovery module supplied by Century of the USA.

According to Miller Africa's Louwrens Riekert "we can offer various chassis/recovery modules and in addition to Century these include Boniface, Century, Chevron, Holmes, Jige and Vulcan."

Export sales of the company's

wheeled recovery vehicles have been made to a number of countries in Africa and the Middle East with the former including Botswana, Kenya and Namibia.

The company is currently marketing Rotators with capacities of 35, 40, 60 or 76 tons and with two or three stage recovery booms. They are also available with multiple winch options ranging from one or four boom winches together with one or two drag winches as well as various outrigger packages.

For the integrated towing and recovery missions they can supply heavy, medium and light duty.

The heavy duty is the top of the range and can be supplied with

boom capacities of 20 to 50 tons and a combination of different underlifts and body configurations.

The second vehicle being shown based on a HINO 500 (4x2) chassis fitted with Miller Africa's slide back carrier. The company can offer these with deck capacities ranging from 4.5 tons up to 18 tons and with deck lengths from 5.2 to 9.1 meters.

These decks are constructed of steel or aluminium with an optional Apitong wood deck. As usual These slide back carriers can be customised to meet end users' specific operational requirements with options including a variety of winch capacities, removal side rails and hydraulic wheel lifts or dock stabilisers.



**A MAN 6X4 RECOVERY VEHICLE IS THE LARGEST MILLER AFRICA ON DISPLAY AT AAD 2022**



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Twiga's products include a range of armoured vehicles, rugged and virtually indestructible military patrol boats, various weapon mounts and customised off-road trailers. All of these products have been designed to allow for transfer of technology.

Twiga's latest 4x4 mine and ballistic protected land platform, designed and qualified in South Africa - the Nyati - has been manufactured in Africa under a technology transfer agreement incorporating client specific battlefield requirements.

The Nyoka 4x4 armoured vehicle range, manufactured in South Africa and Eastern Africa, is in service as an Armoured Personnel Carrier and Weapon Platform.

Twiga's range of virtually indestructible military patrol boats serve in a wide range of operations from counter piracy off-shore to special force riverine operations. Built from High Density Polyethylene these boats provide water platform capabilities from gun boats to indirect fire bases.

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# Rapid Mobile Releases new naval communications technology at AAD

By Jonathan Katzenellenbogen

*The RapidM Multi-Gateway capability enhances naval communications*

**R**apid Mobile, the Pretoria based designer and manufacturer of advanced military communications technology, is launching new naval solutions at the Africa Aerospace and Defence (AAD) show at Waterkloof Air Force base in Pretoria this week. The RapidM stand is at 30S3 in Hangar 3.

The RapidM Multi-Gateway capability is being launched at the show, just weeks after its trials in South-East Asia. It is aimed at enhancing shore-to-ship and ship-to shore communications to ensure reliable and continuous high frequency communications. One of the system's use cases is for joint force operations with a naval component.

Karel Koster, RapidM's Tactical Product Leader, said the Multi-Gateway routing capability is a game changer for high-frequency networks in allowing existing transmit and receive stations to be connected and opens options for lower cost solutions. Due to interference, legacy systems often require a distance between receive and transmit stations. The Multi-Gateway solution allows messages and data to be routed through multiple possible shore stations and ensures improved connectivity, redundancy, as well as compression of messages, and prioritisation of messages. While high frequency radio networks are widely used by militaries around the world, they can be unreliable because

the ionosphere, upon which the waves from these transmissions bounce back to earth, change in its characteristics with the time of day due to changes in the sun. The Multi-Gateway solution allows different frequencies to be automatically tested and remembered.

## MULTI-GATEWAY SOLUTION

Previously RapidM's solutions had only a single gateway which allowed a radio network to connect via an internet protocol. The new capability allows high frequency radio voice, internet, transmission, and receiving gateways to operate off one system allowing substantial cost savings, said Koster. Older systems for high frequency



transmission and receiving would have to be separated because of problems with interference.

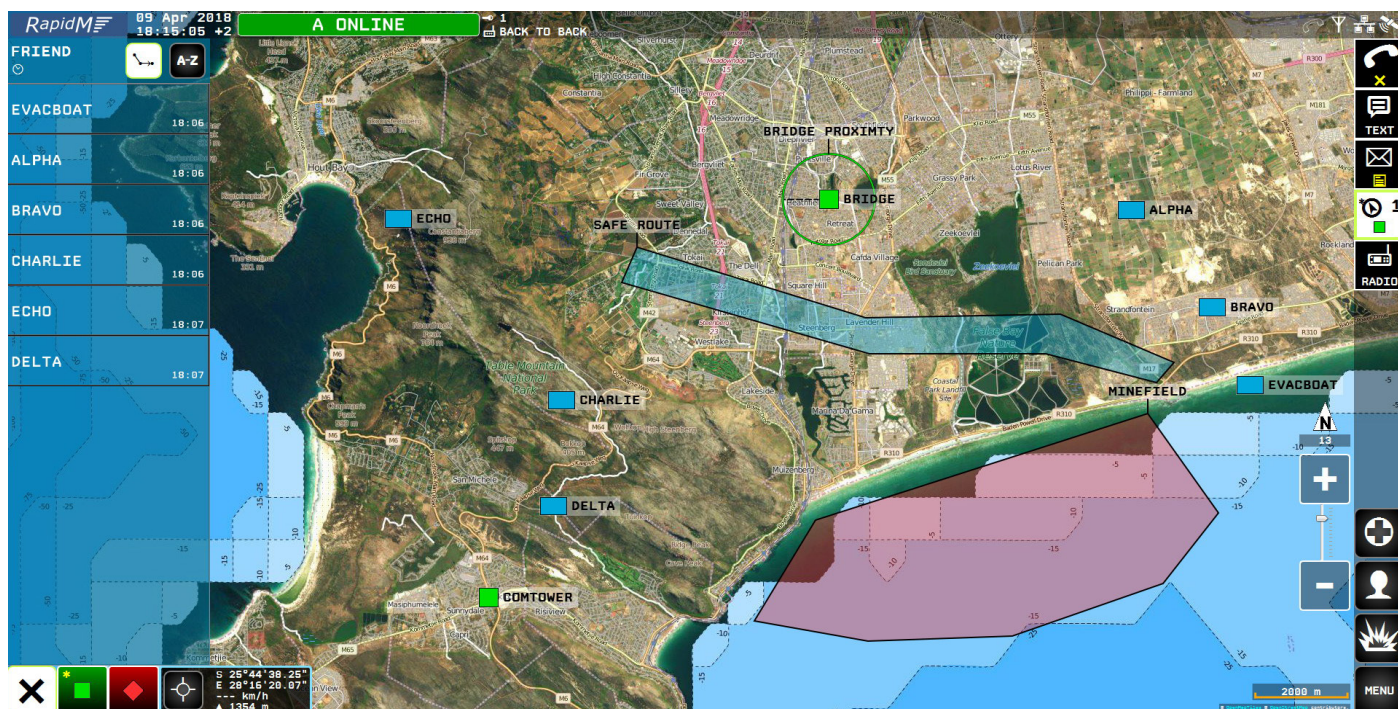
Another attribute of the system is that it can remember which frequencies have been previously used for a specific connection and which have achieved the highest quality. One use case would be for the system to be placed in naval shore stations for both communication with ships and with other stations. A network using this solution can allow for transmissions to be re-broadcast from station to station.

Rapid Mobile is also launching the RM10 Wideband Software Defined Modem with an Automatic Link Establishment capability at AAD 2022. While this product and the RC10 ARQ Server and IP Controller have been launched abroad and have NATO stock

numbers indicating conformity to the alliance's standards, the Africa launch of these products will be at AAD.

Koster said the RM10 addresses the need for higher speeds in data communications over wideband channels in the HF, VHF, and UHF bands. The RM10 design allows operation on crowded ship platforms where space and power consumption are paramount. Together with the companion product to the RM10, the RC10 allows broadcast chat and messaging, and email communications over long ranges at high speeds over a radio network.

**RAPID MOBILE IS A GLOBAL SUPPLIER OF PREMIUM LONG-DISTANCE DIGITAL RADIO COMMUNICATION TECHNOLOGY**



A screenshot from the CommandPoint XL software that provides the Multi-Gateway capability for RapidMs new solution

# Hensoldt South Africa introduces new radar electronic surveillance solution

*The RES9000 electronic surveillance solution is one of several new products Hensoldt is unveiling at AAD 2022*

**H**ensoldt South Africa (AAD Static Park) has introduced its new RES9000 radar electronic surveillance solution for the detection, locating and analysis of modern radar emitters.

The GEW RES9000 from the GEW business unit, launched at AAD on 22 September, complements the company's extensive tactical electronic warfare portfolio.

The RES9000's objective is the interception of modern radar signals for precision direction finding (DF), tactical visualisation of gathered emitter information, emitter classification and matching of intercepted emissions to an emitter library, and reporting and tracking of radar threats in the 0.5 GHz to 40 GHz frequency range, GEW explained.

Artificial intelligence is used to match signals to a user populated





threat library. Electronic intelligence (ELINT) processing and analysis is available with the addition of analysis software.

“Being well known in the spectrum dominance field, GEW has recognized the boundaries between the communications domain and the radar domain are fusing and our customers no longer focus on each domain separately. We have invested heavily over the past few years in the development of a modern and compact Radar ES solution closely integrated with our tactical EW systems to create a complete electromagnetic intelligence solution, which we believe will offer significant value to our customers in dealing with

their electromagnetic threats,” said Christo Fouché, the Chief Executive Sales and Marketing of Hensoldt GEW.

“**THE RES9000 IS DESIGNED FOR THE INTERCEPTION OF MODERN RADAR SIGNALS FOR PRECISION DIRECTION FINDING**

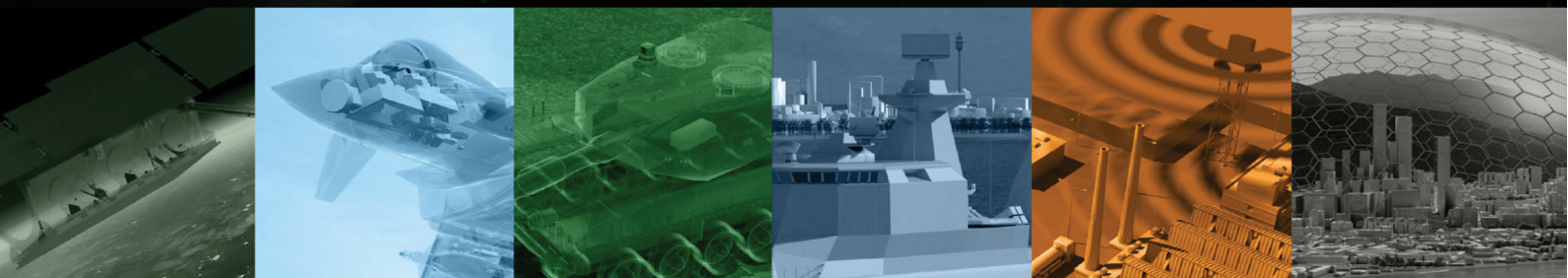


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# S-Plane to convert Mwari to optionally piloted aircraft

*Paramount's Mwari ISR aircraft will become an optionally piloted aircraft*

Paramount Group has signed a memorandum of understanding with S-Plane Automation that will see S-Plane integrate its optionally piloted vehicle solution onto Paramount's Mwari aircraft.

The memorandum of understanding was announced during Africa Aerospace and Defence 2022 by Paramount, which

said the agreement also covered S-Plane's intelligence, surveillance and reconnaissance (ISR) mission solutions.

S-Plane's X-KIT converts manned and unmanned aircraft into complete certified optionally piloted vehicles, unmanned aerial vehicles or manned airborne ISR systems. It will enable the Mwari to address both unmanned aerial support and optionally piloted aircraft operations, with the autonomous systems to be applied throughout the Mwari's architecture, equipment, subsystems, and interfaces.

S-Plane has been creating certification-ready solutions for manned and unmanned ISR systems for the past 14 years. The company's X-KIT is, for example, used to convert Indra's Targus optionally piloted aircraft from a Tecnam P2006T aircraft, by Airbus UpNext for remote control of a Cessna Citation VII business jet for their Extra Performance Wing project and to create the manned Helix ISR system.

Thomas Jones, CEO at S-Plane, stated that, "This wide-ranging collaboration with Paramount is testimony to the exceptional and complementary products, technologies and capabilities of our companies and a shared vision





of the future. We especially look forward to welcoming the Mwari to our stable of OPS (Optionally Piloted System) conversions. Enhanced automation is the inevitable next evolution for land, sea and air vehicles and allows aircraft such as the Mwari to achieve their full potential.”

## ParagonISR

“The X-KIT’s ParagonISR integration within the Mwari’s existing onboard computer will also unlock maximum ISR capabilities and interfacing throughout the flight envelope and in the theatre of aerial reconnaissance, surveillance, and engagement,” Paramount said.

ParagonISR allows payload

operators to view, manage and fuse the outputs of various sensor payloads. It provides features such as payload stream geolocation and projection, mission sharing and sensor coverage. ParagonISR optimises payload application and mission execution in real-time, according to S-Plane.

Steve Griessel, CEO of Paramount Group, stated that, “We are excited to celebrate South African innovation and indigenous technological prowess by way of the signing of this memorandum of understanding, alongside our partners at S-Plane. In doing so, we are not only enhancing the already incredible ISR and operational capabilities of the Mwari, but also strengthening the country’s commitment to aerospace

excellence.

“Paramount and S-Plane seek to additionally collaborate in future with respect to various strategic initiatives and projects across the companies’ land, sea and air portfolios, leveraging the strengths of both organisations in their respective focus areas,” he added.

## S-PLANE WILL INSTALL ITS X-KIT CONVERSION KIT ON THE MWARI



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# Resuscitation plan for Badger

*Armcor and Denel are working on a plan to bring Project Hoefyster to completion*



*The Badger infantry fighting vehicle has been affected by challenges at Denel*

**A**s Denel readies itself to become a properly functioning entity, the State-owned defence and technology conglomerate appears to have an ally in the form of State-owned defence and security acquisition agency Armcor for Project Hoefyster.

Under Project Hoefyster, Denel Land Systems (DLS) was contracted to manufacture the Badger infantry fighting vehicle to partially replace the SA Army's ageing fleet of Ratels. With the project now well into its

second decade, there have not been any deliveries, largely due to state capture at Denel. At one stage Armcor recommended cancelling the contract.

Armcor recently told Parliament's Portfolio Committee on Defence and Military Veterans (PCDMV) that "completion of phase one of Project Hoefyster is deemed by both Armcor and Denel to be feasible" - with conditions. These include end-user agreement on "waiving non-compliance to identified specifications";

suppliers willing to supply required sub-systems and components; availability of sufficient working capital to continue the project and Denel insourcing necessary personnel.

Hoefyster as a project has to be financially ring-fenced with Denel to "find ways of providing bridging funds from existing project funds to restart the programme until payment milestones can be reached". Denel is working on "a request for contract variation" that, once approved by Armcor, will see more regular payments as progress is achieved, facilitating release of funds to provide for labour and supply chain requirements. Armcor will also be asked to waive penalties on outstanding penalty milestones.

## WAIVING NON-COMPLIANCES

Waiving non-compliances will enable Denel to continue the rectification of outstanding non-compliances and complete the initial Section variant, leading to product baseline level being reached.



“The outstanding work to complete phase one will mostly be performed in-house at Denel, as the vehicle hardware in the main already exists. Armscor requested the SA Army requirement for continuation of phase two (industrialisation and production) be reviewed. Armscor will prepare options with regard to continuation of the project, while taking cognisance of availability of funds,” the agency stated.

Hoefyster is more or less presently paused with parts of the development phase at various stages of completion. They are 72% of hull and turret items common to all variants; 84% of the lead – Section – variant; 83% of the Fire Support variant; 73% of the Command variant; 44% of the Mortar variant and 53% of the Missile variant.

Completed as per phase two (industrialisation and production)

are locally developed 30 mm CamGuns and ammunition; 60 mm long range mortar bombs; 15 Patria vehicle platforms; 64 training simulators and four pre-production models of the Section variant.

The original Hoefyster requirement was for 264 IFVs – three battalions – with the contract coming into force in June 2007. The original delivery period was set down to start in May that year and end five years later in 2012.

## COMPLETION OF PHASE ONE OF PROJECT HOEFYSTER IS DEEMED BY BOTH ARMSCOR AND DENEL TO BE FEASIBLE, BUT WITH CONDITIONS





**While short on physical exhibits, Russia is pushing its military hardware at AAD 2022**

# Russia takes aim at African market

By Christopher Foss

**A**ccording to the Rosoboronexport Director General Alexander Mikheev, “Sub-Saharan Africa is now among the growth leaders in the level and quality of military and technical cooperation with Russia. Rosoboronexport has been developing mutually beneficial ties with practically all of the states in the region, helping them to strengthen their defence, capabilities, sovereignty, fight against organised crime and terrorism.”

While it was not possible to bring any of its equipment currently in

production and being marketed for air, land and sea applications to AAD, their huge video screen gives a good example of their huge range of equipment.

On the land side this includes the latest version of the T-90 main battle tank (MBT) which has been exported in large numbers, including Africa, and has seen extensive operational use.

The Russian Army has always deployed a mix of tracked and wheeled infantry fighting vehicles (IFV) as each have their own advantages.



# SUB-SAHARAN AFRICA IS A GROWING MARKET FOR RUSSIAN MILITARY TECHNOLOGY

Wheeled IFVs currently being marketed include the BTR-80A and BTR-82A which have good cross country mobility due to their 8x8 configuration and unlike many of their western counterparts are fully amphibious, being propelled by a water jet at the rear.

At the smaller end of the wheeled AFV market is the Tigr (4x4) which has evolved into a complete family of vehicles with one version, for example, being armed with the Kornet-EM laser guided anti-tank missile.

On the artillery front the MST-A-S 152 mm self-propelled artillery systems is also available with a 155 mm ordnance allowing it to fire NATO ammunition (projectiles and charges).

Russian can also supply a wide range of laser guided artillery projectiles in 155 mm, 152 mm and 122 mm, for example, with the 155 mm laser guided projectile being sold to India for use with its Bofors

155 mm towed artillery systems.

The Russian defence industry also offers one of the largest artillery rocket systems, Smerch on an 8x8 high mobility platform, as well as the unique TOS-1A heavy flamethrower system, which launches unguided rockets with a thermobaric warhead, which have proved to be highly effective against dug in infantry.





**African Aerospace and Defence Expo '22**

Stand 4CW3 – Hangar 4



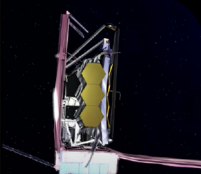
## STAYING AHEAD OF THE THREAT

Competitive advantage in war fighting depends on modernising the production of defence capabilities, which is only possible through digital transformation. Simulation can increase confidence in mission success by predicting real-world performance.



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## DESIGNING THE NEXT GENERATION OF SPACE MISSIONS

Advancements in research and exploration will enable us to observe and explore the outermost regions of space. Simulation is essential to planning remote missions in the complex environments of space and designing the systems that can achieve them.



## INSPIRING WORKFORCES

Industry leaders must evaluate and deploy cutting-edge tools and processes across engineering teams to compete for recruits and retain and inspire existing employees. This requires learning platforms that new hires can use to rapidly onboard and that existing employees can use to develop their expertise.



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Advancements in air mobility are transforming the way we think of short-distance flight. Simulation is essential to designing these new technologies and coordinating the vehicles that rely on them.

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## Ansys Executives on-site at AAD '22



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VP & GM, Middle East, Africa, Russia CIS, Eastern Europe



**HICHEM BEN CHEIKH**

Regional Sales Director, Africa & Middle East



**JIM CHIAMARDAS**

Vice President Sales, EMEA

# Operating in the Bush

By Sam J Basch

*Redeployable Camp Systems SA was tasked with rapidly supplying the SANDF with tents for its border protection duties*

**A**s its name indicates, Redeployable Camp Systems SA (RCSSA) (Hangar 4 Outside Stand ON4) has built an enviable reputation for its turnkey camp solutions in many parts of the world. The company's redeployable camps have been supplied into some of the most inhospitable regions, from deserts and jungles

to the icy fields of Antarctica.

In recent times, RCSSA, part of the KwaZulu-Natal headquartered Canvas and Tent group, provided more than 270 tents to the South African National Defence Force (SANDF) for its border posts around the entire perimeter of the country. This forms part of Operation Corona that is focused

on safeguarding the country's borders. The project entrusted to RCSSA covered 19 military bases on the borders, including those with Lesotho and Eswatini.

According to RCSSA group sales manager Martin Bester, the company managed to execute the order in a matter of weeks, from early December 2021 to





late February 2022, a period that included the Christmas holidays.

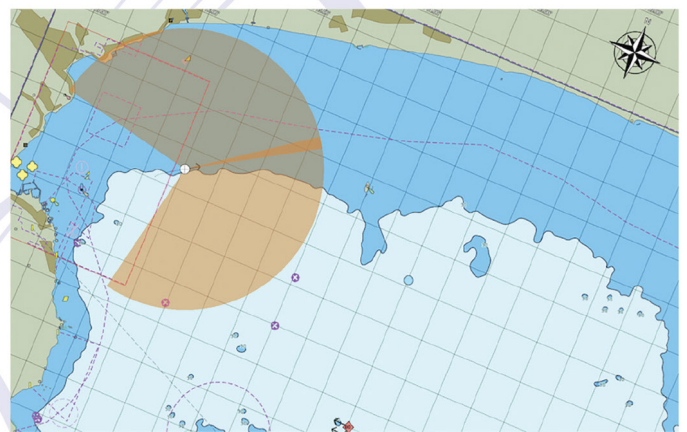
“We delivered just over 100 Warrior tents measuring about 10 x 5 m and a further 44 of the 5 m square Warrior tents,” he explained.

“Besides these and other deliveries, RCSSA repaired existing tents at the bases as required in terms of the contract.”

For this massive and urgent undertaking, the company utilised no less than 42 ten-ton trucks that drove a combined 33 000 kilometres throughout South Africa in the short space of time.

“We executed this contract within the specified timeframe and to the satisfaction of the SANDF,” Bester said. “The Warrior tents, fondly referred to as ‘Weatherhaven tents’ by the SANDF, accommodate eight to ten soldiers, but some tents were destined for other purposes, such as offices.”

“**42 TEN-TON TRUCKS  
DROVE A COMBINED 33 000  
KILOMETRES THROUGHOUT  
SOUTH AFRICA IN SEVERAL  
MONTHS TO DELIVER ON  
THE SANDF’S URGENT  
REQUIREMENT**”



**Trident Tactical** is the 3rd iteration in the evolution of naval Command and Control (C2) systems developed by **Cybicom Atlas Defence**. Trident Tactical has been designed for use aboard small to medium sized naval platforms, and is aimed at customers seeking solutions for the combination of complex and expensive navigation tools and combat management systems.

**Trident Tactical** takes advantage of the latest in software development methodologies and tools, allowing for an agile and scalable architecture, while providing the functionality of a modern integrated naval Command and Control system for cost sensitive applications.



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# ADI Mechatronics and Mavtech partner on fuel cell technology

*Fuel cell technology is being added to Mavtech's driveline capabilities*

Tyre pressure, automation and driveline control specialist Mavtech Technologies have partnered with South African company ADI Mechatronics on industrialising fuel cell technology for electronic drive applications.

The two companies have entered into a cooperation agreement with regard to generating power for electric vehicles by means of hydrogen fuel cells, which Mavtech Technologies will produce.

An example of their electric vehicle drive technology is on view at the Mavtech Technologies Stand in Hangar 4 (E12).

ADI Mechatronics is a relatively new company, established in 2021, that specialises in electronic control solutions, control software and the design and development of electric vehicle drive systems. It is headed up by Managing Director Thaakir Aricum, who was previously employed by Denel Vehicle Systems as a design engineer.

Mavtech Technologies was established in 1995 to offer vehicle control solutions to the South

African vehicle manufacturing industry. It has built up well over two decades of experience supporting various Central Tyre Inflation Systems (CTIS) and recently launched its own Tyre Pressure Control system. It has supported tyre pressure control systems on more than half a dozen vehicles, including the DCD Protected Mobility Husky and Denel Land Systems G6.





# Paramount's Mbombe 4 to be manufactured in Thailand

*Thailand is the latest country to manufacture the Mbombe 4 domestically*

**P**aramount Group (Hangar 4, OS3 and Chalet 8-9) has reached an agreement with Thai companies to manufacture its Mbombe 4 infantry combat vehicle in Thailand as the D-Lion.

Paramount partnered with Thailand's Defence Technology Institute (DTI), Thailand's defence research and development (R&D) agency, and local defence and security company Jatunapas for the local production.

The first locally assembled D-Lion was handed over to General Chalermphon Srisawasdi, Chief of Defence Forces, Royal Thai Armed Forces, at Defence and Security 2022 in August.

"The D-Lion combat vehicle which has been assembled in Thailand through the co-operation of DTI, Jatunapas and Paramount Group represents a first-of-its-kind in this level of combat capability. South Africa is globally recognized for its leading competence in this

vehicle class, whilst Thailand has significant competence in vehicle production," said Ploynapas Chaiyasree, CEO of Jatunapas Company Limited.

"With more than 150 vehicles either being manufactured or on order for delivery or deployment across Africa, Asia and around the world, this announcement in Thailand is an important next step in the Mbombe's continued expansion, and a testament to the innovative partnerships that we







have fostered to the benefit of our partner nations' respective defence industrial complexes," said Eric Ichikowitz, Senior Vice President of Paramount Group.

## GLOBAL ORDERS

Since its launch in 2019, the Mbombe 4 has been ordered by five nations, including the United Arab Emirates, Togo, and India – it is being built in large numbers for the Indian Army by Bharat Forge as the Kalyani M4.

Key features of Mbombe 4 include flat-floor mine protection technology. The vehicle has a burst

speed of 140 km/h and a range of 800 km. The platform offers crew compartment NATO STANAG 4569 Level 3 ballistic protection and blast protection to STANAG 4569 Level 4A and 4B and protection against a 50kg TNT side blast or IED/roadside bomb. The 16 tonnes Mbombe 4 provides a payload of nearly three tonnes, and has been designed to accommodate a wide range of payloads and turrets, including a 30 mm cannon.

Paramount recently revealed the Mbombe 4 S desert variant, which was developed in response to customer feedback and trials in India, Saudi Arabia and the United Arab Emirates.

## “THE MBOMBE 4 IS KNOWN AS THE D-LION IN THAILAND

The Mbombe 4 draws on the heritage of the eight-wheeled Mbombe 8, launched in 2016, and the six-wheeled Mbombe 6, which is in service. Commonality of components (roughly 70%) across the entire Mbombe family of armoured vehicles lessens the costs associated with support, repairs and training, Paramount maintains.



# Unique Group shows subsea technologies

**F**irst-time exhibitor at Africa Aerospace and Defence 2022 is the Unique Group (Hall 4 Stand W6) with its latest innovations in subsea technologies and engineering.

The company's Cape Town team is headed by Andrew Laing, division manager, who noted: "We're excited to be exhibiting at our very first AAD. The show

has been hugely popular in the African subcontinent over the years and we're looking forward to meeting some high-profile regional delegations and making new customers in the next few days."

On display is Unique Group's new altitude training chamber model that is used for the training of aircrew in the physiological aspects of high-altitude exposure. The

system can provide a controlled environment for experiencing changes in barometric pressure associated with flight.

To meet the team and know more about Unique Group's latest offerings, visit the stand 4 W6 or email [sasales@uniquegroup.com](mailto:sasales@uniquegroup.com).



*Some of the Team at the Unique Group Exhibition Stand at AAD 2022*

# And in other news: **Paramount EZRaider** makes AAD 2022 debut

**E**very time the Africa Aerospace and Defence exhibition is held, South African aerospace technology company Paramount is almost always guaranteed to do something to win the headlines.

In shows gone by, it was a vodka bar for delegates or a sky diving anti-poaching dog. In recent years it was Parabot, a massive Transformers inspired robot that towered over the hangars

at Waterkloof Airforce Base in Centurion.

This year at AAD 2022, one of the attention grabbers is three women scooting about on electric four-wheeled scooters, dubbed the EZRaider. But these aren't toys.

Capable of being disassembled and airdropped with special forces operators or paratroopers, they have a 50-80 km range for ultra-fast deployment on existing roads,

with a second version equipped with bigger tyres for cross-country movement.

For the moment though, Nikki Hilton (left) and Boipelo Keepile are riding them at high speed around the air base, getting people to come to the Paramount stand.

How fast are they? "I don't know exactly," said Hilton, "but very fast!"





# SA Army getting new camouflage uniforms

**T**he South African Army will soon introduce new camouflage uniforms for its soldiers, as the existing camouflage pattern and uniform design is compromised and old and does not cater for certain body profiles.

According to Chief of the South African Army, Lieutenant General Lawrence Mbatha, the new camouflage uniform will mainly be for operational utilisation internally and externally. The first roll-out is planned to be displayed during a divisional exercise scheduled for 24 November 2022.

The first inkling of new apparel for soldiers came from an extended Army command cadre conference in Potchefstroom in April 2021, when concept designs were displayed. The SA Army decided to replace its camouflage as the existing camouflage pattern and uniform design were “compromised and old fashioned” – civilians have on a number of occasions obtained and used Army uniforms in spite of the fact that this is illegal, and in at least one case, a trader was illegally selling Army uniforms.



Another issue is that the previous clothing did not adequately cater for certain body profiles or female forms.

Three different camouflage patterns – digital, reduced brown and natural green – will be used in the design of three different uniforms. All make provision for female sizes and designs and feature pleats on shirt backs for expansion and ventilation as well as pockets on shirt sleeves and pen pockets on long-sleeved shirts.

SA Army personnel will also be getting new boots and a new camouflage cap, similar to the

French Foreign Legion's kepi.

The new boots will be a welcome addition, as South African soldiers deployed with the UN mission in the Democratic Republic of Congo (DRC) found boots wore out quickly in the hot and humid environment.

The new uniforms will be made locally in line with government regulations designed to bolster the clothing industry.

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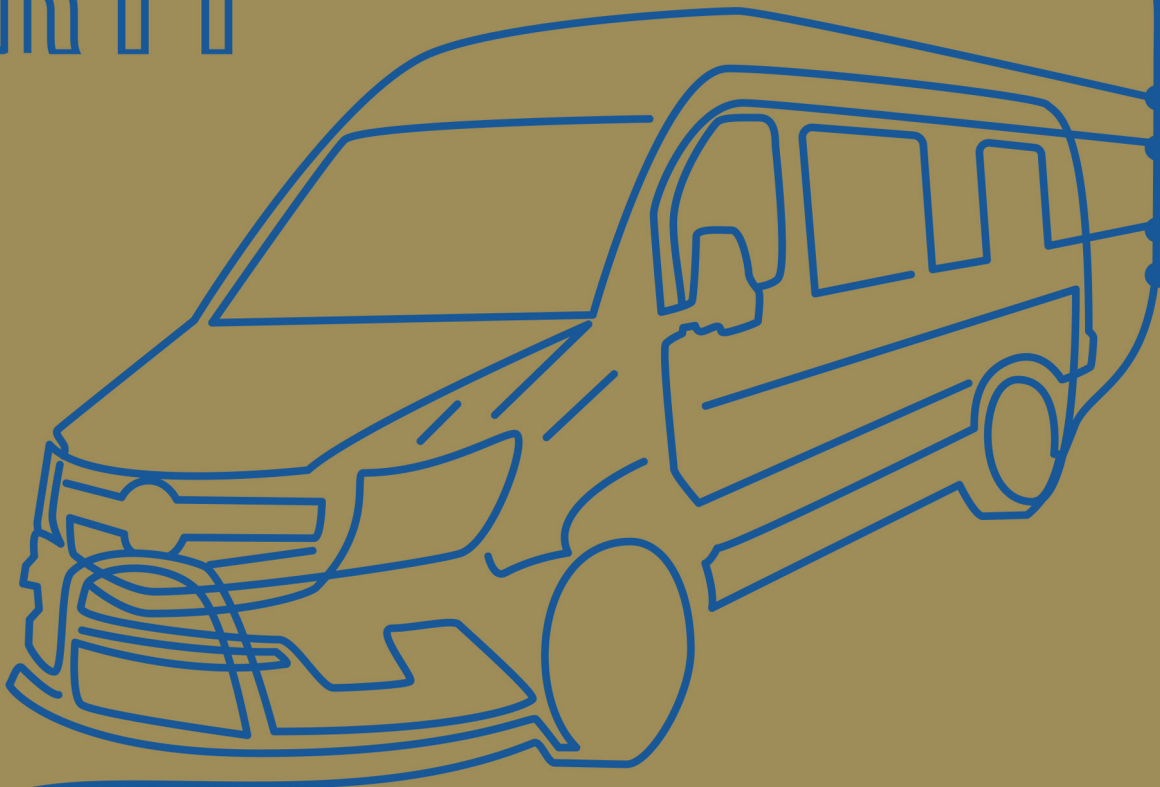
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