

## Game of the Future

Yesterday Rheinmetall launched the Lynx in an Infantry Fighting Vehicle configuration (covered in the article next page) at Eurosatory. At this occasion ESD Spotlight spoke with Rheinmetall's CEO Armin Papperger about the technologies, systems and future trends his company focusses on. The interview was conducted by Dorothee Frank.

**ESD Spotlight:** What is the main focus of Rheinmetall's presentation at Eurosatory?

**Papperger:** First we have the new Lynx, that we see as a family of infantry fighting vehicles – IFV. Second we focus on solutions for short-range air defence protection system – especially the German NBS – this is the Skyranger system that we present here on the Boxer. Third we show a lot of electronic solutions, especially from the areas of command & control and battle management. So here at Rheinmetall you can see solutions ranging from soldier systems to a complete battle management.

**ESD Spotlight:** Has Lynx been created for a special customer or new international markets?

**Papperger:** It was created for international markets and I see quite some opportunities there. With the Puma we already offer an extraordinary good vehicle, but some countries told us that they need more capacity, they want to have more soldiers inside the vehicles. Now if you take a look at the new Lynx family, there we have the capability to have ten fully equipped soldiers in the back.

The second special point on Lynx is the variety and modularity this vehicle has. Today you saw the launch of Lynx as an IFV and tomorrow you will see the same vehicle as a command post. To change one simply has to take out the turret and you can create a command vehicle. Our engineers will do



that in few hours, so tomorrow you really see the same vehicle again, just in a different configuration. Armies might save a lot of money with this modular and adaptable Lynx.

Another idea of the Lynx – apart from modularity and more space – was to get maybe 80% to 90% of the performance of the Puma for 60% to 70% of the price. This does not mean, that Lynx is a cheap product. But at the end of the day there are a lot of countries around the world that are looking for the price per unit, especially

countries who need a lot of vehicles. So we reduced the price per unit.

**ESD Spotlight:** Is this the future, modular designs and reduced prices?

**Papperger:** I think modular design is the future because price is always an issue. At the moment the world is not very safe so armies need more equipment, but most of the governments have not enough budget for this. So yes, you are right, this sets the name for the game of the future.

### Launch of Rheinmetall's Lynx KF41 IFV

(df) The launch of Rheinmetall's Lynx KF41 has been quite an event yesterday. This infantry fighting vehicle (IFV) might be called "big brother" of the air-transportable Puma. But the really interesting thing is that Lynx can switch within few hours from one role to the other. Rheinmetall will show this during Eurosatory in presenting this special Lynx in IFV configuration yesterday and launching it today at 10.00 as a command & control vehicle.

This becomes possible due to the mission modules Rheinmetall has invented. "In the past, containers were used to store modules until whenever they were deployed. The modular option invariably resulted in unused resources and a waste of space and material," the company stated. "Rheinmetall mission modules can be directly deployed in standard ISO containers as a standalone solution, and thus play an active role in combat operations. And of course they

can still be installed in the roof cut out of the Lynx as flexibly as ever – in the remarkable short time of just two to four hours."

Focusing on the Lynx IFV presented yesterday, it was equipped with the new Lance 2.0 turret, so the same turret chosen by the Australian Army. On both sides this Lynx has a missile launcher with two Eurospike missiles.

On the new turret the company stated: "The Lance 2.0 turret is the next generation of the in-service Lance family and has been developed to improve its suitability for an IFV. Lance 2.0 has various enhancements that provide a troop of Lynx KF41 vehicles with a very high level of organic capability, thus allowing the troop to have a disproportionate effect on the battlefield. The Lance 2.0 features enhanced protection for critical subsystems against kinetic and fragmentation threats, improving system survivability during close combat. The next enhancement is the integration of the



new Wotan 35 electrically driven cannon that fires Rheinmetall's proven and in-service 35x228mm ammunition family. Lastly, the Lance 2.0 has two flexible mission pods fitted to the left and right of the turret that allow installation of a variety of sub-systems to give the turret a specialist capability. Examples of customer-selectable mission pods include dual Rafael Spike LR2 ATGMs, non-line of sight strike loitering munitions, UAVs or an electronic warfare package."

**Rheinmetall: Ext Pe6b C 241 & C 201**  
[www.rheinmetall-defence.com](http://www.rheinmetall-defence.com)

### New Electric Vehicle

(df) A little bit hidden a very interesting system made its debut in the military market at Eurosatory: the DSRaider tactical electric



manned vehicle. This vehicle first only had a civil version, EZRaider, but even that civil production line started just three months ago. And in these three months over 100 EZRaider were sold with one customer being the Israel Railways. EZRaider has already shown that it is especially suited to enter tunnels with. Pulling a wheeled stretcher EZRaider is also in use with medical units.

The company experienced that some militaries were interested in their quite unique vehicle, so they now present the military version at Eurosatory. DSRaider can carry up to 420 kg, is silent due to having an electric motor and has a low thermal signature. Training the driver only takes view minutes and the feeling while driving is like surfing or snow-boarding, with this changing of balance one can also control the vehicle.

"The Raider crates a new category in the field of personal tactical vehicle. The Raider's unique go-anywhere mobility character acts as a operational power-multiplayer of the user. The Raider's operation simplicity and high reliability and durability enhance operative advantages in a variety of operational scenarios with a high level of safety for the user. The Raider is an off-road advanced vehicle that can carry on board up to two soldiers with full combat gear," the company states on their vehicle. "DSRaider develops security and para-security applications based on electric-powered tactical manned vehicle that can transport soldiers and equipment through rough terrains which previously were only navigatable by foot."

**DSRaider: Hall 6 JH 497**  
[www.dsraider.com](http://www.dsraider.com)

### Launch of a Military Cloud

(df) At Eurosatory Thales launched cloud technology fitting the needs of military users. In civil life clouds are everywhere and everything, but due to special requirements most armed forces have so far not taken advantage of the advantages and capabilities clouds offer. Another problem was that civil clouds need almost unlimited bandwidth to work properly, something military won't be able to realize in most scenarios. Therefore the Thales Defence Cloud is a sovereign solution designed for constrained environments, enabling deployed forces to conduct their missions in total autonomy in the theatre of operations.

With its Defence Cloud offering and related connectivity solutions, Thales proposes a complete solution including secure, end-to-end hosting of data and applications. Users ranging from commanders in the home country to units deployed in theatres

of operation can access data in complete privacy in a dedicated environment that takes full benefit of Thales's cybersecurity expertise.

The Nexium Defence Cloud solution is both comprehensive and modular. An extensive range of configurations is possible to accommodate the requirements of very high-capacity, readily expandable infrastructure networks for HQ all the way down to an all-in-one box that transforms a Forward Operating Base into new cloud nodes in a matter of hours. This ability to interconnect systems and devices quickly and easily within ad-hoc command structures and organisations boosts mission effectiveness with no trade-off in security.

Equipment and applications can be deployed, configured and updated remotely so that the armed forces can focus on their core missions.

"Thales is bringing to armed forces, its expertise in secure, interoperable infor-



(Photo: Thales)

mation and telecommunication systems, combined with world-class capabilities in the key digital technologies of connectivity and IoT, Big Data, artificial intelligence and cybersecurity," said Marc Darmon, Thales Executive Vice President, Secure Communications and Information Systems. "With Nexium Defence Cloud, Thales is expanding the armed forces' arsenal with a new digital power that allows them to make decisions quickly and efficiently in real time at each decisive moment."

**Thales: Ext Pe6a B 500**

[www.thalesgroup.com](http://www.thalesgroup.com)

### Missiles and Air Defence at Diehl

(df) At Eurosatory Diehl Defence shows, among others, their modern air defence system, IRIS-T SLM. A special feature of this highly sophisticated system is the flexible software architecture that allows any national device to be added to the system. For example, Sweden will use the system with national radars. This flexibility is unmatched by other systems and will also allow any future technologies to be added or any part exchange to be realised with low customization effort.

Another outstanding feature is the realisation of system elements in standard containers. With this container based technology IRIS-T SLM is the first deployable air defence system totally autonomous of the vehicle. The containers might be added to any suitable national vehicle, also the vehicles might be changed during the life time. Other features include vertical launch



which provides comprehensive 360° protection against attacks from the air by aircraft, drones, helicopters, cruise missiles, guided weapons and rockets. The seeker is locked onto the target to be engaged during missile flight (lock-on after launch). Target data are updated during the flight via the data link.

The air defence system enables simultaneous engagement of several targets, even at very short range and with extremely short reaction times. The guided

missile is fired from eight launch canisters, using its thrust vector control for superior manoeuvrability. Due to its high degree of automation it is ideally suited for continuous operation with minimum staff requirements.

Other highlights at the booth include the guided and sophisticated missile section with solutions for almost any system in use in European armies, airforces and navies.

**Diehl Defence: Pav DE / Hall 6 H 567**

[www.diehl-defence.de](http://www.diehl-defence.de)

### Mortar Collaboration

(ds) Austrian mortar specialist Hirtenberger and Singapore's ST Engineering Land Systems have signed a cooperation agreement covering the joint marketing of the Singaporean 120 mm Super Rapid Advanced Mortar System (SRAMS) in combination with the Hirtenberger Defence Systems (HDS) mortar fire control system and mortar ammunition. The cooperation agreement between the two companies will initially last for three years and covers business opportunities in Europe.

The 120 mm SRAMS mortar system can be used from both wheeled and tracked platforms, system weight

is some 1,200 kg, equally significant is the low recoil load of the system which is rated at less than 26 tonnes at full charge. The system has semi-automatic ammunition transfer system that allows for a continuous firing rate of 10 rounds per minute, in comparison a conventional 120 mm mortar like the US M120 can only deliver a sustained rate of fire of four rounds per minute. Another important SRAMS feature is the patented blast diffuser that reduces blast overpressure in the mortar area during firing, even when performing a continuous fire mission at top charge. The SRAMS is operated by a crew of three.

HDS is integrating their ARC-FIRE mortar fire control system with SRAMS, this fire



control system is designed to be simple to use to allow rapid and accurate target engagement. The system allows for the development of a mortar fire plan and then the management of the actual fire mission.

It offers digital mapping and integrated GPS, and uses standard radios for communication and data transfer.

The other HDS contribution is their extensive range of 120 mm mortar ammunition. This includes the Mk2 HE-TNT nature and the Mk3 HE round using Hirtenberger's Confrag system to offer increased lethality through the

more effective mass, velocity and distribution of fragments. There is the Mk2 practice round and three different types of smoke rounds, with white phosphorus,

red phosphorous or Titanium Tetrachloride (TTC) fillers. In addition there is a visible illumination round and an infrared illumination round. This ammunition family offers a maximum range of out to 9 km.

It is significant that the cooperation agreement was signed between ST Engineering Land Systems and HDS in the form of Hirtenberger Defence International Ltd, which is incorporated in the United Kingdom. Alexander Muller, the Managing Director of HDS, said that the British arm of HDS had been established in March 2016 and was particularly complimentary about the assistance that they received from the UK Department of International Trade in establishing their new company in Britain.

The British company is more than a representative office, it is also a production site for mortar rounds and a significant high volume order has recently been received from an undisclosed country in the Middle East for 60 mm mortar rounds, they have also received a major order from an Asian country for a substantial quantity of 60 mm and 81 mm mortar rounds. By the time they submit their financial figures next year, the British company will be profitable, the fact that this will have been achieved in three years is a tremendous performance.

The way that HDS envisage matters developing is that HDS in Austria will handle European customers, while the British company will cover the UK market, those areas where the UK has strong traditional links, like the US and Australia for example, and other international customers. With this increased production capability in Austria and the UK, added to the enhanced market access possible from opening the UK operation, the company believes that it can significantly increase its turnover. Another contributor to improved results will be the interest in further developing the Confrag technology of HDS. Potential customers are looking to use the technology in calibres from as low as 40 mm and as high as 155 mm.

**Hirtenberger: Hall 5A H 388**

**ST Engineering: Hall 6 K 420**

<http://hds.hirtenberger.com>

[www.stengg.com](http://www.stengg.com)

### New Compact Infrared Lenses

(df) MKS Instruments has launched the Ophir SupIR family of compact infrared lenses, designed for use in 10-12µm pixel size uncooled cameras, at Eurosatory. The new collection includes 11 lenses optimized to meet reduced size, weight, and power (SWaP) standards. They deliver high MTF and range from 2.4mm f/1.0 athermalized

fixed focus, to the new LightIR 15-75mm f/1.2 motorized continuous zoom, with fields of view (FOV) from 91.9 to 2.4 degrees. The lenses work with a variety of camera formats, including VGA and XGA.

"The latest market trend is a shift to smaller, 10-12µm pixel size cameras," said Yitzhak Raif, VP and GM of the Ophir Optics Group. "To address the needs of these

next generation devices, we've worked with major camera manufacturers to refine our designs. The new collection of lenses responds to demanding SWaP standards. This results in a reduction in the size of the optical element, as well as a shortened focal length and longer detection range."

**Ophir: Hall 6 / D 350**

[www.ophiropt.com](http://www.ophiropt.com)

### Launch of a New 3D Multifunctional Radar

(df) At Eurosatory HENSOLDT showed its newly developed TRML-4D radar system for ground-based air defence for the first time. The 3D multifunctional radar, which belongs to the proven TRS-4D radar family, will deliver rapid response detection and tracking of approximately 1,500 targets in a radius of up to 250 km and at an altitude of up to 30 km.

TRML-4D uses the latest AESA radar technology (AESA = Active Electronically Scanned Array), which enables the acquisition of targets after just one rotation of the antenna, thus improving the response time and hit probability even in a complex

environment with a high target density and involving highly agile and asymmetric threats. According to the company HENSOLDT has set up a precise coordination of all the antenna elements in the C band (NATO G band) and special signal processing modes, so the radar can provide extremely exact information on the targets, thus guaranteeing early and precise weapon assignment. An integrated secondary radar system for identifying friend or foe (IFF) has been integrated to prevent friendly fire. The high performance of the radar is largely due to the great number of transmit/receive (T/R) modules in the antenna, which are made from special RF-capable materials.



(Photo: HENSOLDT)

The system can be transported by air in an A400M or C130 transport aircraft, but can also be transported by rail. One customer has already placed an order for ten systems.

**HENSOLDT: Pav DE / Ext Pe6b C 170**

[www.hensoldt.net](http://www.hensoldt.net)

### French Army Leases SkyStar

(df) The French Army has made a leasing agreement with RT on their SkyStar. "The SkyStar 180 aerostat system is currently in operational use by the French army, under a leasing agreement," said RT's CEO Rami Shmueli. "We look at the French Army and the French nation, which are very important for us, as one of the leading forces in the world, and we are honored to provide our leading SkyStar 180 aerostat system to support their mission. I can already say that the feedback we are getting from them is positive."

The SkyStar aerostats are a self-contained, versatile, and easily transportable tactical

systems, ideal for defence, border security, HLS and public safety missions. Offering availability of over 85% in any given area, the SkyStar systems already accumulated more than 1,500 billion operational hours worldwide.

The SkyStar 180 is a small-sized mobile aerostat, designed for tactical mid-range surveillance and public safety, as well as for police and military applications. Based on a towable trailer, the system has a stabilized day/night electro-optical payload suspended from a helium-filled aerostat, tethered to a ground system. It operates continuously at wind velocity of up to 40 knots, and can lift a payload of up to 20 kg,

providing surveillance coverage from an altitude of up to 1,000 ft. for up to 72 hours, after which it is brought down for a 20-minute helium refill. Only 2 people are required to fully maintain the system. SkyStar 180 is Ideal for defence, security, border control and public safety missions.

**RT: Hall 6 E 751**

[www.rt.co.il](http://www.rt.co.il)



### Lightweight Protection by DSM Dyneema

(df) Royal DSM present their Dyneema materials used by armour manufacturers to create hard and soft ballistics solutions at Eurosatory. The material is shown in certain examples of armour solutions developed by DSM's customers in a wide range of fields, including vehicle and personal protection.

For example spall liners made with Dyneema UD are a proven solution, offering protection whilst being much lighter than those made from alternative materials. Also, components like RPG nets, slings, synthetic link chains and radomes are made safer, stronger and lighter with Dyneema fiber. Being lighter improves mobility, and offers the potential to increase payloads and enhance fuel efficiency.

Next to enabling the lightest weight ballistic protection compared to alternative materials, solutions with Dyneema require less material to achieve a given performance and have a high durability and long service life, they represent the lowest carbon footprint in application lifetime.

**DSM Dyneema: Hall 6 H 80**

[www.dyneema.com](http://www.dyneema.com)

**Undersea Defence Technology 2018**

Undersea Defence Technology (UDT) strives towards and continues to deliver a platform for the subsea community to gather and discuss the industry's most pressing questions, prominent technologies and innovative solutions. UDT will see international companies encompassing prime contractors, systems integrators, service providers and small & medium enterprises meet and network with over 1,400 industry influencers, government decision makers and senior military officials.

**June 26-28, Glasgow, UK**

**SEDEC**

It is aimed to bring together both national and international authorities and buyers from both the state and the private sector showcasing latest technology in border security, homeland security, secure city sectors. In addition, medium and small businesses in the defence industry supply chain will have the opportunity to demonstrate their products and capabilities to manufacturers of defence materiel.

**July 3-5, Ankara, Turkey**

**MS&D – International Conference on Maritime Security and Defence**

In its 10<sup>th</sup> year of existence, MS&D – the international conference on maritime security and defence – will attract more attention than ever. During the extended two-day conference, speakers and lecturers will address pressing topics – including cybersecurity, climate change and naval technology. Be part of it and seize the opportunity to get together with high ranking global delegations.

**September 6-7, Hamburg, Germany**

**ADEX**

Azerbaijan International Defence Exhibition, ADEX, is the largest event in the region, the aim of which is to present a wide range of military products while promoting the innovative development of the Azerbaijani military-industrial complex. The exhibition is also a platform for cooperation between foreign arms-producing companies and the Azerbaijani military departments and defence industry enterprises.

**September 25-27, Baku, Azerbaijan**

**XI INTERNATIONAL AVIATION AND SPACE SALON AVIASVIT-XXI**

Aircraft and rocket engineering is the subject of national pride for many generations of Ukrainians and „Aviasvit-XXI“ is the display area in Ukraine for showcasing innovative solutions and technology in this segment. XI International Aviation and Space Salon „Aviasvit-XXI“ is a professional platform where science, business and government meet in order to join forces to resolve global and applied objectives for the development of the international aerospace industry.

**October 9-12, Kyiv, Ukraine**

**XV INTERNATIONAL SPECIALIZED EXHIBITION ARMS AND SECURITY**

In recent years, the Ukrainian security and defence sector has gained invaluable experience whilst also actively engaging new technologies developed by its international partners. International Exhibition "Arms and Security" is a large-scale multi-domain exhibition for defence, homeland security, emergency and civil protection services. The exhibition is held according to a decree of the Cabinet of Ministers of Ukraine which guarantees the presence of Ukrainian top leaders and a high level of international audience.

**October 9-12, Kyiv, Ukraine**

