MILITARY TECHNOLOGY

MILTECH

Day 3
24 June 2022

International Defence Show Daily

BEFORE WE BEGIN Essential Information

Official Show Dailies

Seven Magazines in Five Different Languages

THE MAGAZINE

Industrial News

Exclusive Statements

360° View on Programmes

Expanded Interviews

YOU TUBE

Mönch Publishing Group

Continued Information

LINKEDIN

Procurement & Industry Updates

MON

Mönch Online News: **monch.com**

TWITTER

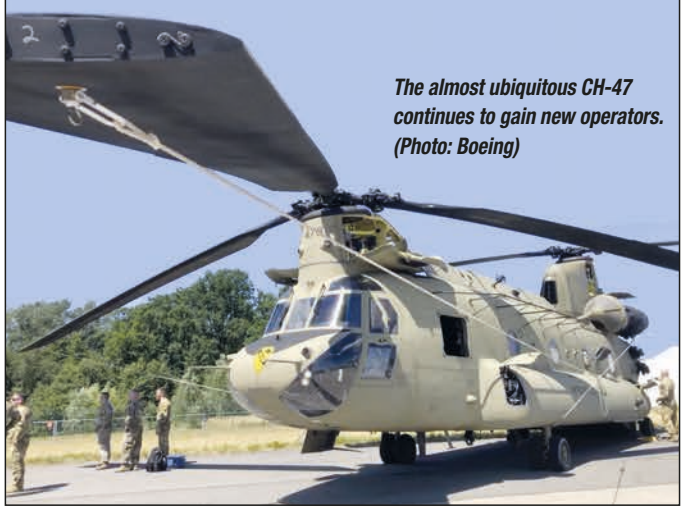
@MONCHPUBLISHING

Photographic Recaps

MILITARY TECHNOLOGY

Contents

Index of Advertisers



The almost ubiquitous CH-47 continues to gain new operators. (Photo: Boeing)

Mönch Verlagsgesellschaft mbH
(Mönch Publishing Group)

Editorial Team:
Tim Mahon (tm)
Dr. Theodor Benien (tb)
André Forkert (apf)
Dr Stefan Nitschke (stn)

Publishers: Uta & Volker Schwichtenberg
Executive Associate and CEO: Volker Schwichtenberg
Executive Associate, CEO and Lawyer: Uta Schwichtenberg
Deputy Managing Director: Christa André
Cover and Layout: Frank Stommel

Editor-at-Large: Dr Ezio Bonsignore
North American Bureau Chief (New Orleans): Marty Kauchak
NATO & EU Affairs Correspondent (Brussels): Caterina Tani
Publishers: Uta & Volker Schwichtenberg

US Office: 1326 St Andrew Street, Unit B, New Orleans, LA 70130-5124

Correspondents: Massimo Annati (Italy); Marco Giulio Barone (France); Angus Batey (UK); Dr Theo Benien (Germany); Philip Butterworth-Hayes (UK); Atul Chandra (India); Tomás Chlebecek (Czech Republic); Dr Robert Czulda (Poland); Peter Donaldson (UK); Arie Egozi (Israel); Tim Fish (New Zealand); Kubilai Han (Turkey); Eugene Kogan (Georgia); Denys Kolesnyk (France); Edward Lundquist (USA); Georg Mader (Austria); Stephen W Miller (USA); Jörg Muth (Estonia); Trevor Nash (UK); Dr Stefan Nitschke (Germany); Santiago Rivas (Argentina); David Saw (France); Andrew White (UK); Dr Thomas Withington (France)

Executive Associate and CEO: Volker Schwichtenberg
Executive Associate, CEO and Lawyer: Uta Schwichtenberg
Founder: Manfred Sadlowski
Deputy Managing Director: Christa André
Cover and Layout: Frank Stommel

Mönch Verlagsgesellschaft mbH:
Christine-Demmer-Straße 7
53474 Bad Neuenahr-Ahrweiler
Germany
Tel.: +49-2641 / 3703-0
Fax: +49-2641 / 3703-199
E-Mail: miltech@moench-group.com
www.monch.com

Other journals of the Mönch Verlagsgesellschaft mbH are:
- NAVAL FORCES (six times yearly in English),
- WEHRTECHNIK (quarterly, in German),
- RIVISTA ITALIANA DIFESA (monthly, in Italian)
- TECNOLOGIA MILITAR (twice a year, in Spanish)
- AL DEFAIYA (bi-monthly, in Arabic)

MILITARY TECHNOLOGY is available to qualified circles within governments, military related organisations and industries.

Your MILITARY TECHNOLOGY Contact

Asian Eastern Pacific (ASEP)
Mr. Vishal Mehta
PO Box 11328
IARI, New Delhi 110012
India
Mobile: +91 99 999 85 425
E-Mail: vishal.mehta@moench-group.com

Belgium, France, Pakistan
Mr. Georges France
Mönch Verlagsgesellschaft mbH
6, impasse de la Grande
F-91510 Janville-sur-Juine
Tel.: +33 1 60 82 98 88
Fax: +33 1 60 82 98 89
E-Mail: georges.france@wanadoo.fr

Italy
Mr. Franco Lazzari
RID
Via Martiri della Liberazione, 79/3
I-16043 Chiavari (GE)
Tel.: +39 01 85 30 15 98
Fax: +39 01 85 30 91 71
E-Mail: franco.lazzari@rid.it
lazzari@moench-group.com

Portugal, Spain, Latin America, Middle East
Mr. Antonio Terol Garcia
Tel.: +34 91 3 10 29 98
Fax: +34 91 3 10 24 54
E-Mail: antonio@terolgarcia.e.telefonica.net
terol@moench-group.com

Australia, Canada, Scandinavia, UK, USA
Mrs. Sally Passey (Director)
BSP Media
Tel.: +44 7968 714280
E-Mail: sally@bspmedia.com

Editorial

INTSIG – Intelligent Signals

It's official.
The world has gone nuts, nothing is real and image is everything.

That is, admittedly, a somewhat exaggeratedly apocalyptic view and true reality (as opposed to the virtual kind so much in evidence in our industry today) is that there is a solid layer of pragmatism and an appreciation for 'doing the right thing' that underlies a lot of what we do as an industry and a community.
But there is a disturbing element of 'spin' that colours our perceptions and can often divert focus and distract attention from the important, substantive that we, our peers and our representatives do on a daily basis.

Take, for example, the visit made by Chancellor Olaf Scholz to ILA on Wednesday, 22 June. With (presumably) limited time available away from his primary job of running the country, he elected to visit only two companies: Airbus (which, of course, has a very significant German component in terms of ownership, workers and revenues) and US giant contractor Boeing. That attracted some criticism: why no visit to an overtly German company – Rheinmetall, Hensoldt, Diehl….? [Show Daily should add those names are exemplars only and do not imply any such statement from those corporations]. Further, at Airbus, the Chancellor evinced greater interest in the airliners manufactured by the European conglomerate rather than any of the panoply of defence solutions it is promoting. And although the Boeing visit focused on the P-8 – a platform already covered in these pages as presaging a step change in capability for the Bundeswehr – additional criticism has been heard in the halls at ILA, centering on why no visit to Lockheed Martin to highlight the very significant German investment in the F-35 and, indeed, why the Boeing visit did not take in the CH-47F.

The problem is, of course, that the criticisms and the supportive comments (there were some of those too, but they don't make such good headlines) are driven by ignorance. We do not know how much time the Chancellor had available; we have no insight into the advice given him by his aides, or the contents of his briefing book; we certainly have no direct knowledge of the tenor of the conversations he held; and we are entirely ignorant of the message(s) he wanted to signal to the watching community. Thus, in the absence of knowledge, we revert to speculation.

Let us indulge in a little alternative speculation. Perhaps the Chancellor is more interested in the potential search and rescue utility of the P-8 than in its ASW capabilities – or sees the potential assistance it can render in a humanitarian disaster as being of greater importance to the voting public. As far as the airliner interest is concerned, was he, perhaps, an aspiring pilot as a small boy? None of this matters, of course, except to illustrate that it seems to matter to us and we will fill the vacuum of certainty with the potentially poisonous potion that derives from conjecture.

And all that is passive – we have not yet begun to consider what messages the Chancellor wished to send – if any. Would visiting active German defence companies have exacerbated tensions within his own party and the Bundestag at large, at a time that the dramatic about turn in Germany's defence posture and policies are causing a debate that threatens to become acrimonious at a moment's notice?
Is the visit to Airbus meant to signify faith in and support for the concept of pan-European industrialization? With limited time available, is it better focus time and public attention on the benefits accruing from investments in dual-purpose platforms, or from aerospace jobs? Did he simply want to indicate even-handedness – two companies visited, one with a civil aerospace emphasis, the other with a defence one?

Then truth is we will probably never know. But that recognition reveals a deeper truth:
it really doesn't matter, except to politicians of every stamp.
And politicians, while they play an important role in the defence and security communities, are not the final arbiters of behaviour.

We have become too obsessed with image and too dismissive of the importance of substance. Correcting that is becoming a matter of urgency so that a better-informed public can take better curated decisions on a host of issues from climate change and energy security to space exploration and defence.
And that is why events such as ILA are so important, providing the locus, the environment and the forum for intelligent debate, discussion and dissemination of information. Why waste time in idle, fruitless speculation as to what the actions of any one individual mean (with the possible current exception of Vladimir Vladimirovich Putin)?

INTSIG – the art and science of intelligent signalling of intent, of import and of impact – is alive and well. Let's not waste the facility….

Tim Mahon
Editor-in-Chief of MilTech

A Quantum Leap in Live Electronic Warfare Training

IAI's Scorpius-T advanced multi-threat emitter solution for use in live EW training. (Credit – IAI-ELTA)

As technology advances, so too do the threats in the multi-dimensional electronic battlefield. The challenges to air forces are daunting. Examples include long-range air surveillance and defense radar, advanced surface to air missiles, fighter aircraft, and other rapidly evolving threats.

It is imperative that air crews be trained to survive and successfully complete their objectives in face of the growing threats. This requires upgrading legacy training ranges in order to allow pilots to train in a realistic environment that emulates modern air-defense systems, and to constantly change the threats and their locations in order to challenge trainees and optimize the training effectiveness.

To this end, Israel Aerospace Industries (IAI), Israel's largest aerospace and defense company, has leveraged its rich technological heritage and culture of innovation to field the **Scorpius-T** (ELL-8257SB) advanced multi-threat emitter solution for use in live Electronic Warfare (EW) training and systems testing and evaluation.

AESA EW: A Game Changing Technology

Scorpius-T is based on IAI-ELTA's Active Electronic Scanning Array (AESA) technology. Built with a staring array of wide-band solid state transceivers, AESA provides a dramatic increase in receiver sensitivity, Effective Radiated Power (ERP), and scan rate – far exceeding legacy EW solutions. The latter, with their traditional dish antennae, can transmit to a given location in the sky and then slowly scan but they are incapable of mimicking modern air defense and missile radar systems, which employ fast electronic scanning and advanced modes such as simultaneous search and track. AESA technology overcomes these limitations: it enables instantaneous electronic scanning, thereby facilitating the emulation of modern threats in the aerial arena as never before seen in EW trainers. In addition, AESA offers multi-beam operation, giving the system the ability to simultaneously emulate multiple threats and radar modes towards trainees' aircraft across the sky.

Train Hard, Fight Easy

Leveraging AESA's exceptional flexibility, Scorpius-T is able to emulate the wide array of threats encountered in today's aerial battle arena. The system facilitates the simultaneous engagement of multiple trainee targets with a selection of emulated radar emissions, legacy and modern, that are virtually identical to those of the actual fielded systems. Moreover, an easily programmable and updatable threat database ensures that the system will deliver realistic and up-to-date training in the future.

Scorpius-T's capabilities are unprecedented, with diverse training scenarios to challenge fourth and fifth fighter aircraft. In particular, advanced fifth generation fighters are equipped with highly developed internal radar and EW systems. Only a modern AESA trainer can provide realistic threat emulation and properly challenge and exercise pilots operating these sophisticated aircraft. Flying against Scorpius-T, pilots will experience a close simulation of the actual threat – effecting cockpit alerts as if the aircraft was being engaged by an advanced missile system. No other training system currently available can provide this experience.

Scorpius-T also supports large scale, complex exercises by simultaneously generating multiple radar threats and engaging multiple aircraft. AESA makes this possible by enabling the system to track multiple aircraft and transmit tailored signals directly at the identified targets to provide a realistic signal-dense, multi-threat training environment for aircrews and EW operators. The system is also designed to support EW system testing and evaluation.

Easily Deployed

Mounted on a single, rugged, off-road vehicle, Scorpius-T is easily positioned where needed. Additional units can be networked and positioned to accurately replicate an actual operational integrated air defense system (IADS).

Let the Training Begin

Scorpius-T is equipped with a Command and Control Center (CCC) where training scripts are prepared along with the rules of engagement for each trainee. The system operators program the emulated anti-aircraft radars, including their full activation sequences – from search, acquisition and track, to launch. The pilots receive their flight paths and the CCC prepares "surprises" to test the pilots' proficiency and ingenuity in dealing with the various threats in real time.

The exercise commences – fighters, unmanned aircraft, and helicopters which move through the arena in accordance with the scripts. Multiple threats engage the incoming aircraft, forcing the pilots to react. To further complicate the mission and challenge the trainees, additional surprises are introduced by launching simulated missile attacks. The system can quickly react or update simulated threats and their parameters as part of the shifting scenario. The system's highly sensitive AESA receivers continuously evaluate the aircraft ECM response. Scorpius-T is also able to transmit ECM against aircraft radars to test pilot's reaction in a cluttered environment.

Upon completion of the exercise, the trainees review their performance in an in-depth post-flight debriefing. The staff can then review in-flight performance highlights and what-if analysis geared towards improving flight tactics, the use of on-board systems, and more.

First Exposure: Blue Flag Exercise

Scorpius-T's first publicized deployment in live combat training took place in October 2021, as part of the Israeli Air Force's biannual Blue Flag exercise – with the participation of seven air forces from around the world. At the Israeli Air Force's invitation, IAI-ELTA successfully deployed the Scorpius-T system in order to provide the first ever live training against advanced air-defense threats that are highly relevant to the participating forces.

A Proven Track Record

IAI offers an extensive portfolio of high-performance and field-proven payloads and a wide range of platforms; from strategic ISR satellites, multi-mission aircraft and UAVs, to tactical drones and ground systems. System solutions cover integrated EW (ESM/ECM), Radar, EO/IR, IMINT, Launch Detection Systems (LDS), SAR/GMTI, SIGINT, and cyber. Scorpius-T, with its new, innovative approach designed to truly prepare air crews to deal with the latest threats, continues IAI-ELTA's long legacy as a trailblazer in advanced defense electronics.

IAI

Initial deliveries of the CH-47F Block II heavylift helicopter could start by the first quarter of 2026. (Photo: Stefan Nitschke)

Delivering a Very Reliable Heavylift Helicopter to the Bundeswehr

The German Air Force's fleet of ageing CH-53s needs to be completely replaced with the CH-47F by 2030. (Photo: Volker Schubert)

Germany's requirement for 60 heavylift helicopters (STH *Schwerer Transporthubschrauber* in German) is a very urgent one.

Replacing the ageing CH-53 MTH (Medium Transport Helicopter), two American manufacturers – Lockheed Martin/Sikorsky and Boeing – competed for a multi-billion dollar contract. The CH-53 currently in service is an obsolete platform, procured to fulfil requirements based upon evaluations made in 1966. Several modernisation/upgrade initiatives were needed over the years to cope with rapid advances in technology, as well as changing mission requirements. Forty aircraft, for example, were equipped with an automatic flight control system and a four-axis autopilot. To provide the Bundeswehr with more advanced capability, which is needed in response to the 'lessons learned' from its missions in the Balkans and in Afghanistan in particular, the government in Berlin signed on to Europe's largest single rotary-wing procurement programme, worth €3-4 billion ($3.7-4.9 billion).

Inflight Refuelling is Not an Option – It's an Absolute Must

The winning bidder in a (too) long-lasting decision-making process, Boeing will deliver its CH-47F Block II Chinook as a 'force multiplier' to facilitate the Bundeswehr's re-orientation towards national and collective defence. Germany will be the second international customer for the aircraft, after the UK. Besides the US and the UK, the aircraft is in service with a number of other international users, including Canada, Greece, the Netherlands, South Korea, Spain and Turkey. The Dutch *11 Luchtmobiele Brigade*, for instance, operates the Chinook as its own force multiplier, and is currently assigned to Germany's Rapid Forces Division (DSK - *Division Schnelle Kräfte).* The successor aircraft should be able to conduct the tactical transport of troops and their equipment, as well as providing special operations support. In addition, the Bundeswehr should be able to sustain NATO force demands for a Combat Search and Rescue (CSAR) capability in particular, for which the venerable CH-53G Stallion is not an option.

Furthermore – and herein lies the principal point, the Bundeswehr will receive an aircraft able to refuel inflight. "*We are working hard to bring this capability to the German customer*," said Boeing's Marc Cherry at a press conference on 22 June. All 60 Block II aircraft will be in a single configuration with that capability, he added. Dr Michael Haidinger, who has served as Boeing's Senior Executive in Germany, Central and Eastern Europe, Benelux and the Nordics since July 2017, concluded that the procurement procedure is progressing. "*Hopefully, the contract will be signed at the end of the year […]".* (stn)

Versatile, Reliable, Adaptable NSM Meets Operational Needs

The big picture for anti-shipping missiles has clearly changed in recent years, particularly due to the ramp-up of several new programmes, in order to add a land attack capability.

The challenges derive from emerging threats ashore. To keep today's anti-shipping capabilities in shape, the military needs to find alternatives to avoid dramatic obsolescence risks, replacing huge inventories of legacy systems like the Exocet MM38 or Harpoon. Arguably the biggest challenge is to replace the variety of systems that do not cope with present-day needs: battlespace dominance (neutralisation of land and sea denial systems) and power projection ashore, directed at time-critical targets such as relocatable assets. Sophisticated candidates, like Kongsberg Defence and Aerospace's Naval Strike Missile (NSM), are set to cope with the extended mission roles of the next generation of naval assets, including shipboard aviation. The NSM is Norway's answer to navies' growing demand for a longer-range precision strike weapon. It will out-range many legacy systems: shipboard helicopters can now deploy the air-launched version of NSM. Kongsberg seems to be very happy with the development so far. "Every variant is optimised for its market," the manufacturer states, adding that it is the world's only fifth-generation naval strike missile with a land target capability.
(stn)

Meeting the requirements for air-launched anti-ship missile with land attack capability for the next generation of combat aircraft and helicopters, the NSM offers a 200+km (>108nm) operational range. (Photo: Kongsberg Defence and Aerospace)

Airbus Shows H225 as Germany's Next Police Helicopter

The H225 will form the basis of the Airbus bid to supply the next tactical and support helicopter for the German Federal Police. (Photos: André Forkert)

The German Federal Police (Bundespolizei) urgently needs to replace its aging fleet of medium transport helicopters. Their availability is often too low, which presents a problem, because they are also intended for the rapid deployment of GSG9 – the Federal Police's special forces.

On 22 June at ILA, Airbus Helicopters provided an insight on the H225 as the centrepiece of its offer for the tender – though declining to comment on 'ongoing tenders and projects.' The company is displaying an aircraft from GHS (Global Helicopter Service), which flies them worldwide, mainly for NGOs and the United Nations, offering materiel, personnel and MedEvac transport. Since ground technical support is often unavailable to crews, the aircraft itself has to be supremely reliable.

According to Airbus, there are currently more than 230 H225s flying worldwide, many for military or other governmental authorities. The H225 is the civilian variant, the H225M the military one. The difference lies in the latter allowing for easier integration of kits and certain sensors – EW suites, for example. The H225M can also carry weapons but, from a logistics standpoint, the two models feature a great degree of parts commonality. The H225 offers more payload, range, air-to-air refuelling options and more fuel capacity than previous versions of the Super Puma family. It also features a 5-blade rotor configuration, an improved cockpit, different engines and a Cold Weather Kit – useful at temperatures down to -45°C. NVG (Night Vision Goggle) is also compatible, and a special feature lies in the cold start capability. According to Airbus, the aircraft is ready for take-off four minutes after "*the pilot enters the cockpit*" – not an unimportant aspect for rescue or special forces missions. The winch operator can not only control the winch with his joystick, but also the autopilot to a limited extent and thus move the machine three-dimensionally by small increments, without having to issue voice instructions to the pilot.

Hungary will be the first customer to use the Airbus HForce system on its H223M aircraft, having already implemented the solution for its H145Ms.

Various kits are already offered as upgrade options for the H225: Cold Weather, Search & Rescue (SAR), Combat Search & Rescue (C-SAR), VIP equipment, internal and external auxiliary tanks for extra range, special forces and firefighting. The H225 can carry up to six prone casualties, or 19 squad seats.

Kuwait is currently receiving an H225 version for its police special forces. France's special forces - RAID and GIGN - also use the Super Puma currently, and are looking into switching to the H225. For the German Federal Police, the H225, i.e. the civilian version, will probably be offered.

HForce

HForce is a mechanical and electrical infrastructure for defined weapons, which is integrated into the helicopter's communication system via a powerful fire control system. The precise system controls aspects such as weapon recoil, centre of gravity, ground clearance and separation of projectiles/missiles from the helicopter. To realise the system quickly and competently, Airbus has assembled an extensive industrial team whose numerous components have been successfully integrated.

The weapons platform covers the entire operational spectrum of threats: air-to-ground and air-to-air. To this end, ballistic weapons (12.7mm machinegun, 20mm automatic cannon and 70mm rockets) as well as laser-guided missiles and air-to-ground (on request) or air-to-air missiles (as a booster) are offered as system elements. This creates an armed multi-role helicopter.

HForce offers four upgrade levels (options). (apf)

Counter-Air Defence Capabilities Mature

The AARGM is a logical fit for the Eurofighter ECR. (Photo: André Forkert)

Air power faces completely new forms of surface threats that will certainly influence doctrine over the next several years – or even decades.

Emerging Risks

The threat from Integrated Air Defence Systems (IADS) is real. These are typified by a highly modular design and open system architecture, allowing the introduction of advanced multifunction radar technologies, battle management systems (BMS) and the latest interceptors and effectors. The Air Force Assessment, Coordination and Engagement Branch at the Joint Air Power Competence Centre (JAPCC) noted in 2018 that the robustness of modern IADS goes even further. They can operate in either standalone or joint targeting modes, using network-centric warfare type tactics, while deriving the Air Situational Picture (ASP) from existing, distributed sensors. "*Systems of this kind can be integrated with airborne platforms for centralised command and control (C^2), making it difficult to engage them*," JAPCC stated. This is why SEAD [suppression of enemy air defences] functions constitute a strategic imperative.

The Way Ahead

Anti-Radiation Homing (ARH) missiles – along with reconnaissance, stand-off jammers and other EW assets, will continue to form an integral part of modern air forces' strategic capability to counter these threats. A key driver is Northrop Grumman's Advanced Anti-Radiation Guided Missile (AARGM), now coming on stream with several NATO air forces and which will be capable of engaging traditional and advanced land- and sea-based air defence systems, as well as engaging non-radar time-sensitive targets. AARGM is the result of observations made during air operations in Kosovo, Iraq and, perhaps, Libya. During these conflicts, surface-to-air radar tactics and capabilities shifted in such a way that the existing AGM-88B High Speed Anti-Radiation Missile (HARM) used by NATO air forces in a number of SEAD campaigns outlined deficiencies to hit radars.

Key AARGM upgrade components to the legacy AGM-88B include the advanced ARH sensor, the active millimetre wave (mmW) terminal guidance system and the Digital Terrain Data (DTED)-aided SAASM [Selective Availability Anti-Spoofing Module] GPS/INS. According to a source at Northrop Grumman Innovation Systems (NGIS), the ARH sensor is the "*initial key to the system*" to detect and then pass angle-of-arrival (AOR) information to the AARGM's guidance and control processing system. The AOR is combined with DTED information to provide a GPS coordinate – which then becomes the sensor focus when the hostile radar shuts down. Until then, the combined sensor system refines the threat radar location as long as it continues to transmit. "*Once the threat radar shuts down, the GPS threat location becomes the primary guidance to place the endgame terminal mmW seeker in position to scan a volume to find the radar, missile launchers or support equipment*," a company source explained. When used in a complex DEAD [destruction of enemy air defences) scenario, the AARGM requires an RF signal to provide a targeting capability, however. The missile can be used as a point-to-point GPS type of weapon against time-sensitive targets; target coordinates will be required for this capability.

Next Steps

The AARGM is sold only through the Foreign Military Sales (FMS) process, meaning that potential new customers must provide the US government a formal request for AARGM that most often takes the form of a Letter of Request for a classified capability briefing and/or a request for pricing and availability information. This initial request for information initiates the US government's Exception to National Disclosure Policy (ENDP) review that culminates in an ENDP Committee review. Once the potential new customer is approved by the committee, information will "*begin to flow for them to make a more informed decision to procure AARGM*," an industry source explained. Via the FMS, and with support from the NATO Support and Procurement Agency (NSPA), Germany will be the latest customer; the German government decided in March 2022 to procure 15 examples of a variant of the Eurofighter that can be deployed for SEAD operations.

With the AARGM-ER (Extended Range), Northrop Grumman is taking the next steps. The manufacturer outlined that there are options for the integration of AARGM-ER on the F-35 – it is designed to fit in the internal weapons bay for both the F-35A and F-35C, according to information contained in various USN budget documents. The ER variant might double the operational range of the current AARGM to, say 150 kilometres. An initial operational capability is anticipated by around 2023. With AARGM, operators will have a significantly improved ability for DEAD (as opposed to simple SEAD) against evolving threats.

Conclusion

'Lessons learned' from the current war in Ukraine prove the contention that, "*rapidly improving IADS need to be countered by completely new abilities*." As the electromagnetic spectrum is becoming the "*warfighting domain of the future*," where peer and near-peer adversaries are expected to pose serious risks for friendly forces, modernisation of existing assets is becoming essential while developing the full spectrum of air power in the 2020s. (stn)

Five Minutes with HENSOLDT

HENSOLDT plays certain functions in a growing number of military programmes today. The manufacturer is active in the development, manufacture and supply of navigation, surveillance and security radar systems in use by many national and international operators. At ILA in Berlin, Joachim Schranzhofer, Hensoldt's Head of Communications and Marketing, spoke to Show Daily about the company's programmes and its future agenda. To name but one innovation expected to come to life in the near future is the TRML-4D radar on display here, described as a technology with which the company sets international standards in modern radar technology. It is an AESA radar with active electronic beam steering, enabling the detection of an air target after a single rotation of the antenna. The use of gallium nitride (GaN) transistors will improve the radar's detection performance even further. Of interest, the TRML-4D active multifunction radar forms part of Diehl Defence's IRIS-T SLM Ground-Based Air Defence (GBAD) system. Besides new Electronic Attack (EA) technology on offer for Germany's Tornado ECR successor, a recently developed product to detect stealth-capable fighter jet is Hensoldt's Twinvis radar. It is expected to increase the detectability of modern stealth aircraft. (stn)

Pitching innovations for military use: Joachim Schranzhofer, Hensoldt's Head of Communications & Marketing, anticipates good results. (Photo: Stefan Nitschke)

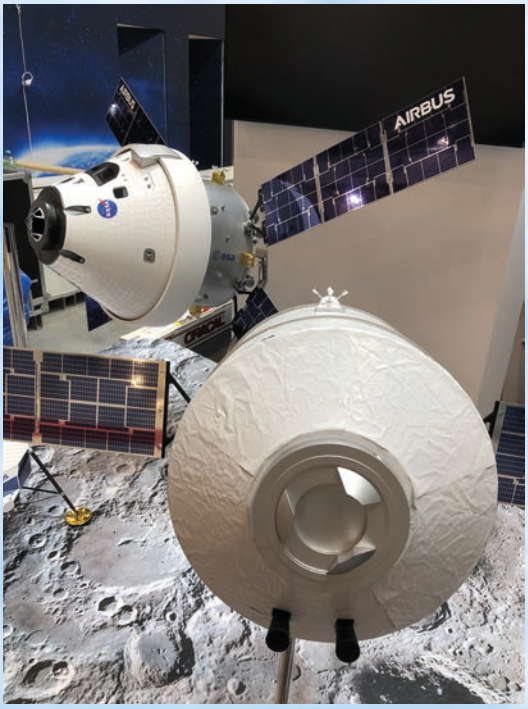
Germany and the Netherlands Join Forces to Procure Airborne Vehicles

German and Dutch National Armaments Directors signing the MoU at ILA Berlin on 22 June. (Photo via André Forkert)

On 22 June, at ILA 2022, the National Armaments Directors of Germany and the Netherlands signed Memorandum of Understanding (MoU) for the joint acquisition of a new Airborne Vehicle. This vehicle is an important means of mobility for the Airmobile Brigades of both countries, because the vehicle can be transported in and under a helicopter. In Germany, the project is known as Luftlandeplattform for which over 3,000 vehicles could be acquired. Possible candidates are the Caracal from Rheinmetall, with partners ACS and Mercedes-Benz, the Groundforce GRF 5.2 from Defenture and the GDELS Merlin. At ILA only the Caracal is on show, at the Rheinmetall booth.

The Netherlands Defensie Materieel Organisatie stated in a post, "By working together with the Bundeswehr, we strengthen the integration of the airmobile units of both countries, we learn further from each other's expertise and we save costs through scale effects. Partly due to the dire situation in Europe, it is important to realize the purchase quickly. The goal is that the first new vehicles will be delivered in 2025." The Netherlands 11 Luchtmobiele Brigade (11 LMB) is part of the German Division Schnelle Kräfte (Rapid Forces Division). (apf)

Photographic Recap of ILA 2022 Day Two



(All photos: apf / stn)

Intuitive, flexible and showing the way forward, VR Helicopter Mission Training on display at ILA 2022 is attracting considerable attention. (Photo: André Forkert)

Thales Shows the New Way Forward for Training

VR Helicopter Mission Training is a world premiere from Thales at ILA 2022 – the first time a simulator of this type has been shown. Still under development, it demonstrates where the field of training and simulation is headed. And France has already determined it will be used in training for the H160M Guépard crews of the Light Joint Helicopter programme (HIL), initially, for basic training only.

The new system uses Mixed Reality, combining the avionics, Virtual Reality (VR) and other features. There are two screens in the simulator, both touch-sensitive and each capable of displaying two monitors or two functions from the cockpit. And it allows for team training, so two simulators can be used in parallel, in a side-by-side configuration, or one behind the other ,as in the Tiger. A door-gunner can also be part of the team. Advanced eye-tracking is used for monitoring and evaluation. This allows the system or the instructor to see if the pilot checks important displays often enough, or fails to do so due to workload. Manned-Unmanned Teaming (MUM-T) can also be used, allowing the crew to access corresponding sensors on the drones.

France and Hungary have been using the VR approach to train door-gunners for some time. Now the pilot and co-pilot are being added to the mix. The system has not yet been certified and cannot therefore be used to replace real flying hours – but it serves as the basis of the discussion with EASA on what the training of the future will be like. (apf)

Meet MOSARC, Collins Aerospace's New Generation Military Avionics

MOSARC from Collins Aerospace is a revolutionary integrated and advanced avionics solution that meets the governmental requirements for open systems standards while ensuring the separation of air vehicle and mission system equipment, enabling rapid third-party integration into the field for current and future air-systems. Collins Aerospace calls it the Military Avionics New Generation.

So far it was presented in the Custom Experience Centre in Huntsville, USA. According to the manufacturer they showed there that it works. As a next step, Collins Aerospace will build a similar but smaller centre in Heidelberg, Germany.

MOSARC is a digital layer and the backbone. On this layer 3rd parties can settle up and enlarge the capabilities thank to additional applications. That way rapid developments or upgrades can be implemented. So far upgrades on avionics were done every 15 years, now they can be done as often as needed or wanted – in the speed of relevance. And much easier than before. The principle is already known from Software Defined Radios, where the software brings new capabilities without the need to intervene in the hardware. MOSARC is ensuring the separation of air vehicle and mission system equipment and the ability to manage the exchange of information between the two.

Everything is based in the modular Open Systems Approach (MOSA), that incorporates the technical and business strategies to provide systems that are well supported by Collins Aerospace and third-party embedded system providers from aviation and associated industries.

And I forward and backwards compatible, so it can be used on older and existing air-platforms and on new and upcoming ones – like FCAS or TEMPEST.

This approach uses the incremental acceptance process as defined in DO-297, which enables integration and acceptance of new components into a deployed Integrated Modular Avionics (IMA) system, as well as maintenance of existing components, without the need for re-acceptance efforts.

Another advantage is the modularity, so the user can take only parts of MOSARC, or only parts of the solution.

Part of this solutions is the MOSARC display. At ILA 2022 the prototype of the MFD-4820 Large Area Display is shown. It is a wide, 8-by-20-inch monolithic liquid crystal display (LCD) with resistive multi-touch (up to four points) surface that is optimized for use with gloved hands to eliminate unintended touchscreen activations. The MFD has electrically independent left/right halves. This redundant-design architecture can enhance operation, usage and safety. Together, these features enable synchronized, artifact-free video formats across the center of the display. The display incorporates two screens into one, with two dual inputs. (apf)

MOSARC's large area display lies at the heart of the system's capability. (Photo: Collins Aerospace)

CISPA-Airbus Digital Innovation Hub Established

From left to right:
Prof. Dr. Dr. h. c. Michael Backes, CISPA Founding Director and CEO;
Luise Bang, Digital Transformation Officer at Airbus Defence and Space;
Evert Dudok, Executive Vice President Connected Intelligence at Airbus Defence and Space.
(Photo: CISPA/Tobias Ebelshäuser)

Airbus and the CISPA Helmholtz Center for Information Security signed a Memorandum of Understanding (MoU) at ILA Berlin 2022 to open a centre of excellence for cybersecurity and trustworthy artificial intelligence in Saarland, Germany. The CISPA-Airbus Digital Innovation Hub will be located at the CISPA Innovation Campus in St Ingbert, and will start operations this year, with the intention to grow to around 100 experts within the next three years. In the long term, Airbus and the CISPA are jointly aiming to grow the competence centre to more than 500 experts.

"*Joining efforts with a renowned German research institution like CISPA is a key step in our strategy to continue strengthening our top-notch cybersecurity capabilities and expertise. At Airbus we are firmly committed to continue investing in the technologies and resources of the present and the future, which will enable us to be at the forefront of tomorrow's challenges, ever more digital. To achieve this ambition we are carefully selecting the right partners, and the creation of this competence centre is a great example of our long-term vision and investment in innovation*", explained **Evert Dudok**, EVP Connected Intelligence at Airbus Defence and Space.

CISPA Founding Director and CEO, Prof. Dr. Dr. h. c. **Michael Backes** says, "*The talks with Airbus were very trustful and constructive right from the start. Just like us, they want to reach for the stars in the future topics of cybersecurity and artificial intelligence and were looking for the strongest partner to do so. The combination of our know-how, reputation and excellent specialists will foster the creation of new opportunities to bring our research into application through attractive and future-proof jobs in Saarland. After the establishment of our Innovation Campus, the now starting large-scale collaboration with Airbus constitutes a key milestone towards our overarching goal of creating 10.000 jobs in the next 20 years and thereby serve as the driving force for the successful structure change of the State of Saarland*".

The CISPA Innovation Campus currently under construction in St Ingbert offers a unique space for established companies to settle but also for start-ups, which will get support to the financing and implementation of their innovative ideas with a new venture capital fund of €50 million set up specifically by the CISPA.

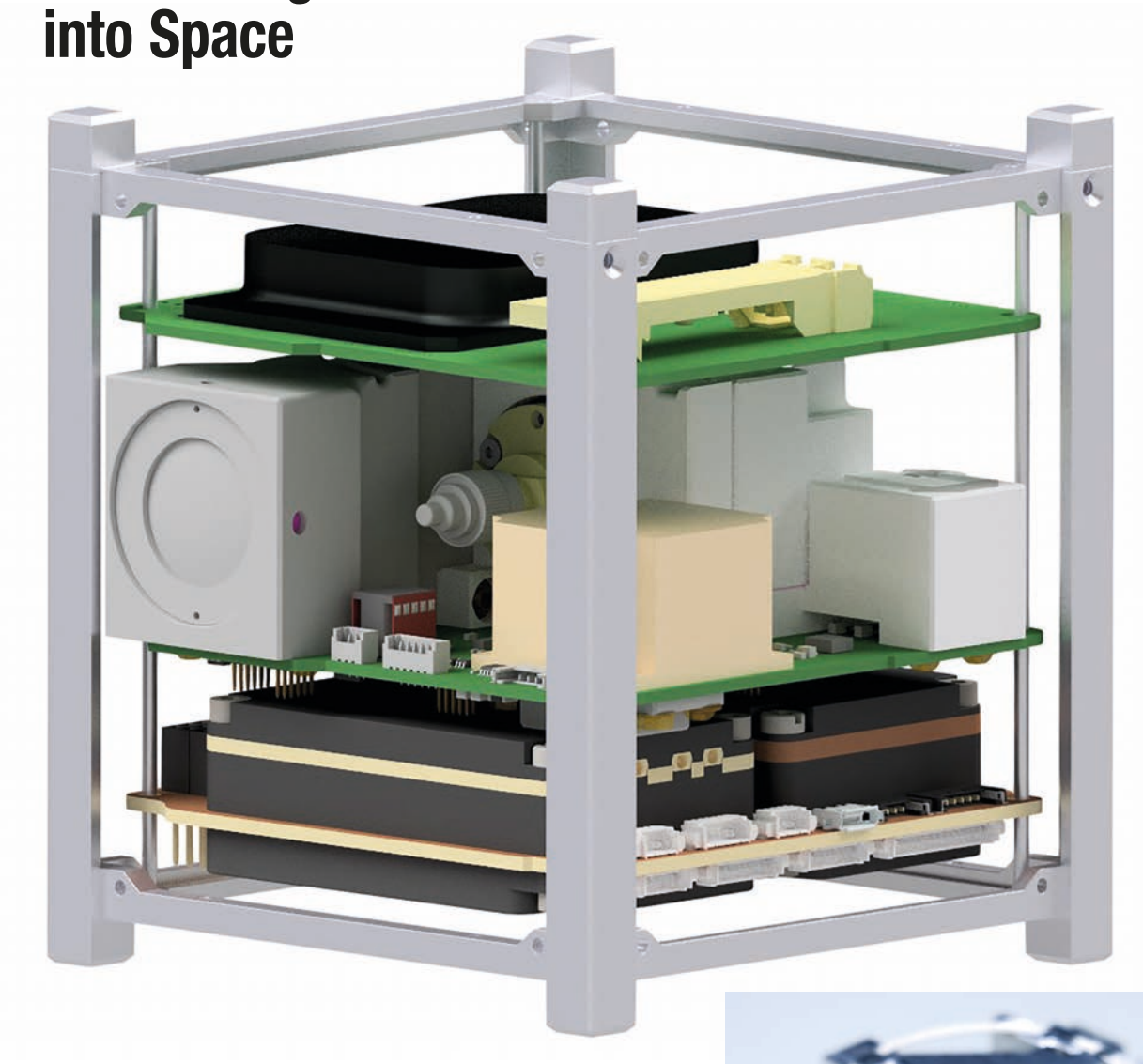
With this partnership between Airbus and the CISPA, the information security research institution as well as the Innovation Campus and Saarland aim to become even more attractive for young talent from all over the world.

Ground Observer 20 Multi-Mission Radar Premiered – Again

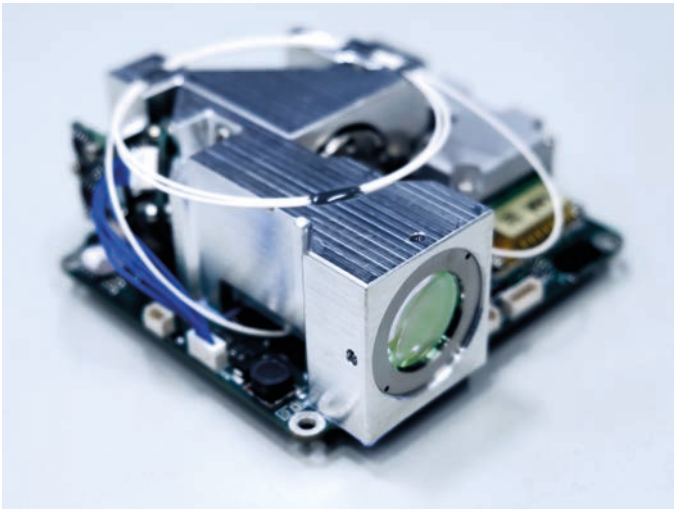
It's not entirely new, as Thales already presented the multi-mission radar Ground Observer 20 (GR20 MM) in October last year. But now it can be seen for the first time in real, hands-on live demonstration at ILA 2022, making its public debut. The GR20 MM is intended to serve as a ground-based multi-mission radar and the ultimate solution for early drone detection and ground surveillance. It can simultaneously monitor ground and low-level movements, and thus also protect against small tactical drones, helicopters and enemy ground forces. The Ground Observer 20 Multi-Mission is a single-mode, multi-mission radar for seamless three-dimensional (3D) 360° detection. Through a simple and clear HMI-Venus interface, operators can automatically and easily detect a threat, gaining valuable time to decide whether and which counter-strategies to deploy. In complex scenarios such as asymmetric conflicts or high intensity combat, automatic and rapid classification for swift situational awareness creates a tactical advantage. The radar's compact size and modular design make it easy to transport and deploy. Within five minutes, two soldiers can set up the radar and quickly deploy it for a new mission, whether on a mast or for off-vehicle operations. With its 6-pack battery, the G020 MM provides operational and special forces personnel with hours of uninterrupted situational awareness and a high level of protection. By moving away from the generator option, Thales has ensured that the G020 MM can be operated silently, and guarantees mission success through its high transportability. (apf)

The extremely portable G020 MM can be set up by two personnel and brought into operation within five minutes. The extremely portable G020 MM can be set up by two personnel and brought into operation within five minutes. (Photo: André Forkert)

Tesat Brings Laser Communication Terminals into Space



Tesat offers appropriate LCTs for a wide range of applications. Pictured is the world's smallest LCT – CubeL. (Photos: Tesat-Spacecom)



Tesat-Spacecom, headquartered in Backnang, Baden-Württemberg, is a recognised leader in optical communications technologies. The company established itself as a global leader in the manufacturing of payload equipment for communications satellites and has been involved in over 700 space programmes worldwide to date. Harking back to 2008 reveals the company's unique expertise: in February that year, a government-to-government cooperation between the United States and Germany to establish a laser link between two operational satellites in low Earth orbit (LEO) started a new chapter in the history of communications. The German radar satellite TerraSAR-X and the US Missile Defense Agency's NFIRE satellite, both equipped with laser communication terminals (LCT) manufactured by Tesat-Spacecom in Germany, established the first successful and stable orbital laser link.

Tesat can offer appropriate LCTs for a wide range of applications. In the case of the SpaceDataHighway, this is the LCT 135, which can transmit up to 1.8 GBps over distances of up to 80,000km, safely, quickly and completely fail-safe. Through this geostationary backbone, Tesat's technology enables worldwide data transmission in near real time. For applications in LEOs, there is the SmartLCT that can be deployed on smaller, lighter satellites, with huge weight and size savings. Enabling data transmission over distances of up to 45,000km while maintaining the high data rate of up to 1.8 GBps, the SmartLCT weighs just about 22 kilograms. Tesat's smallest LCT for CubeSats – called CubeL – was brought on stream in April 2018, following a successful Critical Design Review at the German Centre for Space (DLR; *Deutsches Zentrum für Luft- und Raumfahrt)* in Oberpfaffenhofen (Bavaria). CubeL is a joint development programme undertaken by the Optical Communication Systems (OCS) Group at DLR's Institute for Communication for Navigation IKN; *Institut für Kommunikation und Navigation)* und Tesat-Spacecom as industrial partner. (stn)

Elettronica Announces Future Business Plans for Germany

ELT's stand at ILA 2022. (Photo: Elettronica Group)

At ILA 2022, Elettronica announced that it has developed a long-term investment plan to strengthen its presence in Germany. The company wants to contribute to cover the country's needs through its Elettronica GmbH subsidiary, while fully exploiting the industrial and engineering assets of the Elettronica Group in EW, security, cyber.

Elettronica has been a global player in EW for 70 years, and a leader in Cyber and Homeland Security solutions. The company has supplied more than 3,000 EW systems to over 28 nations in all operational domains, and has an industrial/commercial presence around the world, in particular in Europe, the Gulf/Middle East and the US. Elettronica is the design authority for EW self-protection systems on important European avionics programmes, such as the Eurofighter Typhoon EuroDASS, NH90 NFH helicopter and several naval programmes.

In Germany, Elettronica Group has a strong presence through its subsidiary Elettronica GmbH, based in Meckenheim (Bonn) for more than 40 years. In considering upcoming programmes and the German MoD's challenging requirements, the group decided to launch a long-term investment plan in order to reinforce its presence in Germany, based on the following three main lines of action:

- *Ad-hoc* capability proposals, i.e. availability of proven EW systems to fit customer requirements, thus reducing programme risks, time and costs;
- Short/medium-term capability proposals proposal, i.e. EW system architecture technical/operative know-how based in Germany to support national programmes;
- Cooperation with German companies, and supporting bilateral German-Italian MoD cooperation.

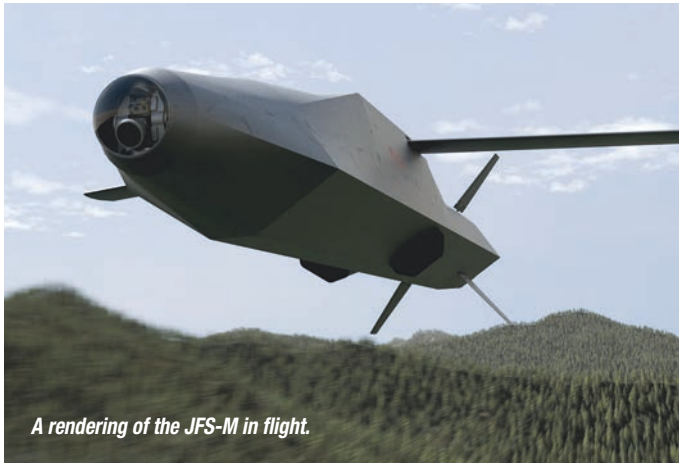
Elettronica's investment plan in Germany is aimed at developing innovative technologies, integrating cognitive EW solutions based on artificial intelligence, machine learning and deep learning algorithms fully designed, developed and produces in the group's laboratories. The plan seeks to keep nurturing national and EU skills to provide air superiority to next-generation fighters, able to confront modern operational scenarios, merging symmetric and asymmetric threats. (apf)

The JFS-M is designed to be launched from multiple platforms, including MRLs. (Photos: MBDA)

MBDA Future Large-Scale Indirect Fire System

During ILA 2022, MBDA Deutschland GmbH announced new cooperation to support the German Army's need for long range indirect fire capabilities. MBDA, together with Krauss-Maffei Wegmann (KMW) and ESG Elektroniksystem- und Logistik-GmbH (ESG) have signed a memorandum of understanding on cooperation for the Bundeswehr's 'Future Long-Range Indirect Fire System.'

The aim of the cooperation is the further expansion and implementation of the Joint Fire Support Missile (JFS-M) concept for the Bundeswehr. The new JFS-M missile is to be deployed with the Bundeswehr's existing MARS II/MLRS-E artillery rocket systems from KMW, as well as other platforms. In addition, the existing ADLER III command and weapon engagement system of the artillery force is to be used by ESG. In the future, the JFS-M may also be used by allied forces.



A rendering of the JFS-M in flight.

By using guided missiles in conjunction with artillery systems, armed forces are able to achieve a scaled and highly precise effect across the entire range band, from short to long range. The JFS-M can be configured as required and deployed in the areas of effect, reconnaissance, active and passive EW, as well as in a training variant.

MBDA, KMW and ESG have know-how and many years of experience in the fields of stand-off weapons, platforms (MARS II/MLRS) and command and weapon engagement systems, as well as mission systems. The system design draws on both proven systems and subsystems, especially those already used by the Bundeswehr, as well as new technologies. In addition, state-of-the-art technologies such as fail-safe GPS navigation, 3D flight planning and image-based navigation sensors are used. Target engagement is supported by artificial intelligence for automated target recognition and identification.

The German Army's artillery has a requirement for effectors with a range of several hundreds of kilometres. MBDA wants to rely on guided missiles for this purpose since, compared with rockets, these feature significantly higher persistence and survivability, as they can fly at low altitudes and in a terrain-adapted manner. In this way, the enemy cannot calculate the impact target in advance. In addition, they have better navigation.

In addition to the new cooperation, MBDA announced the development of a missile against the threat of hypersonic weapons – a concept currently still under development, with the intention of conducting it in collaboration with international partners as an EU armaments cooperation. **Thomas Gottschild**, Managing Director of MBDA Deutschland GmbH, commented that "*Many projects can no longer be carried out on a purely national level. We can still manage a project like Enforcer on our own, but not FCAS or this challenge. For that we need partners*".

MBDA will also be exhibiting SPEAR, which, like Meteor, is designed for the internal weapons bay of the F-35. (apf)

MBDA and CAE Partner for Virtual Simulation Environments

MBDA and CAE have signed an MoU at ILA 2022 with the intention of developing and deploying simulation environments for network-enabled missiles.

According to **Thomas Gottschild**, Managing Director MBDA Deutschland GmbH, "*This is crucial for the capabilities of the Future Combat Air System (FCAS). This is because remote carriers will play a crucial role in FCAS to expand the system's action space and increase perseverance and survivability*." The remote carriers can be used as sensors or effectors or as their carrier platform. But this requires entirely new algorithms in mission intelligence.

The aim is to create a virtual simulation environment that supports the development, training and use of network-enabled collaborative effectors. In addition, armed forces can use simulation for mission planning and optimisation, for operational behaviour prognostics, and for testing and evaluating operational concepts of deployment. In this way, armed forces are supported in planning and conducting necessary analyses for the adaptation of tactics, techniques and procedures (TTP). The Live Virtual Constructive environment lies at the heart of the construct, enabling training, testing, mission planning and the coordination of different effectors in the field in real time. MBDA will present concepts for such user environments at ILA, together with partner CAE.

Operational testing, mission planning, training, exercise as well as control and monitoring of a mission, require realistic and adaptable synthetic user and planning environments. These environments, in combination with collaborative algorithms, create the basis for the interaction of manned and unmanned FCAS units. This enables leadership in complex scenarios and informed decision-making in terms of mission tactics. MBDA Germany and CAE will jointly develop the key technologies required for mission planning, collaborative algorithms and sensor data fusion. MBDA will provide the necessary hardware and missile algorithms for the development; CAE will contribute its expertise in the field of highly complex simulators.

Guido Brendler, Head of Sales and Business Development at MBDA, commented „*Virtual simulation helps to validate the operational concepts of collaborative missiles and to further develop our effectors technically. This is crucial against the background of constantly changing operational conditions. Our cooperation partner CAE is a proven specialist in synthetic environments. We will jointly present the first results of our partnership at ILA*."

Thibaut Trancart, Managing Director CAE for the Europe and Middle East region, added „*In the future, visualisation and informed decisions will be crucial for military success. Our long experience in providing simulation training and synthetic environments, together with MBDA's advanced technologies and effects management in a cross-domain environment, provide our customers with safe, fast and cost-effective training and deployment capabilities.*" (apf)

The companies signing the MoU at ILA 2022. (Photo: MBDA)

Rheinmetall Air Start Units for Luftwaffe

Rheinmetall's mobile starter units are already well established in Luftwaffe use. (Photo: Rheinmetall)

Rheinmetall has received an important new contract to provide 16 new mobile start units (MSU) with integrated ground power (MSU-GP) for the German Air Force. Value of the three year contract is stated at €13 million.

The contract also includes the retrofit of 48 MSU-E units currently in service to the most recent MSU-GP version – the only air start unit of its kind. The Luftwaffe has been using the Rheinmetall MSU to start its entire fleet of aircraft, including the Eurofighter, since 2014, and this contract thus continues a business relationship that has been successful for decades.

Designed to prioritize reliability and versatility, the Rheinmetall MSU-GP is a dependable solution for any take-off. As the only turbine-powered air start unit, it is lighter to deploy and more compact than a diesel engine unit. Air transportable and proven across the globe, even in extreme weather environments, the MSU-GP delivers. And integrated ground power means 2-for-1: it saves critical space, with both a bleed air and electrical power supply in a single unit, while improving cost effectiveness.

In military applications, Rheinmetall MSUs are not only used with the German Air Force, but are also in operation with the US Navy, which employs them on all of its aircraft carriers. As countries increase their commitments to reducing their emissions with higher standards and regulations, airports around the world need to pivot towards zero emissions solutions. To support those requirements, Rheinmetall recently introduced the Rheinmetall eMSU – the world's first all-electric air start unit. The eMSU allows for carbon-free main engine starts and reduction in overall gound operations emissions. Easy to operate, it is the greenest air start unit solution on the market. (tm)

Five Minutes with Northrop Grumman LITEF GmbH

Northrop Grumman LITEF GmbH, based in Freiburg, is a leading developer and manufacturer of inertial navigation and sensor systems for a wide range of applications in the air, on the ground and at sea, as well as for industrial applications. With the continued development of the FOG (Fibre Optic Gyro) and MEMS (Micro Electro Mechanical Systems) technologies, the company will continue to offer robust inertial solutions in the future that meet the toughest mission requirements worldwide. In an interview with Show Daily on 23 June, LITEF's CEO Lutz Kampmann noted that the current generation of inertial reference systems produced at LITEF is typified by higher sensor data accuracy, and when compared with the previous generation is performing as low weight and low volume components. These attributes make them unique on the market, according to Kampmann. *"No other competitor is able to achieve these results,"* he stated. (stn)

CEO Lutz Kampmann expects a growing demand for MEMS and FOG technology in the future: "I believe in the future we will get more accuracy at a small size and low energy consumption […]." (Photo: Stefan Nitschke)

Watch Out: 2nd C-130 is coming

At the weekend the Bundeswehr will get its second C-130J-30 transport aircraft with the tactical registration 55+02. It will be transferred directly to its squadron in France.
The KC-130J tanker versions will all be delivered next year.

C295 - New Users for the 'Mini-Herc'

The C295 is now in service with 36 users in 33 countries. (Photo: André Forkert)

As Airbus Defence announced already on 23 February, the Serbian Air Force will become the next operator of the C295 aircraft. According to Airbus, two aircraft have been ordered, making Serbia the 36th user - in 33 countries - in the world. Delivery is scheduled for the end of 2023.

To date, Airbus has taken 282 orders for the C295. In April, the Spanish research institute INTA (Instituto Nacional de Técnica Aeroespacial) ordered a single aircraft, to serve as a research platform for the institute and complement its existing fleet, which consists of two C212s, a Stemme S15 and several remote-controlled aircraft. For this purpose, the C295 is to be flexibly equipped with sensors and instruments. And, in January 2022, the maiden flight of the Clean Sky 2 technology demonstrator based on a C295 took place in Seville. The European Union's Clean Sky 2 project, in cooperation with the European aerospace industry, aims to develop innovative technologies to reduce CO^2 and noise emissions. Fuel consumption and CO^2 emissions are to be reduced by between 20-30%, thanks to the new technologies, and noise pollution is also to be reduced by up to 30% compared to the technical state of the art in 2014. India is one of the newest customers for the C-295, having ordered 56 aircraft in September 2021. Egypt, with 24 C295M, was the biggest user up to that point.

The Serbia contract was signed in Madrid in the presence of high-ranking government officials from the Republic of Serbia and Spain. This contract is accompanied by an MoU between the respective MoDs to explore the development of future defence programmes between the two countries. Airbus is committed to continuing and furthering its close cooperation with Serbia, which already uses Airbus military solutions, the company said in a press statement.

The two aircraft will be delivered in transport configuration, and are equipped with Collins Aerospace's advanced Pro Line Fusion avionics suite. However, the Airbus C-295 Persuader is also used in other countries as a multi-purpose transport, maritime reconnaissance, SAR platform, gunship, armed ISR and maritime patrol and ASW (MPA) aircraft. An Airborne Early Warning and Control (AEW) version was developed jointly by Airbus Military and Israel Aerospace Industries (IAI).

Often referred to as the "mini Herc", the C295 presents itself as a viable alternative or complement to the Airbus A400M, Antonov An-12 or Lockheed Martin C-130 Hercules in the field of tactical airlift. Embraer's C-390 is a new addition to this class of aircraft, which has already found its first customers in Brazil, Hungary and Portugal. Above this class, it is aircraft such as the Airbus A400M - which can be used tactically and strategically - Antonov An-124 Ruslan, Lockheed C-5 Galaxy, Boeing C-17, Airbus A310/330 MRTT, Xian Y-20 or the Ilyushin Il-76 that dominate strategic deployment.

The class below, such as the Antonov An-32, the CASA C235/C295 or the Alenia C-27 SPARTAN, on the other hand, have so far eked out a rather shadowy existence, at least as far as the attention of outsiders is concerned. In the daily routine of military air transport, however, this class of aircraft can convince with facts.

On the one hand, the comparatively low procurement and maintenance costs, a high payload, short take-off and landing (STOL) characteristics, versatility and the use of unpaved runways are decisive positive attributes that speak for this class of aircraft. In addition, a large part of the transport tasks performed with 'Hercules-class' aircraft can also be carried out with the smaller class. Statistics show that in 80% of the flights of the worldwide Hercules fleet, neither payload nor payload volume are fully used.

With all the advantages mentioned, however, the main disadvantage – the interior height of the loading space – must not be overlooked. The exception in this class is the Alenia C-27, with an interior height of 260cm – the C-130, by comparison, offers 275cm and the A400M an impressive 400. For the C295, the cabin height is given as 190 centimetres.

Much of the equipment of the infantry or special forces, can be transported by the An-26 or C295. The new Aero 4x4s of the Polish Paratroopers Brigade or the Spanish FALCATA are combat or transport vehicles of the airborne troops that can be transported in a C295 or An-26. And the Czech Republic has already conducted positioning trials for the ACS Armoured Car Systems GmbH ENOK Airborne (AB) with its C295s. The country has six C295/C295Ws. Hungary and Cyprus have also ordered the ENOK AB.

With the appropriate additional equipment, the C295 can also be used well as a Forward Arming and Refuelling Point (FARP). In addition to refuelling systems, platforms such as the CRAYLER or another small, light 4x4 can quickly set up the capability. The combination of commercially available systems such as the ENOK 4.8 AB, the mobile refuelling system for aircraft from the French company TITAN, used by the U.S. Marine Corps under the acronym TAGRS (tactical aviation ground refuelling system), or the French armed forces can enable a high-performance, land- as well as air-mobile FARP. In the German Rapid Forces Division (Division Schnelle Kräfte), there is a FARP project. This is to be deployable by fixed-wing aircraft as well as helicopters.

Networking and the mutual use of air transport capacities within NATO are also progressing steadily. In future, the German Air Force and the French *L`armee de l'air* will operate a joint squadron with ten C-130Js and KC-130Js. At the European Air Transport Command (EATC) in Eindhoven (NLD), 27 French C235s and 13 Spanish C295s are available, among others. Here, orders are assigned to the aircraft that are best suited for the job. Germany and the Netherlands also provide nearly all their transport aircraft to this group.

Measured in terms of numbers and user states, the CASA C235/295 is probably the most successful 'small tactical transport aircraft' worldwide. The conceptual disadvantage of the low height of the cargo compartment compared to the HERCULES does not seem to diminish its success.

The market for light tactical transport aircraft seems to be so interesting that Ilyushin has developed the Il-112, a successor to the AN-32. The first two prototypes are currently undergoing troop trials with the Russian Air Force.

Weaponized C295

In 2014 Jordan was the first officially known user country that had a C295 gunship. Airbus Defence and Space and ATK (now part of Northrop Grumman) converted one of Jordan's two C295 transport aircraft into a gunship. Jordan hat already two AC235 gunships at that time. Part of the gunship was an integrated mission and fire control systems, electro-optical – e.g. L3Harris MX-15 - and radar sensors (Thales I-Master Synthetic Aperture Radar), AGM-114 HELLFIRE missiles, a side-mounted M230 30mm Bushmaster chain gun, as well as guided 70 mm rockets.

The ENOK airborne tactical vehicle can be carried internally in the C295. (Photo: ACS)

In June 2021 Airbus presented an upgraded C295 Armed ISR (Intelligence, surveillance and reconnaissance) version. This is to provide persistent close air support (CAS) capabilities. During the first flight tests, the aircraft carried eight laser-guided missiles and two laser-guided bombs dummies, located on four underwing hardpoints. Fully loaded the C295 should be able to carry 16 Air-to-Ground missiles. Mission endurance should be 8+ hours. The last generation of the FITS (Fully Integrated Tactical System) will ensure, that the C295 Armed ISR can integrate a variety of different weapon options. The user can select from machine guns, 27 mm cannon, guided and unguided rockets, laser-guided missiles to laser guided bombs. An Airbus brochure shows the TEBER-82 laser guidance kit for MK-82 bombs, two sideways 12.7 mm machine guns, sideways 27 mm autocannon and Door Gun System (DGS), L-UMTAS guided anti-tank missiles, CIRIT 2.75" Laser guided missiles and 2.75" CAT-70 unguided missiles. These weapon options can be flexible mixed, according to the missions needs. Airbus recently signed a series of memorandums of understanding with Roketsan, Expal, Escribano and Equipaer, Rheinmetall, Nobles Worldwide and US Ordnance. This just gives an indication of the variety of weapons that could be used on the C295. (apf)

The C295 – probably the most successful small tactical aircraft on Earth. (Photo: André Forkert)

Bundeswehr Receives First A321 NEO

On 23 June, Lufthansa Technik handed over the first of two Airbus A321-251NX (NEO) Long Range (LR) aircraft to representatives of the German Armed Forces on the occasion of ILA 2022.

The first aircraft carries the tactical registration 15+10, and will initially be stationed at the Flugbereitchaft BMVg in Cologne. It is a brand-new factory aircraft from Airbus in Hamburg, which was subsequently modified by Lufthansa Technik (LHT), also in Hamburg, to meet the capability requirements of the Luftwaffe. During the handover, LHT emphasised that the aircraft was modified exclusively for functionality. Four configurations are possible, showcasing the maximum flexibility of the conversion. Its mission is primarily troop transport as well as Medical Evacuation – with transatlantic range, moreover. In the MedEvac configuration, it can accommodate up to 12 stretcher cases or six intensive care units. The MedEvac kit is to be installed and certified in the first quarter of 2023, with operational availability from mid-2023. The necessary supplemental type certificates, both civil and military, for the aircraft will be done together with the associated New Generation Patient Transport Units (PTE NG). Lufthansa Technik will deliver a total of twelve units and two reserve units of the PTE NG to the Bundeswehr.

All in all, LHT put more than 100,000 man hours into the conversion, with up to 160 employees involved. The Bundeswehr representatives also praised the short implementation time of six months, despite COVID and other adversities.

Lt Gen **Ingo Gerhartz**, Chief of Staff of the German Luftwaffe, emphasised during the handover that the two new aircraft have made the German Air Force much more effective. And he recounted that the trigger for the procurement of the two A321LGs was the circumstance in November 2018 that the old Airbus of the Luftwaffe could not take the then Chancellor to the international summit in Argentina in time, due to a defect. Mockingly, one can also argue that if politicians remain on the ground, new material is quickly procured, but otherwise no one cares. But the inspector pointed out the grey paint of the aircraft and thus above all the troop use, so it is not one of the classic white politician-transporters of the Flugbereitschaft. The second machine is expected in a few weeks. „*For me, the main thing is that this Airbus A321 Long Range in its grey livery sends a clear signal to our troops. The soldiers of the German Armed Forces will be delighted with the new transport aircraft - an upgrade to 'Military Business Class'*," added Gerhartz. „*Our new Airbus will soon be flying west across the Atlantic to pick up Navy exchange crews in Latin America, for example, it will fly our Army comrades to Lithuania or our servicemen and women to Africa. This A321 will shoulder an enormous mission package and help save lives on its worldwide missions. We are thus excited about this new 'member' of our 'Air Force Family'. Our flight crews, on-board crews, technicians and members of the Special Air Mission Wing welcome it warmly*."

Other representatives at the handover included Lufthansa Technik COO **Soeren Stark** and Airbus CEO Guillaume Faury, and the State Secretary in the German MoD, Benedikt Zimmer. „*The handover of the first A321LR to the German Air Force is another milestone for us in what has become a successful partnership spanning decades. I am all the more pleased that we have once again succeeded in meeting the high demands of our customer*," said Stark. „*With a cabin precisely tailored to the needs of the German Air Force, our team has once again set standards. For this, my sincere thanks go to all involved.*"

The A321LRs will be deployed together with the new ACJ350s, the first of which is already in use. (apf)

With '15+10' in the background, Lt Gen Gerhartz accepts delivery of the Bundeswehr's first A321-251NX (NEO). (Photo: André Forkert)

Full Court Press for Bundeswehr H145M

The H145M will provide the Bundeswehr with a wide variety of additional capabilities. (Photo: Airbus Helicopters/Christian Keller)

Leading companies from the German aerospace and defence industry have joined forces to provide the Bundeswehr with the five-bladed H145M as its light support helicopter, it was revealed at ILA.

A requirement for up to 55 helicopters is expected. Under the name 'LUH SK - Team H145M,' Airbus Helicopters, ecms Aviation Systems, Hensoldt Sensors and Hensoldt Avionics, Liebherr-Aerospace, Rohde & Schwarz, Safran Helicopter Engines and ZF Luftfahrttechnik are working together to guarantee the customer a high-quality overall package with an attractive price-performance ratio and short delivery times. One of the major concentrations, given the political situation, is on providing support for the helicopter from Germany. The team is open to further interested parties.

"*We have a strong product with very high availability, guaranteed short delivery times and have organised support for the weapons system with a large number of German companies*," says **Wolfgang Schoder**, Managing Director of Airbus Helicopters in Germany. "*With the formation of the team, we are offering the Bundeswehr a complete configuration that can be procured quickly and efficiently.*"

The H145M multi-role helicopter has been in service with the Bundeswehr since 2015 and has proven its value and flexibility, with an availability of over 90%. The new version of the H145 features a new, innovative five-bladed rotor that increases the helicopter's payload by 150 kilograms. The design of the new bearingless main rotor also simplifies maintenance operations.

In addition to tactical air transport, the light twin-engine helicopter can be used for the deployment of crisis response forces, fire support, armed reconnaissance as well as the evacuation of wounded or the liberation of hostages. It has also increasingly taken on the role of flying command post. The H145 was developed as a civilian model for day and night operations and in the most adverse conditions. It is used by armed forces, police and rescue teams all over the world. It is powered by two powerful Safran Helicopter Engines Arriel 2E turbines, controlled by the FADEC (full authority digital engine control) system. In addition, the helicopter is equipped with the Helionix digital avionics suite and thus offers not only innovative flight data management but also a powerful 4-axis autopilot, which considerably reduces the pilots' workload in their missions. Its particularly low noise emissions make the H145 the quietest helicopter in its class.

The H145M is already in service in Hungary (20), Germany (15), Serbia (9), Thailand (5) and Luxembourg (2). The US Army operates a fleet of more than 460 civil helicopters of the H145 family under the name UH-72 Lakota. (tm)

Rohde & Schwarz Shapes the Future

21.1 The R&S VCS-R/B field-proven, full IP communications system is being highlighted during ILA 2022. (Image: Rohde & Schwarz)

At ILA Berlin Airshow 2022, Rohde & Schwarz is showcasing its VCS-R/B future-proof, full IP communications system. This field-proven solution provides clear separation between the red/secure and black/non-secure domains and enables any military air traffic control (ATC) operator at any air operations control center to connect to any radio anywhere at any time. With R&S VCS-R/B, the operator can access two security domains at the same time, using the same audio accessories and clear audio routing principles. It features an innovative graphical user interface (GUI), which allows the operator to access all required communications securely at their fingertips, yet displaying both separated security domains, over which the operator retains full operational awareness. The heart of the system is the R&S Trusted Audio Switch, which ensures that the two security domains are strictly separated while still being accessed by only one audio device (e.g. headset). "*With customers in place and operational systems worldwide, R&S VCS-R/B is field-proven*," commented **Marius Münstermann**, VP ATC. "*The system supports requirements of NATO and other sophisticated customers. Reliable, cost-optimized and easily expandable, customers speak highly of the system, stating that workflows and functionalities improved through operational experience with this communications solution. Seamless integration with other available third-party devices, C2/battle management systems or mission-critical management systems is also supported by the R&S VCS-R/B.*"

R&S VCS-R/B supports the ED137 standard to ensure safe and secure ATC voice communications. From a security perspective, the R&S Trusted Audio Switches have been certified against Common Criteria by the German Federal Office for Information Security (BSI). (tm)

Turning Heads and Shaking Hands

Rohde & Schwarz Delivers 1,000th SDR for F-16

Celebration at ILA 2022: Rohde & Schwarz (R&S) has delivered its 1,000th AN/ARC-238 software-defined radio (SDR) to Lockheed Martin for integration on F-16 aircraft. The AN/ARC-238 consists of two airborne radios from the SOVERON radio family, namely the R&S MR6000R/L radios, and meets secure communication requirements perfectly, while being fully qualified on the F-16. AN/ARC-238 is the US government designation for the R&S MR6000R/L radios. R&S has been the preferred supplier of airborne radio communications for the F-16 programme since many years, including the newest production F-16 Block 70 aircraft for international customers.

"*To reach this milestone is a great privilege and showcases our team's ability to continuously produce and distribute high-quality software-defined airborne radios in support of the F-16*," says **Stefan Pleyer**, VP Market Segment Avionics, Rohde & Schwarz. "*I am confident that our SOVERON radios make the F-16 even more efficient. We are proud to work with Lockheed Martin, delivering the 1000th SDR.*"

"*We congratulate Rohde & Schwarz on this milestone delivery of the 1000th software-defined radio (SDR) for the F-16; a strong demonstration of their longstanding partnership with Lockheed Martin and the F-16*," said Raymond Piselli, VP, International Business at Lockheed Martin. "*The F-16 is a critical piece of the 21st century security network, offering advanced interoperable capabilities. With more than 3,000 F-16's operating in 25 countries, we are focused on helping our customers seamlessly and securely connect all assets in the joint battlespace.*" (apf)

Handshake at ILA with: Raymond Piselli, Vice President, International Business, Lockheed Martin; Alex Walford, Country Director Germany, Lockheed Martin; Jeff Harwood, Sales Manager Avionics, Rohde & Schwarz; and Stefan Pleyer, Vice President Avionics, Rohde & Schwarz. (Image: Rohde & Schwarz)

The SLM Air Defence System protects urban areas, critical infrastructure sites and military units

www.diehl.com/defence