



REAIM 2023:
CALL TO ACTION



DIGITAL TWIN
BY ENGINIA



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NEW MEXICO



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VISIBLE

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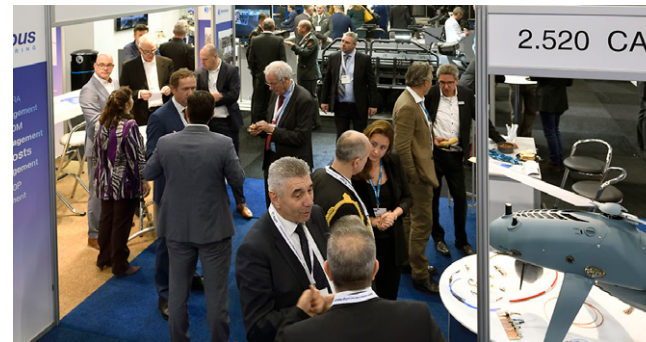


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Call to action

During the REAIM summit, government representatives agreed to a joint call to action on the responsible development, application and use of artificial intelligence in the military domain. Chief of Defence Onno Eichelsheim: "Defense sees the possibilities of AI and will use it more and more."

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There is no conflict to be won with poorly maintained equipment, every strategist knows. Enginia offers a helping hand with a Digital Twin. "We don't have that many naval vessels, so let's make the most of them."

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Cover: A lot of helicopters participated end 2022 in the large international exercise Falcon Autumn. Soldiers from Germany, the Netherlands, Poland and the United States trained large-scale airborne operations. A total of 37 helicopters and more than 1,000 military personnel participated. Defense supplied Apache attack helicopters, Cougar and Chinook transport helicopters and NH90s.

Photo: Mediacentrum Defensie

'Call to action' responsible use of AI in the military domain

During the REAIM summit, government representatives agreed to a joint call to action on the responsible development, application and use of artificial intelligence in the military domain.

Text: Riekelt Pasterkamp
Photos: REAIM 2023

The two-day meeting on February 15 and 16 was organized in the World Forum in The Hague by the Ministry of Foreign Affairs and the Ministry of Defence. South Korea was co-host.

Around 2,000 participants from all over the world, from governments, the business community, civil society, academia and think tanks, gathered here. With the joint call to action countries and stakeholders emphasize the need to put the responsible use of artificial intelligence (AI) higher on the political agenda and to further stimulate initiatives that contribute to this.

Machine

With artificial intelligence (Artificial Intelligence or AI), human skills are imitated by a machine. An AI system receives data, for example via a camera or microphone, and can then respond to it itself.

Some AI technologies have been around for more than sixty years. AI is therefore not new, but in recent years it has been playing an increasingly important role in daily life. Think, for example, of the chat robot that helps you with customer service, or funny photo filters that work on the basis of facial recognition. Other examples of AI are search engines, autocorrect and self-driving cars.

Armed forces worldwide are also investing in AI technology. Armed forces can apply AI in weapon systems, logistics processes and data analysis. In practice, AI could be used by the military, for example, to raise the alarm when something changes in intelligence footage, to optimize flight paths or to help distinguish between friend/foe and impartial.

Urgency

A 'global commission AI' will be set up to promote mutual awareness worldwide, to clarify what is meant by AI in the military domain and to determine how to achieve its responsible development, production and application. The committee will also describe the conditions under which the management of AI can best be arranged.

Host Minister Wopke Hoekstra (Foreign Affairs): "We have clearly highlighted the urgency of this subject with this REAIM summit. It is now time to take further steps. I am pleased that we have reached agreement on this. The Netherlands will continue to be a driving force in reaching international agreements on this subject."



Minister of Foreign Affairs Wopke Hoekstra spoke at the start of the Summit.

Hostess Minister Kajsa Ollongren (Defense): "AI is of great importance for the armed forces of the future. By using AI within the right frameworks and regulations, we make our operational and logistical processes easier and more efficient. In addition, AI enables us to make faster and more



Chief of Defence Onno Eichelsheim: "Defense sees the possibilities of AI and will use it more and more."

informed decisions. In this way we not only protect our own soldiers, but we can also limit damage and casualties as much as possible. To ensure that we use AI in a responsible manner, we will continue to work closely with partners within existing alliances such as the EU and NATO, but also with NGOs, think tanks, educational and knowledge institutions and the business community. In doing so, we invest in our freedom."

South Korea was the co-host of the REAIM summit. Like the Netherlands, South Korea actively encourages countries to discuss the responsible use of AI in the military domain. This also led to the worldwide contribution of participants and government representatives to this REAIM summit.

Example

The Netherlands is already experimenting with the applications of AI in a controlled environment. An example of this is an investigation in which AI analyzes the terrain and thus offers route options to a commander.

Commander of the Armed Forces Onno Eichelsheim: "Defense sees the possibilities of AI and will use it more and more. AI is not just about the deployment of weapon systems. With AI, for example, we can also process the ever-increasing amount of information for our operations much better. Even with the application of AI, we ourselves, as users, remain responsible. I want to apply and evaluate AI step by step." ●

Continuously looking at one truth

There is no conflict to be won with poorly maintained equipment, every strategist knows. Enginia offers a helping hand with a Digital Twin. "We don't have that many naval vessels, so let's make the most of them."

Text: Riekelt Pasterkamp

A Digital Twin is a digital representation of a product, explains Paul Hörchner, director of Enginia. "The core is a three-dimensional image to which data is linked in all kinds of ways. During the making process, several Digital Twins are created, one from the production and one from the design. By merging these, information from the use and maintenance can be added and made transparent." Together, these different Digital Twins form the so-called Holistic Digital Twin."

A digital twin, in other words. For the Ministry of Defence, a Digital Twin means greater deployment of equipment and more investment space for new equipment. Hörchner: "Systems that are previously delivered with higher quality accelerate the construction of the possibilities. If the systems can then also be more easily maintained and adapted, the usability remains high and flexible."



The digital information from the supply ship "Den Helder", which will be commissioned in 2025, is the first.

Photo: Damen

Digital

In October last year, the Ministry of Defence signed a contract with Enginia to manage technical design documentation for the maintenance and modifications of the newly built vessels, including the supply vessel (CSS) and the frigates (ASWF).

The Defense Materiel Organization (DMO) and the Material Maintenance Directorate (DMI) in Den Helder jointly ensure the acquisition and maintenance of ships, submarines and systems at the Royal Netherlands Navy. Enginia supports DMO and DMI with the configuration and implementation of so-called Product Lifecycle Management (PLM). Here, design and maintenance data are digitally stored and made available during the entire maintenance of new ships to be built.

According to the Ministry of Defence, this digitization is necessary to make the ships more deployable in the next 30 years by minimizing the time required for maintenance and modifications to the ships. The digital information from the supply ship "Den Helder", which will be commissioned in 2025, is the first. After that, the frigates will also be supported with this platform.

Sensors

"A navy ship is full of sensors," says Hörchner. "If such a sensor gives something back, for example

that there are vibrations in the propeller shaft, you need to have the design and production data at hand to be able to locate the problem exactly. In a Digital Twin, all the information of a complex system is brought together. In a form in which we continuously look at one truth together."

The configuration of a naval ship changes regularly during its life due to new technology, maintenance, repair and modification. "During the design phase, we look for the desired configuration. Over the years we have placed countless different versions side by side. By recording all this information digitally in one place, everyone has a clear picture of the latest state of affairs during the design phase. This means we have much less confusion in a period in which the ship is not yet completely clear to everyone anyway."

Security

Bringing together data from design, construction and maintenance seems easy on paper, but in practice it is more difficult. Data security plays a major role, Hörchner knows. "The main contractor builds a ship. Another contractor is building the radar, which has a higher safety class. The artillery comes from abroad with an even higher safety class. All associated information is now digital. This means that we must be extra alert to its security. We therefore work with the so-called 'zero trust'. Parties cannot see anything unless necessary. For example, you

Photo: Enginia



A Digital Twin means greater deployment of equipment and more investment space for new equipment.

Photo: Enginia



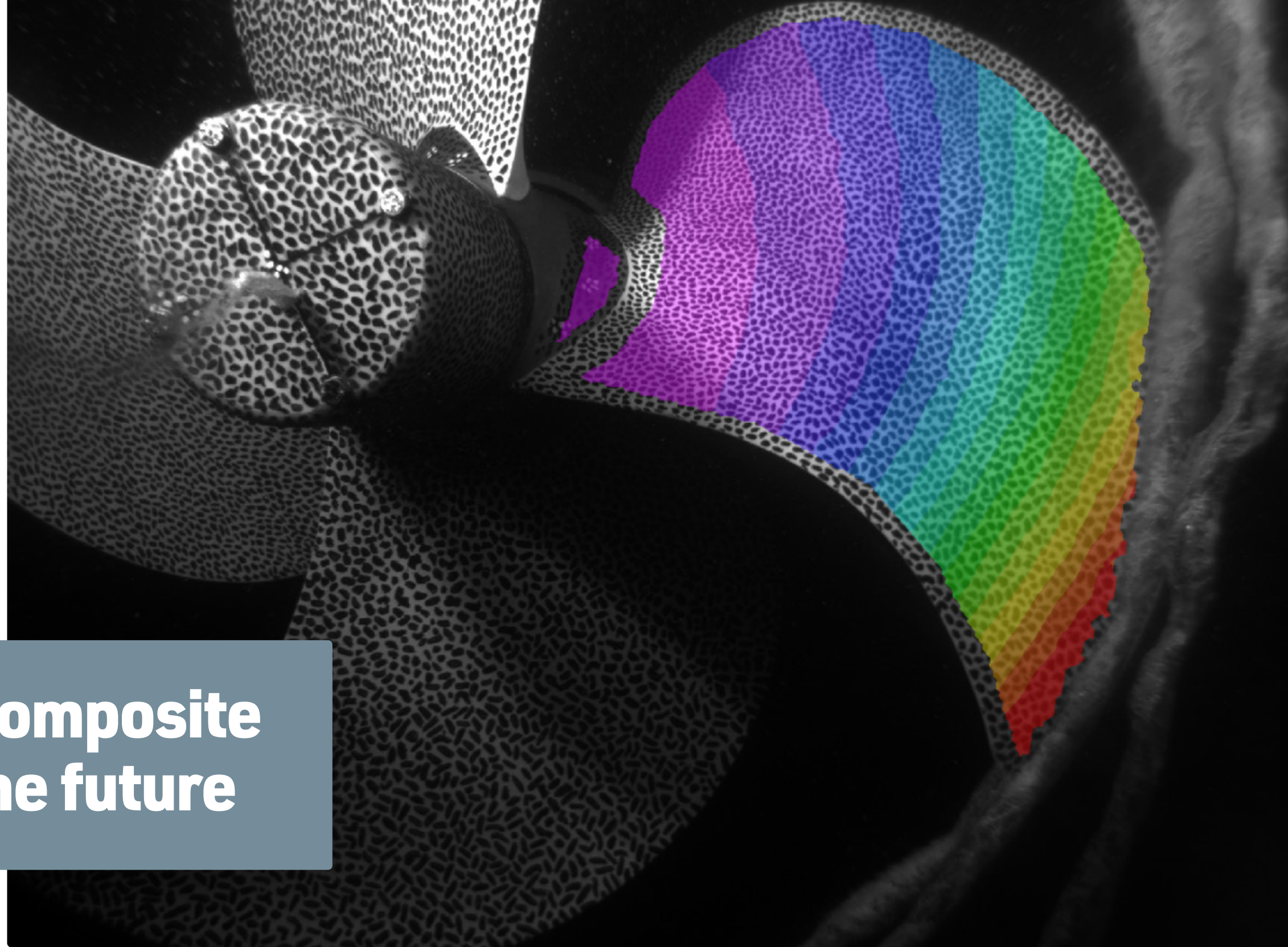
Numerous parties are involved in the construction of a new naval vessel.

can include that information can only be accessed on computers located in the Netherlands. Data must, as it were, protect itself."

Numerous parties are involved in the construction of a new naval vessel. They all want to know what is expected of them at what time. If one of them is not using the latest version, this will result in incorrect orders, duplication of work, planning delays and lower quality. Complex systems, like most weapon systems, change greatly during design, manufacture and maintenance. A Digital Twin offers efficiency and a high availability of naval vessels. "We don't have that many naval vessels, so let's make the most of them."

The Digital Twin is on the rise in industry and will also reach the Ministry of Defence. Hörchner: "A Digital Twin improves cooperation between departments and even between companies. By looking at the same truth together, there is less confusion. If people quickly understand each other, that creates a positive flow in the collaboration." ●

Solico Engineering in Oosterhout is the number one composite engineering company in the Benelux and has been for the past thirty years. Specialists in engineering highly loaded composite structures for a wide range of Defence, Maritime, Industrial and Civil Engineering applications, they have worked on bespoke composite applications both above and below the water surface. One such innovative application for composite materials is their newly engineered composite propeller.



Solico propels composite materials into the future

Text and photos: Solico

The first use of a fibre-reinforced plastic (composite) propeller dates back to the 1960s when Soviet fishing boats first investigated composite materials for these components. Despite the advantages of composites over metals (better corrosion resistance, higher fatigue resistance, improved efficiency, higher cavitation inception speeds, and reduced acoustic signature), aluminium bronze remains the most common material used for propellers. A study was conducted recently by TU Delft PhD students Pieter Maljaars and Mirek

Kaminsku with the support from MARIN, the Ministry of Defence, and Solico, which aimed to look again at the potential for composite propellers.

Advantages

To clarify what this could mean for the industry we sat down with Solico's Doenan Mager just to go over a few things. "The advantages of composites in the maritime defence world are increasingly appreciated. Apart from its light weight, advantages in ballistic properties, radar transmissivity or radar

cross-section, other factors such as response to military fire safety requirements are increasingly apparent. The intended application of a large composite superstructure on future Frigates is testimony to this", says Doenan. He goes on to explain that "in future, everything from the bridge up is likely to be designed in composite. If we also look at underwater components, there are certainly more and more applications such as streamlined plating for submarines, submarine propellers, and rudders where composites are becoming more commonly

adopted. In land forces as well composites are also more frequently used. Army vehicles, such as the Boxer, are very interesting for composite applications with weight savings on components such as the exchangeable 'mission module' providing a great benefit to the overall operational envelope."

Less

A composite material is not sensitive to corrosion and is therefore more maintenance-friendly than traditional materials. In addition, it is also a lot



lighter. That is not necessarily an advantage, but it can be beneficial. For the propeller project research focused on what is known as the torsion-bending coupling of non-symmetric lay-ups. Simply put, when the propeller blade bends, it will also twist. This effect can only be achieved with composite materials. When the precisely engineered composite blade exerts a force and bends slightly, it twists in the water in such a way that its pitch is slightly decreased. The onset of cavitation is thus postponed to a higher RPM compared to metal propellers. This means that it can turn faster without the complexity of a conventional adjustable pitch mechanism. This is a big advantage, resulting in lower fuel consumption, but also a lower acoustic signature, which means that a vessel is less likely to be detected. Certainly important in times of war, an additional advantage is that the propellers also have reduced magnetic and electric signatures, which also ensures lower detection.

Test

Pieter Maljaars developed a calculation method that predicts the deformation of a ship's propeller under stress. Solico Managing Director Eric van Uden explained that the calculation method predicts the hydro-elastic behaviour of flexible blades. The Solico team was tasked with engineering the connection between the composite blades and the hub and predicting the propeller deformations during operation. They performed a stress analysis using a Finite Element Model and concluded that the connection was critical enough to require a test program. After several tests, the connection was found to perform as predicted and was later tested for fatigue by TU Delft, which showed that the construction was strong enough to endure the stress experienced by the ship's propeller. A full set of four

composite blades was made and the hub was milled for field testing. The propeller was constructed with the connections engineered by Solico and installed on a Ministry of Defence diving support vessel. For the first time, the deformations of a composite ship's propeller were measured underwater and in real-time. The quality of these measurements was important for the validation of the calculation method developed by Maljaars. The results showed that the deformations measured corresponded well with Pieter's predictions as well as the Solico FE calculations.

Challenge

According to Eric, the challenge in using composite blades for ship's propellers lies in the connection between the blades and the metal hub, which has been known to cause problems in the past, leading to the loss of blades and their disappearance to the bottom of the sea in various projects. Eric explained that there were many influences involved and that they had reached the limits of what they could calculate. Despite their best design efforts, they still encountered stresses on propeller parts that impacted how a propeller would perform in the long run. For this reason they initiated an extensive test program to test the blade-hub connection with increasing detail. There was no publicly existing knowledge about this type of connection under these conditions, but the connection was validated in the practical test program and Eric believes this confirms a significant future potential for these types of structures.

Future

Eric reported that the study was successful and that it was possible to predict the hydrodynamic and elastic behaviour of the composite blade using

Pieter Maljaars' computer model for non-anisotropic behaviour. According to Pieter, the blades needed to be highly flexible in order to accurately measure blade deformations. The ultimate goal is to use the flexibility of composite propellers to improve efficiency and reduce propeller noise in the future.

According to Eric, the use of composite propellers is still limited due to their higher production costs compared to bronze aluminium propellers. The exact life cycle and performance of composite materials are still unknown, so further studies are needed to provide a guarantee. However, if the ongoing studies determine that the bending and twisting of composite propellers generate the promised advantages such as reducing fuel consumption and noise, it could compensate for the higher costs. Eric concluded that composite materials need to prove themselves in the long run, and follow-up studies are necessary to determine the feasibility of using composite propellers in the maritime industry.

Sonar

The closer the density of a material is to the density of water; the less sonar reflection will result. With a

density of 1500 to 2000 kg/m² composite materials are almost 'transparent' to sonar when compared to steel structures. This advantage is exceptionally important for appendages to underwater structures, such as rudders, fairings and propellers.

Since the first generation of composite propellers, important steps have been taken, especially in the way the propeller parts are attached to the aluminium-bronze shaft.

With extensive in water testing completed, current plans are to make even larger composite propellers and then validate their performance with similar testing. The next one manufactured will have a propeller diameter of more than three meters, quite a step on from the one meter diameter propeller in the picture.

The Solico team are optimistic that detailed engineering studies combined with step-by-step testing of composite components in this challenging application can maintain the momentum in developing lighter, higher performing and less detectable propellers for future vessels. ●



Air Policing

The Royal Netherlands Air Force operates with F-35s in Poland. From Malbork airbase in the north of the country, the fighter jets will guard the NATO airspace above Eastern Europe until the end of March. In addition to this so-called 'Air Policing', there will also be plenty of training with allies. There are eight Dutch F-35s at Malbork. Four F-35s, including Polish MiG-29s and American F-15s, will practice. In addition, two F-35s monitor NATO airspace 24 hours a day. There are two other devices in reserve for this purpose.

Photo: Mediacentrum Defensie



Their mission becomes ours ...

AAR

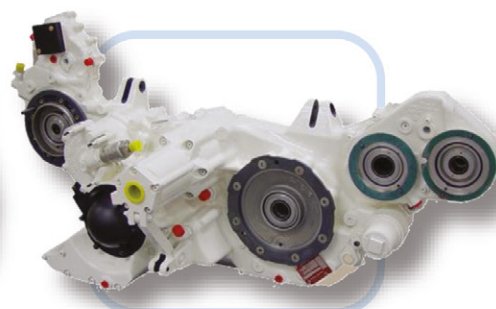
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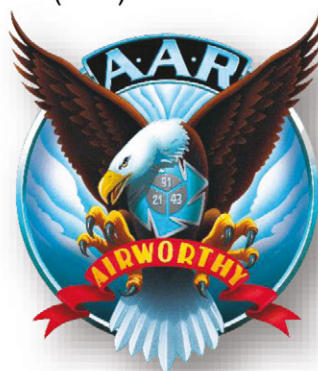
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Wij zijn Enginia, specialist in Digital Twin toepassingen voor de defensie-industrie. Samen tekenen we de route uit naar jouw digitale wereld én maken het uitvoerbaar. Dat doen we met onze dienstverlening en software voor modellering, simulatie, productie én data-uitwisseling.

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3D printing at Cannon Air Force Base

Cannon Air Force Base, a unit of the United States Air Force, is located in a remote location on a high plateau in the eastern part of the very sparsely populated state of New Mexico. Here, highly trained pilots and other air force personnel are trained to carry out special security missions all over the world.

Text and photo: AMREurope



Cannon Air Force Base is located in a remote location on a high plateau in the eastern part of New Mexico.

"Our training facility has everything that makes an operation look close to a real battle without it becoming life-threatening," said Lejay Colborn, who is responsible for planning and organizing the exercises. He was formerly with the US Navy's Explosive Ordnance Ordnance Disposal Service and is technically trained.

An enormous amount of material and equipment is needed to make these large-scale operations successful and on the right track. So if a part or device breaks down, it must be replaced as soon

as possible. This is to keep the interruption of the exercise to a minimum. The need for replacement parts continues.

After extensive research, the squadron at Cannon Air Force Base decided to invest in a Markforged X7 3D printer. The benefits were immediately noticeable.

Pilots often carry heavy equipment with them during exercises. Because this requires quite a lot of people's stamina and because all that weight does not promote freedom of movement, every opportunity to reduce the weight of the pack must be seized.

The unit decided to 3D print several tools. They were printed with Onyx, a microcarbon fiber reinforced composite. Lighter and much more durable than conventional tools.

Because the exercises also take place at night, the staff has night vision goggles. These night vision goggles are held in place by brackets mounted on the front of the helmets. These supports regularly break due to incorrect use and must therefore be replaced. Replacement costs a minimum of US\$100 per support and lead time is a few weeks.

Colborn realized that he could make these supports himself using the 3D printer. The cost was less than US \$5 and it only took a few hours to print the mounts! The 3D printed supports are at least as strong as the purchased aluminum supports.

Colborn's conclusion: "Getting the Markforged X7 3D printer was one of the smartest things we've ever done. This machine has saved us not only money, but also so much time. Highly recommended for applications in defense." ●

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years of proven track record for optronics on Leopard 2 weapon systems and other armoured vehicles and 20 years of field-proven experience in the use of artificial intelligence and neural networks for military sensing.

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BAA NLD for Fennek MLU under contract. Reconnaissance, observation, engagement: the BAA is the next generation mission-approved observation and reconnaissance system.

851

patents are held by HENSOLDT. A sign of our ongoing spirit of innovation which we apply for the armed forces.

More than 6,400 HENSOLDTians worldwide help to equip armed forces with state-of-the-art solutions and products to meet the demands of a new era in security policy. Our product and solution approach increases your response capability, helping you to achieve operational success, thus maintaining your national safety and security. As a leading technology company in the defence industry, we provide sensor solutions and electronic warfare technologies and competencies in data analytics and cyber security, enabling armed forces to detect and combat threats in both the analogue and virtual space.

HENSOLDT – Innovations for a safer world



Electric Fennek rides

The number of electric cars on public roads is steadily increasing. Electric driving is becoming more and more common. But does an electric vehicle also fit into the operational environment of Defense? Research is being done into this with the E-Fennek.

Text: Materieelgezien

Photo: Medacentrum Defensie

It doesn't look very different from its diesel brother. But behind the armor lies a completely different technique. The 5.7 liter six-cylinder in-line engine has been replaced by an electric variant with a battery pack. With an electric vehicle, everyone immediately wants to know what the range is.

Paul de Man, project leader from DMO Ground-based Weapon Systems Knowledge and Innovation, also regularly receives this question: "A maximum of 150 kilometres. The battery pack is fully charged within five hours." But according to De Man, these are not the most important data. "This project was started purely to gain knowledge about electrifying the powertrain on such a vehicle. This also includes operations and maintenance in operational conditions. What problems do you encounter and what solutions are available now or in the future?"

Task

The choice for the Fennek is not strange in this case. If you look at the various vehicles in the armed forces inventory, the task of this reconnaissance vehicle is best served by an electric motor. It is whisper quiet and does not spread exhaust fumes, the thermal signature is minimal so that it is less noticeable on thermal image and the comfort for the crew is better.

De Man: "The crew can simply understand each other without using an intercom and both the air conditioning and heating run on electricity from the batteries. You now suddenly hear squeaks and creaks that were drowned out by the diesel engine at first," he jokes. ●

Pilots can experience stressors like hypoxia.

Military Innovation by Doing

Our goal is spin-in: getting the newest tech applied within the Ministry of Defence.

Text: DMO

Photos: Mediacentrum Defensie

Each branch of our armed forces has an innovation center or network, we at MIND for the Defence Materiel Organization. We maintain a pair of eyes for DMO within national and international innovation ecosystems. We had an early start in 2018 at the Kromhout Kazerne, but if we wanted to reach innovators, we had to go beyond the fences.

That's how the MIND-bases came to be. We now have a footprint and officers at existing innovation hubs of Technical Universities: the RDM campus in the Port of Rotterdam, in Brainport Eindhoven, and in Enschede at UTwente.

Necessity

We took a year to start with an open and broad scope, find priority areas of tech, and areas of interest within the Strategic Knowledge and Innovation Agenda. Integrating innovation into our core processes has been the theme from day one, and it is starting to work.

While the MINDbases are very visible footholds, our team "inside the fence" at the Kromhout Kazerne go through the Defense Whitepaper for this cabinet and its instruments, take a good look at the toolbox: we are mainstreaming spin-in at a promising pace.



The MINDbases are very visible footholds.

Examples

Finding the best match with operational requirements gives the best odds for innovations getting onboarded. Three examples spring to mind.

First, the Hullvane and maritime requirements. Any vessel, and especially a launching platform, scores points on mileage, water surface signature against detection, and stability for its launched subsystems, flying or floating. So when we were presented with the Hullvane concept, which improves performance in all three, we had a very convincing case. It is being fitted under a patrol ship as we speak.

The mobile hypoxia trainer for the F-35 by TNO and Multisim is a second showcase. Training pilots and flying personnel for low-oxygen situations is a demanding puzzle. Time is scarce, data is confidential, and a check-up in a hypobaric chamber is hardly the surprise of a sudden pressure drop in the cockpit demanding split-second decisions. Now we have a simulator for virtual missions wherein pilots can experience stressors like hypoxia, a much more immersive training.

Even closer to our end-user colleagues: the KPU (the uniform and kit service) now has a digitized obstacle course when testing. Previous try runs were compared mostly on user reviews. The new system adds to those results by measuring those requirements which are less immediately obvious."

With 70 ongoing projects? Plenty, but you will have to wait for the details. ●



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NIDV in 2023

Business is the cork on which our economy floats. It can easily be added that security depends on business contributions. Contributing to security while retaining turnover is a major motive for joining the NIDV.

Information NIDV. With increasing purchasing power of Defense, the number of participants at the NIDV Foundation is also increasing. They are informed weekly about business opportunities offered to them by the Ministry of Defense. Before Defense puts a major investment project on the market, the NIDV is consulted about possible industry involvement. The Police procurement calendar is shared. Ties are strengthened with the new Netherlands Institute for Public Safety (NIPV), increasingly responsible for procurement for the First Responder service. Regular opportunities offered by the European Union and NATO are plotted with NIDV participants. Dutch "Partners in international business" and European Alliance programs enable participants to enter certain markets with government support. And the Russian invasion of Ukraine leads to a variety of urgent needs assessments that NIDV companies also receive from the EU, NATO and the UK.

Policy documents. Good information helps ensure that our participants can enter into contracts. After all, without contracts, the chimney of NIDV companies does not smoke. The above daily activities of the NIDV are essential, but not sufficient for the future of a healthy defense and security sector. That is why intensive discussions with the ministries of Defense and Economic Affairs and Climate Policy, including at the ministerial level, include the concretization of the Defense Industry Strategy and the Defense Innovation Strategy. With an increasingly active industry policy, also for our sector, the frameworks are thus set for the coming years.

International position of the sector. Little comes naturally. Some €50 billion is handled annually by our companies with 180,000 employees. Of that, defense and security contracts include €5 billion with about 18,000 employees. Two-thirds of that €5 billion is for export. So indispensable! The NIDV continues to push for a level playing field in Europe, not only in procurement but also in the field of export licenses for military equipment. Now that the European Member States are also increasingly converging in the field of defense, export policy must also be truly harmonized. Our companies adhere to export and compliance rules. That our companies that meet ESG criteria are not accepted banks and other institutions is short-sighted and further compromises our security. Together with umbrella organisation ASD (www.asd.eu), the NIDV is also working on this. And that there will be special legislation to prevent foreign, read especially Chinese, investors from taking over our defense companies is a good thing. The NIDV especially wants to keep this legislation workable. That the arm of e.g. the United States with its export regulations also extends to the sector is a concern that the NIDV is also raising.

Europe is working to build more powerful armed forces and a stronger defense technological and industrial base. The European Defense Fund with €8 billion budget is a key to this. Together with Defense and EZK, the NIDV is working on the Dutch strategy for the EDF. If the needs of the armed forces and the capabilities of our sector are well combined, opportunities arise that can also lead to leading positions for Dutch companies in European consortia for certain weapon systems or components thereof. And with a strong Dutch sector, Europe becomes stronger, which in turn offers benefits to NATO.

International supply chain. Of great importance remains the connection of our companies in the international supplier chain. The Netherlands builds its own naval ships and radars, excellent ecosystems, but cannot do everything. Together with CMP, we position Dutch companies with

NULKES' NOTES

Mr. Ron Nulkes, Director NIDV



foreign suppliers from whom Defense buys e.g. aircraft. Industrial contacts are being strengthened with Sweden, France, Greece and in a Benelux context. Also together with the government we are working on a trade dialogue with the US. This will give our companies stronger positions in the supply chain.

Knowledge. It is also important for the sector to maintain a good connection with the academic level. To this end, among others, the NIDV annually awards the Jan Gmelich Meijling thesis prize for the best thesis at one of the academic institutions for defense and security. [With a special chair of "military-industrial cooperation," the NIDV also wants to contribute to professionalizing cooperation within the Triple Helix for Defense and Security]. On a practical level, the NIDV organizes master classes, which increase the sector's familiarity with the operational commands, the DMO and the Police, as well as its knowledge of European procurement and Dutch government security procedures. We also provide education and advice on Defense security regulations. After all, the bar for companies is high doing business with our security clients!

Prepared for crises. The NIDV stands even in times of crisis. During the COVID19 crisis, the NIDV inventoried which companies should be considered for an exception from lockdowns, because otherwise national security and that of allies could be compromised. And discussions are underway with Defense to prepare our sector for extraordinary circumstances as well. With the unpredictable Russia, such scenarios must be taken into account. Especially in those circumstances, companies must be able to continue to supply the Dutch and other armed forces.

NIDV not only represents interests of participants. Throughout the year, NIDV works to bring government and industry together, to explain what our companies can do and to report to companies what our security forces need. We also raise issues in the implementation of Defense security requirements. Not only the paying NIDV participants reap the benefits of this. Therefore, for the other companies, joining the NIDV is worth considering in 2023 on Nov. 30st.

NEDS. Short-term opportunities and the above long-term approach come together every year in Ahoy Rotterdam; the NIDV Exhibition Defence & Security, or NEDS. Companies show what they have to offer, government officials reveal what they need. It is the highlight of an NIDV year, which we are setting up again this year with an extensive supporting program. Furthermore, it is planned to hold another EDF / Global matchmaking on Nov. 29th.

Image of the sector. Wryly, the Russian invasion changed public opinion about the armed forces and the defense sector for the better. With a well-equipped military, someone will think twice before going to war. That military needs industry. It is increasingly recognized that there is mutual dependence: the armed forces cannot do without industry, and industry cannot do without orders from the armed forces. The appreciation for the armed forces and our sector is increasing. That too sets the bar high for our sector.

Future. Our sector is competitive, qualitative and innovative. We have self-creating ecosystems, fill diverse niches, have excellent SMEs within our borders, are essential in the international supply chain and blow our weight in (inter)national forums. NIDV platforms play a crucial role in serving our armed forces and positioning NIDV companies. The NIDV is prepared for the future with an excellent functioning team. I wish our society maximum security and our participants bread on the table. It remains for me to wish the new chairman and my successor much success for the sake of peace and security and the earning potential of our industry.

Mission

The NIDV foundation promotes the sustainable positioning of the Dutch Defence and Security Related Industry (NL-DVI) for national/international (government) contracts and at (inter) national supply chains. The NL-DVI stands for the highest quality and efficiency of equipment, services and application-oriented knowledge. The NIDV is the strategic partner of public authorities in the field of defence and security, and pivot in the cooperation in the golden triangle of government, knowledge institutions and the business community. ●

Patriot system to Ukraine



The Netherlands will supply parts of a Patriot air defence system, specifically 2 launchers and missiles, to Ukraine. The Netherlands is also responsible for training Ukrainian soldiers. Further The Netherlands will supply 100 vehicles fitted with anti-aircraft guns that were commercially purchased in the Czech Republic.

Ukraine has a continuing need for well-trained military personnel. The UK took the initiative at the beginning of July last year with Operation Interflex, which was launched to train Ukrainian military personnel rapidly and on a large scale. The Netherlands joined the operation. In the period September to November,

approximately 90 members of the Royal Netherlands Army trained 400 Ukrainian recruits. Towards April, almost 70 members of the Netherlands Marine Corps will train a further 400 Ukrainian recruits. Throughout 2023, Dutch service members will train hundreds of Ukrainian military personnel. ●

COLOPHON



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C-390 MILLENNIUM

ONVERSLAANBARE COMBINATIE

VAN SNELLE HERCONFIGURATIE EN MISSIEFLEXIBILITEIT.

Bij humanitaire missies zijn de snelle herconfiguratie, snelheid en flexibiliteit van de C-390 Millennium onmisbaar gebleken voor de Braziliaanse luchtmacht. Op het hoogtepunt van de COVID-pandemie hebben zij de C-390 ingezet voor de levering van levensreddende medische voorraden, waaronder ambulances en vloeibare zuurstof, aan afgelegen gemeenschappen in het Amazonebekken. Na de aardbeving van 2021 in Haïti werd een C-390 door de Braziliaanse luchtmacht gebruikt om 10,5 ton geneesmiddelen, voedsel en gezondheidszorguitrusting af te leveren om de slachtoffers te helpen en de noodhulpoperatie te ondersteunen. En toen zich een verwoestende explosie voordeed in het havengebied van Beiroet, Libanon, bracht de Braziliaanse luchtmacht in iets minder dan 16 uur levensreddende geneesmiddelen en voedselvoorraden 'op de grond'. De C-390 heeft zich in het veld en onder de zwaarste omstandigheden bewezen en is nu door de Portugese en Hongaarse luchtmachten uitgekozen om hun humanitaire missies te leiden.

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