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HACKING WILL KILL

The recent information about Russian hacking into the US Democratic Party's computer systems, interfering with their presidential election campaign, has sent shockwaves into political parties and organizations all over the world.

The obvious consequence is of course that if someone can hack into the US Democratic Party's computers, it is probably possible to hack into most computer systems in use by political parties or organizations around the world.

This has of course created a great deal of concern among politicians and leaders, because this might directly interfere in the political work of elected leaders and representatives.

A foreign agent's interference in any country's democratic processes is of course a severe reason for concern, but concern about hacking into computer systems should run deeper.

Today a vast number of computer systems runs and controls crucial infrastructure in every country in the world. If it is possible for unauthorized persons to get access into computers interfering with political processes, it is possible to break into and interfere with computer systems operating vital infrastructures, like transport systems, telecom and communication systems, hospital and healthcare, water and power supply and in worst case, police and defence systems.

We must recognize that the knowledge of how to break into our computer systems is out there. So far, we have every reason to believe that this knowledge is concentrated within government agencies in some countries. And so far, the use of this knowledge has been focused on political processes, technology and business sensitive information etc. But we are not in control of this knowledge, and this knowledge can easily be spread to people and groups that have a far more threatening agenda than influencing political processes or gaining business sensitive information. At some point, we will see that terror groups will hit us through internet and computer technology. And inevitably, this will lead to people getting killed.

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Coverphoto:

The Norwegian army will purchase ground based air defence systems from Kongsberg. The photo displays test firing with AMRAAM missiles in Vidsel test range in northern Sweden. Photo: Torbjørn Kjosvold/FMS



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GERMANY TO BE PARTNER FOR NEW SUBMARINES TO NORWAY

In early February this year the Norwegian Government decided on Germany as strategic partner for new submarines. The partnership is based on a German-Norwegian common purchase and lifetime management agreement on identical, new submarines.

The decision involves a broad and long-term Navy-to-Navy cooperation encompassing submarines and other naval capabilities. The cooperation will include the purchase of identical submarines and cooperation on training, exercises, spare parts, maintenance and lifetime management of the new submarines. The submarines will be based on the 212-design already in service in Germany and Italy. The cooperation also includes cooperation between Norwegian and German industry.

– Submarines are amongst the Norwegian Armed Forces' most important

capabilities and are of great significance for our ability to protect Norway's maritime interests. It is important that we have found a strategic partner that we can build a broad and long lasting cooperation with. This lays a good foundation for the long-term relations we need to maintain a credible submarine capability in the future. Submarine cooperation with Germany will ensure that Norway gets the submarines we require, and at the same time contributing to Smart defence and more efficient defence materiel cooperation in NATO, says the Minister of Defence Ine Eriksen Søreide.

The Norwegian Ministry of Defence has practised equal treatment of the suppliers and their nations. The same amount of time and effort has been spent towards France and Germany, and the activities towards both have been balanced. It has been clearly communicated on all levels that it is the totality of the offers that will be the determining factor. Both France and Germany offer excellent submarines that meet Norwegian needs, and both nations have been given good opportunities to come up with a total offer on new submarines and cooperation.

Norway will now enter into final negotiations with German authorities. When a government-to-government agreement is in place, a German-Norwegian negotiation towards the German submarine supplier thyssenkrupp Marine Systems (tkMS) will commence. tkMS is the largest producer of conventional submarines in Western Europe. The



shipyard has extensive experience with building advanced submarines and a large production capability.

The plan is to sign a common contract for new submarines in 2019. This will enable delivery of new submarines from the mid-2020s to 2030. This timeline ensures a continuous Norwegian submarine capability as the Ula-class submarines reach their end of life and enter the decommissioning stage.

– The submarines Norway and Germany will procure, ensure a submarine service for the future. Norway has an evolutionary approach to new submarines, and will base the procurement on an existing submarine design. This way we avoid an extensive development project with the risks and costs this would involve. In addition, together with Germany, we will get a larger scale in the production, says the Minister of Defence.

Independent of this decision, the work to establish further cooperation with other nations continue in order to achieve even greater synergies and economies of scale. Norway has for several years worked closely towards the Netherlands and Poland to create a broad submarine cooperation. This work will continue. ■■

A German Type 212 submarine. Norway and Germany have agreed to sign a common contract for six identical submarines based on the Type 212 design. Norway will purchase four of the submarines, and Germany two. Photo: tkMS



DCNS DISAPPOINTED

In a press release, DCNS states that the company takes note of the choice of Norway to interrupt the competitive process before its conclusion in order to choose an alternative solution in the framework of a joint inter-governmental procurement with another European country.

We regret this sovereign decision even if we respect it. We remain convinced that our offer was superior, in particular in the anti-submarine warfare area, crucial for operations and patrols in the High North.

We remain at Norway's disposal to re-engage the discussion, especially if the cooperation planned with the German Government would not reach an agreement.

DCNS thanks the departments of the Defence Minister and the

French Navy as well as its Norwegian and French industrial partners. They accompanied and supported the Group to build up this solid and top-level technological and industrial offer which meets the Royal Norwegian Navy's ambitions.

DCNS' future conventional submarine programmes will benefit from excellent work and the Scorpene teams' mobilization to precisely meet the Royal Norwegian Navy's requirements, with very ambitious target costs.

LITHIUM IRON BATTERIES AS AN ALTERNATIVE

Thyssenkrupp Marine Systems offers Lithium Iron batteries for the new Norwegian submarines, as an optional alternative to traditional lead acid batteries.

The lithium iron phosphate (LiFePO₄) battery, also called LFP battery is a type of lithium-ion battery. LFP batteries have somewhat lower energy density (the amount of energy stored per unit volume or mass) than the more common lithium cobalt oxide (LiCoO₂) battery found in consumer electronics. But compared to other Lithium-ion batteries, the LFP battery are inherently safer, and this is of course a crucial characteristic for a battery planned for use in a submarine.

Compared to a traditional lead acid battery a lithium ion battery offers several benefits. Most important is perhaps that a Lithium-ion battery is one-third the weight of a similar capacity lead acid battery, and a Lithium ion battery can be recharged 5000 times or more, compared to 400-500 times for a lead acid battery. In addition, a lithium Ion battery can be discharged 100%, while a lead acid battery should never be

discharged more than 80%; in fact, most lead acid batteries are recommended not to exceed 50% depth of discharge.

But despite all benefits of Lithium ion batteries compared to lead acid batteries, the lead acid batteries are significantly more safe. We have all read the stories of smart phones with lithium Ion batteries catching fire on airplanes. A similar battery fire in a several hundred kilos battery package on board a submerged submarine, would of course be a total disaster. This is why all submarines today are equipped with traditional lead acid batteries. But by offering an alternative battery package for the Norwegian submarines, based on LFP batteries, thyssenkrupp Marine Systems are taking a step into the future, coming up with an alternative that offers many of the huge benefits of the Lithium-ion batteries, while still retaining an acceptable level of safety.



Test firing of the NSM. Besides the Norwegian Navy, the NSM missile has been sold to Poland and Malaysia.
Photo: Kongsberg

NAVAL STRIKE MISSILES FOR 10 BILLION NOK

Only a few days after the news broke on the Norwegian decision to go for Germany as strategic collaboration partner for the supply of future Norwegian submarines, the Norwegian Government issues a press release concerning an agreement for the sale of NSM to the German Navy.

According to the release, Germany has confirmed its intentions to buy missiles from the Norwegian defence industry.

– Germany is planning to procure a notable number of missiles for its navy. This opens huge possibilities for Norwegian industry, for Kongsberg as well as for Norwegian sub-suppliers. It is important to secure the technological lead held by Norwegian missile technology, and we will over the years ahead, co-operating closely with Germany, develop the Norwegian NSM missile further against future threats, said Minister of Defence, Ms. Ine Eriksen Søreide.

Germany declared its willingness to enter into an extensive cooperation around the Norwegian NSM missile at the time when the agreement was made. The value of future NSM sales to Germany alone may reach a figure of 10 billion NOK, or just over one billion euros.

Many missiles for a small navy?

In the event that Germany does purchase NSM missiles to the tune of 10 billion NOK, this means that the German Navy

will take delivery of more than 300 of these missiles.

The question may be raised as to whether the German Navy has a need for this many missiles. Given the premise that the Navy's will be equipped with the NSM's, the German Navy currently operates three destroyers of the Sachsen class, and four frigates of the Brandenburg class, while four frigates of the type F125 Baden-Württemberg class are under delivery towards 2020 as replacements for the Bremen class.

Furthermore, the German Navy has plans to procure four multi-mission frigates. These frigates are designated "Mehrzweckkampfschiff 180" (MKS 180), and the first vessel of the class is planned to enter operations in 2023. The original number of multi-purpose MKS180 vessels was six, but budget reasons reduced this to four. The option remains to raise the number to six at a later time, however.

Adding up the numbers, this means that the German Navy as it looks today will have some 15 vessels of the destroyer/frigate size that can be likely candidates for NSM armament.

The navy also has five corvettes of the Braunschweig class, and is planning to double the number of these corvettes.

The current five Braunschweig class ships, however, are equipped with 4 pcs RBS 15 Mk3 sea target missile, supplied by the Swedish Saab and the German Diehl, and planning until now has called for the five new Braunschweig class corvettes to be similarly equipped with RBS 15, probably incremented to Mk4 when this is available.

Even the four frigates of the type F125 Baden-Württemberg class are planned for RBS15 Mk4 armament, but as an interim stopgap solution until this missile is ready, the ships will be armed with 8 pcs RGM-84 Harpoon anti-ship missiles.

If the German Navy upholds their plans to keep and procure more of the RBS15 missile, the relevant recipients for the NSM will be only the three destroyers of the Sachsen class, the four Brandenburg class frigates plus the four (or six) vessels of the future MKS180 class. Should the Navy on the other hand discard all RBS15 missiles in favour of the NSM, the number of relevant vessels will be 25 according to what is known about German Navy planning today. Even so, 300 missiles spread among 25 vessels still means a substantial number for each ship. A volume of 1 billion euros' worth of NSM missiles will inevitably mean that a large number of missiles would be purchased to go straight into storage. ■■

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KONGSBERG EXPECTANT TO THE SUPPLY POSSIBILITIES FOR NEW SUBMARINES

The Kongsberg Group regards the selection of German submarines of the “212” class as a point in their favour. The procurement of four such vessels will be the biggest defence contract since the F-35 fighters. But the exact procurement value will not be clear until the Government submits an investment proposition this spring, emphasises the Minister of Defence, Ms Ine Eriksen Søreide.

Text: Tor Husby

Earlier assessments of the total investment cost including weapons, docks, training and maintenance will amount to more than 30 billion NOK, or 3.3 bn EUR. Current planning calls for the new submarines to be phased in from the year 2026, while the old submarines of the “ULA” class will be successively phased out of the structure from 2028.

- We are centrally positioned for the delivery of systems for command and control, navigation, sonar and tactical communication. When we integrate all of this in one complete package, this amounts to

an effective combat direction system. Due to our competence and experience, we are expecting important delivery assignments to the new submarine class. It is also a Norwegian requirement that the procurement of the four submarines should be reflected in the form of industry contracts, says Director of Communications, Ronny Lie.

A binding Industry Agreement is supposed to be in place before it is time to sign the contract for the submarine purchase in 2019.

50 years of development

Together with a number of Norwegian sub-contractors, Kongsberg has been supplying

and has remained a world leader in combat direction systems for submarines over a period of close to 50 years. The systems have been under continuing development and modernising up to the latest version, designated MSI-90U MK2. In 2017, this combat control system is in use on submarines in Norway, Germany, Italy, South Korea, the Netherlands and Indonesia.

Why should it be used again on the upcoming Norwegian submarines, and how effective is the Kongsberg system in relation to other systems on the market?

- In their time, submarine systems have been ever more highly developed to avoid detection, while at the same time wishing to detect other submarines as early as possible. All over Norway there are extensive submarine environments – within fisheries, oil and gas, scientific research, and not least within defence. Norway has a history of several hundred years of spending vast resources in detecting, finding and mapping submerged items in a difficult littoral terrain. This amassed competence has led to a highly advanced

One partner for all missions



submarine combat system which uses analyses of available sensor information to provide a situation image of the conditions surrounding a submarine superior to any other current system.

The best on the market

A number of countries have selected the Norwegian submarine combat system, following several practical comparisons where it has stood out as the best. It was quite a natural thing that this competence should be carried through to the new Norwegian submarines, that are to be built in Germany.

Are we looking towards new technological breakthroughs in this field?

- In the new Norwegian submarine generation, a lot will be based on familiar off-the-shelf technology. New solutions may appear in some areas, but what this can entail remains to be seen during the phase towards the possible contract signature in 2019, replies Johannes Namstad Dobson, Group Communication Manager for the Kongsberg Group.

Underwater technology is incidentally one of the areas of technological competence within the national defence industry that are defined as part of Norway's substantial security interests. ■■

TEAMING UP FOR SUBMARINES

KONGSBERG, Thyssenkrupp Marine Systems and Atlas Elektronik have signed a comprehensive teaming agreement for submarines. As part of this agreement, the partners will establish a new company based in Norway. Shares in the joint venture will be part-owned by both the Norwegian and German partners. The newly founded company will be responsible, among other things, for the development, production and maintenance of combat systems, weapon control systems, effectors, sensors and sonar systems. This will enable all three partners to jointly offer the full range of services and products to

their clients. The agreement has a potential for more than NOK 15 billion for Kongsberg in the next decades and comes in addition to the announced 10 billion Naval Strike Missile (NSM) contract with the German navy.

-The new company will not only partner for the joint Norwegian- German submarines contract, but also the exclusive partner for all future submarines built by thyssenkrupp Marine Systems, says Dr. Rolf Wirtz, CEO of Atlas Elektronik, adding that the joint venture company will also be looking into opportunities outside the submarine business.



From left: Eirik Lie, President Kongsberg Defence Systems, Dr. Peter Feldhaus, CEO of thyssenkrupp Marine Systems and Dr. Rolf Wirtz, CEO of Atlas Elektronik. Photo: MilitærTeknikk



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NEW LOGISTICS AND SUPPORT VESSEL DELAYED



KNM "Maud" at the shipyard in South Korea, mid-July 2016. Sea launch was on June 4, 2016, and equipping and test preparations are going on. The vessel is in the final stage of the outfitting and equipping phase, and all technical gear is in place. Cable laying and connecting of equipment is entering the final phase. Outfitting of cabins, crew quarters, mess rooms, galleys and hospital is well under way, while a good deal of work remains here. Photo: NDMA

Delivery of the new logistics and support vessel for the Norwegian Navy, KNM "Maud", has been delayed. Currently under construction in South Korea, the vessel was originally scheduled for delivery in September 2016, but this has now been postponed until the autumn of 2017.

KNM "Maud" is being built at the Daewoo Shipbuilding & Marine Engineering (DSME) shipyard, and the ship will be replacing the KNM "Tyr" and KNM "Valkyrien", both of whom were phased out in the summer of 2015.

– The postponement is mainly related to the yard's difficult financial situation, which has caused delays in design, procurement (subcontracting) and production. On top of this, the yard

has suffered from two fires, explains information advisor Simen Rudi of the Norwegian Defence Materiel Agency (NDMA).

– The contract with DSME has been entered into at fixed cost and negotiated specification. The yard is responsible for the entire delivery, including design, projecting, building and test. This means that the financial risk in the event of delays is unilaterally placed with DSME. The building contract contains regulations that

FACTS ABOUT THE LOGISTICS VESSEL

- ▲ **Length overall:** 183 m
- ▲ **Beam:** 25.9 m
- ▲ **Design draught:** 8.62 m
- ▲ **Max displacement:** ~ 27,500 tons
- ▲ **Speed:** >18 knots
- ▲ Two main propulsion engines @ 7500kW (Wärtsilä)
- ▲ Two diesel generators @ 3170kW (Wärtsilä)
- ▲ Two bow thrusters @ 1000kW (Wärtsilä)
- ▲ **Propulsion type:** Diesel hybrid (CODLOD)
- ▲ Two "dual abeam" RAS rigs for transfer of fuel at sea (Rexroth)
- ▲ 25 tons' heave-compensated deck crane (Pellegrini)
- ▲ Fire Sea Protector remote controlled weapons platforms (Kongsberg)
- ▲ **Core crew:** 43 persons
- ▲ **Supplementary crew:** 116 persons

LOAD CAPACITY:

- ▲ **Diesel (F76):** > 7000 tons
- ▲ **Helicopter fuel (F44):** > 300 tons
- ▲ **Provisions:** > 30 tons
- ▲ More than 40 units of 20 foot containers
- ▲ Smaller vessels
- ▲ Vehicles
- ▲ More than 200 tons of ammunition
- ▲ 2 units NH-90 helicopters (has helipad and hangar)
- ▲ Medical capacity (up to 48 patients)
- ▲ Hyperbaric chamber for divers

MILESTONES:

- ▲ **Contract Award:** 28 June 2013
- ▲ **Steel Cut:** 22 May 2015
- ▲ **Launch:** Conducted June 4, 2016
- ▲ **Delivery:** In the course of 2017

CONTRACTOR:

- ▲ Daewoo Shipbuilding & Marine Engineering (DSME)
- ▲ British Maritime Technology (BMT)

NORWEGIAN SUB-SUPPLIERS:

Norwegian providers have deliveries within several of the vessel's systems. Among these are: Steering machines and deck machinery (Rolls Royce), rescue craft and parts of the rescue system (Maritime Partner and Vestdavit), galley (Norrøna), trash incinerator system (TeamTec), and navigation system (Valmarine).

should indemnify the Defence Materiel Agency against costs of delay – including for example increased costs due to prolonged conclusion of contract.

The risk of currency fluctuations, on the other hand, is carried by the Defence Materiel Agency. The contract is in USD, and dependent on the exchange rate development, delays can have either effect – cost increase or reduction.

The operational consequences for the Navy will be the delayed phasing in of this important logistics capability, intended among other things to offer the Navy's vessels – and the frigates in particular – the possibility of receiving fuel and supplies at sea. In the meanwhile, the Navy will be more dependent on land-based logistics and support from other vessels in the force. The crews are fully occupied with training and preparations for taking delivery.

The Defence Materiel Agency with support from the Navy keeps a construction office at the shipyard, to perform all inspections during the building period, says Rudi, adding that for this procurement, very little equipment will be provided from the Defence Materiel Agency. Nonetheless, there are several Norwegian sub-suppliers to the Korean shipyard. ■■

OFFSET BUYING

- ▶ The industrial collaboration agreement with the DSME, entered into in June 2013, specifies a commitment to 100 % industrial cooperation with Norway, amounting to 100 % "offset" of the total contract value of 235 MUSD. This commitment will be subject to change according to the contract value for the duration of the agreement.
- ▶ Per the last revision, DSME has complied with just under 10 % of its commitment by the end of 2015, while performances done in 2016 will not be reported until spring 2017.
- ▶ DSME has experienced some challenges to its performance relative to the plan. Among other aspects, DSME had express intentions to involve Norwegian defence industry in Korean defence materiel as part of the plan. Further to this, the DSME had wished to bring Norwegian industry along as a sub-supplier into other defence materiel markets, where DSME saw future contract opportunities. This has taken more time than expected, and planned materiel programmes in other defence markets have been hit by similar delays.
- ▶ The Defence Materiel Agency is working on several alternatives with the DSME, aimed at jointly securing good defence-related projects. The running dialogue with Korean officials is also operating smoothly.



Artist's impression of KNM "Maud". The primary task of KNM "Maud" will be to provide reinforcements of fuel, provisions and equipment for naval vessels that form the Norwegian Task Group (NorTG), with a view to extending the operative endurance of the strength at sea. Among her secondary tasks will be assertion of sovereignty, support to other military units, civilian support, search & rescue (SAR), humanitarian operations, and the participation in network-based defence.

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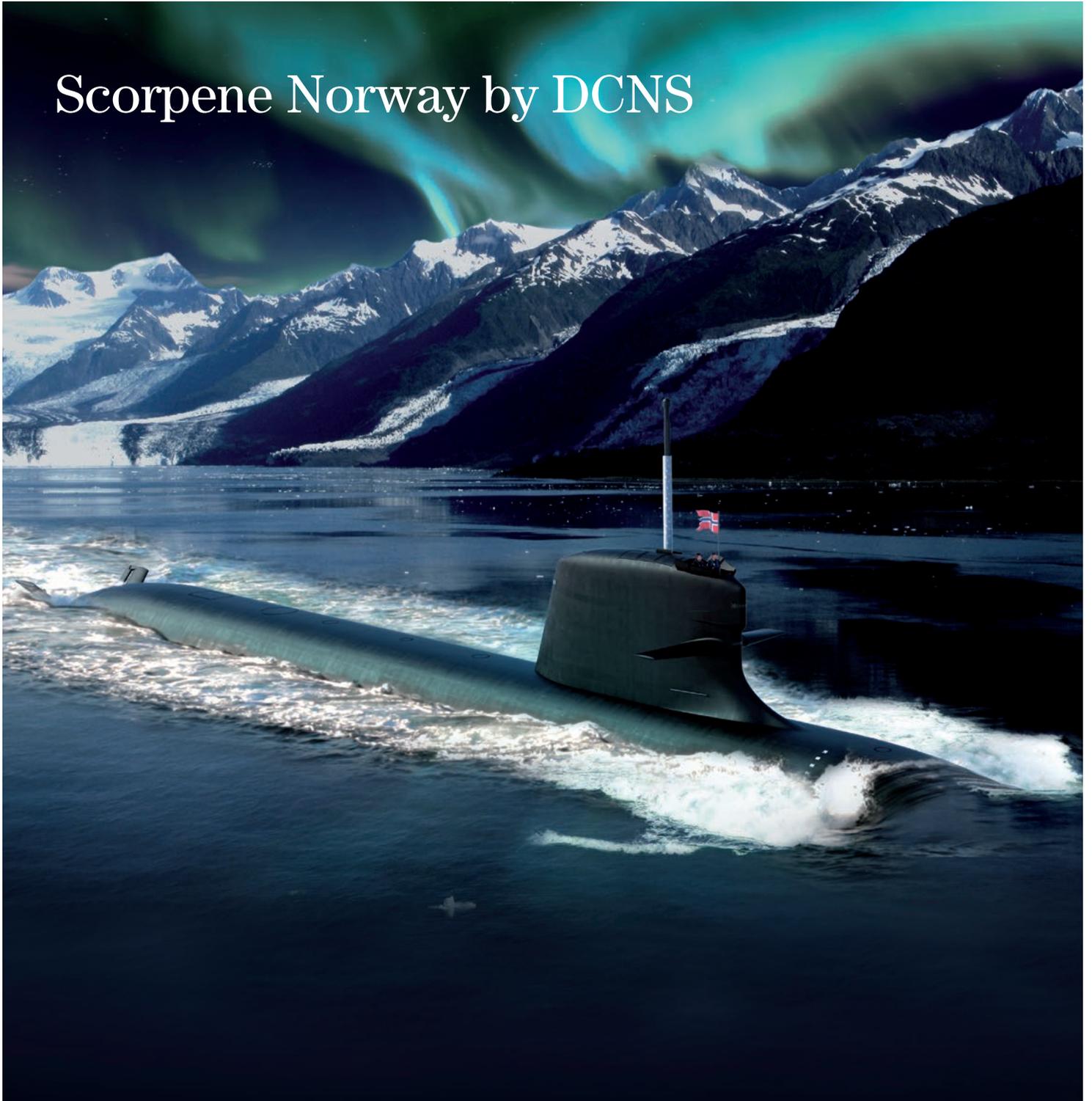
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LEDEREN HAR ORDET:

MENS VI VENTER PÅ KONTRAKTER

Norge har valgt Tyskland som strategisk samarbeidspartner for neste generasjons ubåt. Tyskland har, i følge en pressemelding fra Forsvarsdepartementet, bekreftet at de vil anskaffe missiler fra norsk industri. KONGSBERG, thyssenkrupp Marine Systems og Atlas Elektronik har undertegnet en avtale om å etablere et norsk joint venture som skal være en eksklusiv leverandør av kampsystemer til tkMS sine ubåter.

Mer enn to år før det er planlagt å inngå kontrakt om leveranser av ubåter til Sjøforsvaret og få uker etter at nyheten om at Norge skal samarbeide med Tyskland om ubåter ble kjent, posisjonerer norsk og tysk industri seg for utvikling og produksjon av så langt til sammen seks ubåter, fire til Norge og to til Tyskland. Sjelden, om noen gang tidligere i forbindelse med en stor forsvarsanskaffelse fra utlandet, har det lyktes å få på plass rammene for et fremtidig samarbeid så lenge i forkant av at det inngås en forpliktende kontrakt. Det er et godt utgangspunkt for å sikre at den kommende anskaffelsen av nye ubåter også blir en suksess for norsk forsvarsindustri.

Det er lett å la seg rive med når milliardene sitter løst og euforien

griper om seg. Så langt er ingen kontrakter inngått og ingen forpliktende myndighetsavtaler signert og eventuelt ratifisert. Selv om forutsetningene for et vellykket samarbeid sjelden har vært bedre på tilsvarende tidspunkt i forberedelsene til en stor forsvarsanskaffelse, er det derfor all grunn til å minne om at det fortsatt gjenstår krevende forhandlinger, der mange utfordringer må håndteres, før det kan inngås kontrakter om anskaffelse av ubåter. I dette ligger en risiko, men også betydelige muligheter.

Erfaringene bl.a. fra anskaffelsen av ULA-klasse ubåtene på 1980-tallet og fregattene sent på 90-tallet, tilsier at noen enkle prinsipper, som sikrer at potensialet som er identifisert faktisk kommer til realisering, bør legges til grunn.

Avtaleverket i sin helhet må være juridisk forpliktende i det øyeblikket det inngås kontrakt om anskaffelse av ubåter. Det innebærer bl.a. at eventuelle forbehold om parlamentarisk behandling av myndighetsavtalene må være ryddet av veien før det inngås kontrakt, slik at når Norge forplikter seg til å anskaffe fire ubåter er også Tyskland juridisk forpliktet til både å anskaffe to ubåter og til å anskaffe missiler fra norsk industri. Videre må industrisamarbeidsavtalen mellom Forsvarsdepartementet og tkMS være signert før kontrakt inngås.

Avtalene mellom norsk og tysk industri om leveranser til hverandre må tilsvarende være utformet slik at de senest blir juridisk bindende på det tidspunktet kontrakt om anskaffelse av ubåter signeres. Det

samme gjelder eventuelle andre avtaler om leveranser av forsvarsmateriell fra norsk industri til Tyskland som skal skje innenfor rammen samarbeidet.

Erfaringene bl.a. fra fregattprosjektet viser med all tydelighet at det som ikke er forpliktet når anskaffelseskontrakten signeres er beheftet med stor risiko i forhold til realisering.

Derfor blir det viktig at stortingsbehandlingen av ubåtanskaffelsen, som er planlagt å skje før sommeren, gir et tydelig mandat som slår fast at ovennevnte prinsipper skal legges til grunn. Det innebærer bl.a. å slå fast at det er forutsetning for å inngå kontrakt om kjøp av ubåter at alle avtaler, myndighet-til-myndighet, myndighet-til-industri og industri-til-industri, som skal inngås innenfor rammen av det norsk-tyske samarbeidet om anskaffelse av ubåter, skal tre i kraft og være juridisk bindende senest fra det tidspunktet Norge forplikter seg til å anskaffe ubåter.



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PROGRAM CONFERENCE AIR SYSTEMS

The first program conference this year was held in the middle of February, drawing almost 70 attendees. This also marks the tenth season of program conferences, with an increased interest.

For the Air Force, there are major tasks to be faced in times ahead, Col. Torgeir Berg, station chief of the LST said in his opening statement.

- First and foremost, there is the introduction of the F-35 fighter aircraft, with arrival of the first aircraft being planned for November of this year. With the F-35 we are getting a fifth-generation fighter aircraft. This fact alone is not all that essential in and of itself; the important thing is that equipped with the new planes the Air Force can take on fifth-generation operations. This also means that the Air Force will need to learn to master and exploit the huge capabilities inherent in the F-35. To do this, we must in parallel with the procurement work on the development of new plans and concepts, as well as develop new competences, in order to really get the maximum leverage out of the new planes.

- At the same time as the introduction of the F-35, there is a number of other systems entering service with the Air Force, continues Berg, and mentions helicopters, air defence and P-8 surveillance aircraft among others.

Further to the introduction of new systems and materiel, the Air Force is also facing major changes in the shape of shutting down air bases and moving of personnel. And these things are we expected to push through while at the same time remaining operational 24/365, says Berg in conclusion.

P8 Poseidon; Norway's new maritime patrol aircraft

Last year, the Norwegian Government made a decision to procure P8 Poseidon aircraft, and the investment decision was approved by the Norwegian Stortinget just before Christmas.

- From some quarters, it has been maintained that the current fleet of P3 Orion aircraft can still keep flying for a long time, says Per Magne Bjørnsletten from the Norwegian Defence Materiel Agency. But the main downfall of the Orion planes does not concern the aircraft themselves, but rather the sensor side, and in particular sensors for submarine detection. It is in this area we can see difficulties in securing spare parts and upgrades over the coming years, not least with the US Navy in the process of phasing out its own anti-submarine Orion planes.

The purchase will be handled as a complete procurement comprising both aircraft, torpedoes and support systems. With respect to spare parts and training, the plan is to connect with the US Navy for the first few years.

For the operational phase, we have been looking at the possibility of British co-operation, but this is by no means clarified yet, says Bjørnsletten, adding that if all goes according to plan, the planes will be delivered in 2023 for full operational status in 2024. ■



For the Air Force, there are many demanding and exciting tasks to be faced in times ahead, says Col. Torgeir Berg.
Photo: MilitærTeknikk



The P8 will provide us with increased anti-submarine capacity over the P3, in terms of sensor capacity as well as range and endurance, says Per Magne Bjørnsletten of the NDMA.
Photo: MilitærTeknikk

SEMINAR ON BUSINESS ETHICS AND ANTI-CORRUPTION

In the estimation of the World Bank, a total of some 1000 billion USD is being spent on bribes in the world each year. The defence sector, with massive projects and complex contracts, is at particular risk of exposure to this problem. And the defence contractors have their own responsibility to evaluate risk, and to have in place adequate systems to prevent corruption effectively. When FSi held a seminar on business ethics, more than 60 delegates took part, eager to share experiences and gain further insights into an area that continues to gain in importance.

The National Armaments Director, Morten Tiller, explained his experience on a mod-driven process on anti-corruption in the Norwegian Defence procurement sector, some ten years ago.

- I learned a lot through this process, and we picked up a few bruises, but as a whole, I am proud that we raised this issue. We conducted pretty thorough investigations in this regard, and for the most part, matters were all clean and above board, but this was not always the case. We also took near-enough constant flak from political groups, who held that we were exaggerating matters out of proportion, and that we should wait for a legal conviction. To these, I will just reply

that we hold our employees to a higher standard of ethics than their simply managing to stay out of jail.

The most important lesson I learnt was that everyone in an organisation needs to develop a strong ethical "gut reaction". We achieve this through having good systems in place, with continued focus on training, practice and heightened awareness.

CIDS, Centre for Integrity in the Defence sector

The Centre for Integrity in the Defence Sector (CIDS) was established in 2012 on the initiative of the Norwegian Ministry of Defence.

The centre seeks to promote and enhance professional in-

tegrity and good governance in the defence and security spheres.

In 2014, the CIDS was tasked by the Ministry of Defence with establishing terms to prevent corruption among defence suppliers. The CIDS has gone on to develop a standard which potential suppliers are invited to acknowledge and adopt.

- It is quite a voluntary thing for businesses to recognize this standard, while we will be asking businesses who decline to adopt the standard to explain precisely why this is a problem for them. And, says Tiller with poorly concealed irony, the businesses that decline to adopt the standard will probably find that they are starting the competition on

defence contracts at a slight disadvantage.

The requirements in the CIDS standard is based on common European standards for the defence industry, and the same requirements will be entered as an appendix to the Procurement Regulations for the Defence, also known as Anskaffelsesreglementet for Forsvaret, or the ARF.

- Norway has for some time been setting the pace both internally in NATO and internationally when it comes to fighting corruption, and we will also for the years ahead be a driving force in this effort, says Tiller, adding that one of the issues where we have dedicated a lot of effort is for good governance and high ethics to become a competitive tool for the industry.

Mette Sørfonden, director for the Norwegian Defence Materiel Agency, elaborated in her opening statement on the Transparency International's definition of corruption: "Corruption is the abuse of entrusted power for private gain"

- Even though we have seen a few judgements on corruption in Norway during recent years, we lack precise knowledge on the depth and width of the corruption problem in Norway. Financial Crime says the cases that are brought to trial are merely the tip of the iceberg, and I really wish we had more facts on the extent, the amounts, the players et cetera.

Sørfonden emphasised the significance of being able to spot possible dilemmas that may arise in a busy everyday business climate, and that training and reflection are important means for heightened awareness in the organisations. Sørfonden also noted that the Defence Materiel Agency has received valuable help from CIDS and the internal audit department of the Defence in this work.



National Armaments director Morten Tiller (left) and Mette Sørfonden, director for the Norwegian Defence Materiel Agency.
Photo: MilitærTeknikk

In closing, Sørfonden concluded that for the future, the Defence Materiel Agency will expect all its suppliers to have measures and systems in place for the fight against corruption.

Andy Watson from Transparency international manages a team that is looking into corruption in the arms and weapons trade, in the defence industry as well as in the public sector.

- Corruption in the defence industry could carry dramatic implications with it, above and beyond the purely financial consequences, said Watson in his opening statement.

Corruption may result that the Armed Forces will get inferior materiel, which would lessen the operative efficiency. Also, corruption may in some countries undermine the national stability, and contribute to the establishing of

violent extremism, organised crime, and violations against the civilian population.

We are quick to think that corruption is only associated with more or less "shady" companies, and for the most part, this holds true. But we are regrettably also seeing large, well-renowned international companies getting involved with corruption, explains Watson, citing the example of Rolls Royce, who recently had to admit to paying several millions of pounds in bribes in many countries. And according to a British Court of Law, these bribes have been approved by high-ranking officials of the organisation.

Agents, the high-risk factor

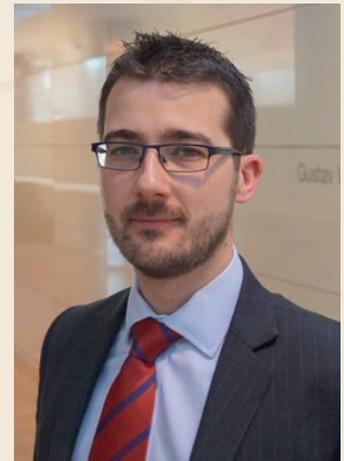
In 2013, US Government agencies calculated that third-party agents or go-betweens

were involved in some 90 percent of the corruption cases concerning export contracts.

Some companies choose to avoid the use of agents, while other companies maintain that there are some markets where doing business without using local agents just cannot be done.

Regardless of your view on this issue, it must be conceded that agents represent one of the most serious risk factors for any company wishing to avoid involvement in a corruption matter.

This may be due to several aspects. Often, the company has failed to conduct adequate Due Diligence on the agent, while at the same time having weak contractual controls over an agent. Furthermore, the agent will often lack the same level of training in ethical awareness and compliance as what is taken for granted among the company's



Andy Watson from Transparency International.

Photo: MilitærTeknikk

own employees, and that some agents are hired on intensively result-oriented contracts, often no cure, no pay contracts, which will render the agent financially exposed should the company fail to prevail in the contest. ■



INFO/ERFA 2017

KAMPKRAFT OG BÆREKRAFT – HVA ER INDUSTRIENS ROLLE?

Når: 19. - 20. april 2017

Hvor: Soria Moria Hotell og

Konferansesenter,

Voksenkollveien 60, Oslo

Påmelding: www.fsi.no



FSi

FORSVARS- OG
SIKKERHETSINDUSTRIENS
FORENING

FSi SMB CORPORATE PRESENTATION: ELECTRONICON AS

ELC operates on three main arenas: Project collaboration with main suppliers, projects around supply of own-developed products, and service/maintenance assignments.



Own products lie mainly within the integration of navigation systems; navigation Integration with NIU (Navigation Interface Unit) as the main system. NIU can handle a large number of sensors and data users. Data formats can be adapted to user requirements, and can be sent by LAN. NIU offers the option for the customer to configure how navigation data are distributed and otherwise managed.

As a spin-off, this has resulted in ELC now being able to provide navigation sensor simulators and test equipment for digital interfaces.

ELC has also established itself as developer of replacement electronics and modules for systems that are hard to keep operational due to shortage of spares and general obsolescence. ELC currently holds several contracts in the obsolescence field, with the Defence itself as well as with defence suppliers.

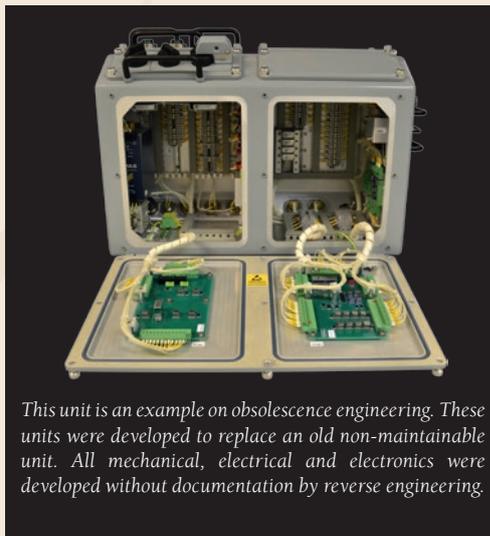
As a partner and subcontractor to other defence businesses, ELC provides components and sub-systems, as well as services related to integration on board e.g. navy vessels. ■■

HISTORY

- ▶ Electronicon AS (ELC) was established in 1969 in the wake of a contract to provide maintenance work for the Oslo class frigates. Over the subsequent years, ELC became a service partner for the Defence in the areas of radar and communication radio, later to be supplemented with sonar and navigation systems.
- ▶ ELC was also one of three businesses doing overhaul work on electronics systems (sonar, radar and communications radio) on German-made submarines in the 1980/90's.
- ▶ Towards the end of the 1980's and well into the 90's, ELC was gradually more involved in projects such as related to upgrades to the Oslo class frigates and reconditioning of the Kobben class submarines.
- ▶ In the early 2000's, ELC started own development work, in particular in the area of distribution of navigation data.



Navigation Interface Unit developed by Electronicon AS provides powerful Data Distribution of navigational or digital data; the picture shows the latest off-the-shelf module, tested both for military and civilian environmental requirements.



This unit is an example on obsolescence engineering. These units were developed to replace an old non-maintainable unit. All mechanical, electrical and electronics were developed without documentation by reverse engineering.



Electronicon AS has broad experience from working with several radar systems as partner with OEMs.



Electronicon is located close to the Haakonsværn Navy base, and has facilities for production/assembly and maintenance as well as offices, training and meeting space.

FACTS

- ▶ **Owners:** Family owned via the holding company Telecal AS.
- ▶ **Number of employees:** 13, most of whom are engineers and technicians.
- ▶ **Location:** In Bergen, close to the Haakonsværn naval base.
- ▶ **Defence market involvement:** Several defence contracts, mainly with the Navy. Sub-supplier to several defence suppliers.

FSi membership:

- ▶ Member of the FSi since start-up. (Also a member of the predecessor to the FSi)
- ▶ Active participant at program conferences and selected events
- ▶ General manager is a member of "Program Group Sea"

Suggestions for the FSi's SMB-committee:

- ▶ 1) Simplified regulations around Defence procurements from single suppliers (Form 5301)
- ▶ 2) Parts of the development funding in large projects should be dedicated to development assignments for sub-suppliers or SMB companies. Developed material should be the sub-supplier or the SMB's intellectual property.



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– BULLETIN BOARD FOR DEFENCE, INDUSTRY AND TRADE –

ISP rejection regarding export of one helicopter system for demonstration flights in China

First North listed CybAero AB, which develops and manufactures remote-controlled helicopter systems, October 21, 2016 applied to the ISP, Swedish Inspectorate of Strategic Products, for export authorization of demonstration flight UAS in China.

The application concerns one helicopter system and the demonstration is addressed to the Administration of Fishery and Fishing Supervision.

In the present case there is in ISP's assessment grounds to

take into account all relevant aspects, including national foreign and security policy as well as the intended end use and the risk of diversion. ISP rejects the application.

The decision may not be appealed under § 25 third paragraph of the Act (2000: 1064) on control of dual-use and of technical assistance.

ISP's decision does not affect the ongoing Factory Acceptance Tests of three systems with Jolly in China.

Updates Gripen lease agreement with Hungary

The Swedish Defence Material Administration (FMV) has updated an agreement to give Hungary more flight time and updated aircraft.

The additional agreement, signed to the lease agreement with Hungary for 14 Gripen C / D combat aircraft, gives Hungary 400 extra flight hours per year, increasing from 1,600 to 2,000 hours.

As per the agreed terms, the Hungarian Gripens are to fly until 2026 and Sweden will

provide support to cope with the extended flight time.

The deal also requires FMV to upgrade the Hungarian aircraft to the latest version of the JAS Gripen, the Version 20, which Sweden currently uses.

Hungary initiated a ten-year finance lease with the Swedish government on 14 JAS 39 Gripen in 2006.

The agreement, which also covers training and support, was renewed in 2012 and is valid until March 2026.

Maintenance of Underwater Weapon Systems

Saab has signed a contract with the Swedish Defence Materiel Administration (FMV) for product support and maintenance of the Swedish Navy's underwater weapon systems.

The contract enables FMV to place orders for product support and maintenance of underwater weapon systems during the period 2017-2019,

up to a total value of SEK 236 million. The contract comes under the terms of the Letter of Intent (LoI) between Saab and FMV that was announced on 9 June 2014. The LoI supports the Swedish Armed Forces' underwater capabilities for the period 2015-2024.

KONGSBERG to upgrade the Fridtjof Nansen class

Kongsberg Defence Systems (KONGSBERG) has entered into agreement with the Norwegian Defence Material Agency (NDMA) to update the Combat Management System and the Active Sonar System of the Fridtjof Nansen class frigates.

The contract value is 313 MNOK and will be delivered over four years.

KONGSBERG has supplied the anti-surface and anti-submarine warfare systems based on KONGSBERG's Combat Management System architecture and integrated with the Aegis Combat System. KONGSBERG has conducted update and maintenance activities regularly since the class was introduced. This contract extends the lifetime of the systems.

PROTECTOR RWS with Switzerland

KONGSBERG has signed new contracts for delivery of PROTECTOR RWS to armasuisse for approximately MNOK 130.

The remote weapon system that will be delivered to Armasuisse is an updated configuration with new advanced capabilities for new platforms.

"KONGSBERG has delivered PROTECTOR remote weapon systems to Switzerland since 2007. This configuration is the result of a close cooperation with the customer to develop the system for a new generation of platforms," says Espen Henriksen, President of Kongsberg Protech Systems.

The PROTECTOR RWS protects military troops by allowing the vehicle's weapons to be operated from a protected position inside the vehicle. As of today, PROTECTOR has been chosen by 18 nations and KONGSBERG is the world's leading provider of remote weapon systems.



Photo: Saab



Photo: Kongsberg

Patria AMV28A with Kongsberg PROTECTOR

At IDEX Patria showcases the latest member of the Patria AMV product family - Patria AMV28A, where 28A stands for 28 tonnes GVW amphibious (sea-stage 3) vehicle. Patria AMV28A is equipped with Kongsberg PROTECTOR Medium Caliber Turret (MCT-30) with Commander's Independent Weapon Station with 12,7 mm Machine Gun and Javelin AT launcher.



Photo: Patria

Raytheon to build Naval Strike Missile launchers in the US

Raytheon Company (NYSE: RTN) has received an initial contract to produce Naval Strike Missile (NSM) launchers at its production facility here. The deal ushers in U.S. manufacturing of the Norwegian-developed weapon system. Production will occur at Raytheon's Louisville, Kentucky facility.

Kongsberg Defence Systems awarded the initial contract for qualification units. The award follows a July announcement that Raytheon will produce NSM launchers in the U.S. The company also plans to perform final assembly, integration and test of the Naval Strike Missile at Raytheon's Tucson, Arizona facility.

Raytheon already produces Close-in Weapon Systems including Phalanx, SeaRAM, and Rolling Airframe Missile launchers in Louisville.

"This contract is an important next step in our long-term

partnership with Raytheon, and the historic first production contract for NSM in the US," said Harald Ånnestad, Kongsberg Defence Systems president. "Kongsberg is committed to continuing the evolution of building and supporting NSM in the US for the foreseeable future. This helps to create high tech jobs and secures US sustainability of NSM".

With a range of more than 100 nautical miles, NSM is a long-range, anti-ship missile that provides superior strike capability against land and sea targets. Raytheon and Kongsberg believe NSM is an ideal solution for navies around the globe and the best over-the-horizon missile for the U.S. Navy's Littoral Combat Ship.

The companies are also teamed on the development of the Joint Strike Missile and National Advanced Surface-to-Air Missile Systems also known as NASAMS.

Saab Expands Partnership with Akaer in Brazil

Saab has acquired another 10 per cent of shares, reaching 25 per cent of stakes, in Akaer, one of the largest companies within development of aeronautical projects in Brazil. In conjunction with the expansion of the Saab-Akaer partnership, Akaer acquires 100 per cent of the shares of the Space and Defense Division (E&D) of the Brazilian optronic company Opto Eletrônica S.A.

Saab and Akaer have been partners since 2008 and the Brazilian company was contracted by Saab to develop parts

to the fuselage of the Gripen NG fighter, even before Saab was down-selected for negotiations to re-equip the Brazilian Air Force. Saab's investment in Akaer began in May 2012, when Saab made a convertible loan in shares, a contribution of resources equivalent to 15 per cent of Akaer. Saab's stake in the company is hereby expanded to 25 percent, and Akaer remains independent, and controlled and managed by the Brazilian founder and management. Since 2012, Saab is part of Akaer's Advisory Board.

Long range flight for Joint Strike Missile

The Joint Strike Missile (JSM) has successfully completed a flight test in the United States. The missile was launched from an Edwards Air Force-based F-16 over the Utah Test and Training Range west of Salt Lake City.

The JSM is a strike capability designed for internal carriage on the F-35. The test demonstrated safe separation from the aircraft performing a number of challenging flight manoeuvres, long range while continuously alternating speed and altitude, unique capabilities for this class of strike missiles.

The JSM is in development for the Norwegian Armed Forces and will complete the

qualification program in 2018. JSM will have operational capabilities enabling the F-35 to fight well-defended targets across long distances. The missile will be integrated on the F-35A but can also be integrated on other types of aircraft. KONGSBERG and Raytheon are partnered to provide the JSM for US and international customers.

"The test verified all intended goals completing another milestone towards full integration on the F-35. The JSM program is on track to provide the war fighter a long range precision strike anti-ship and land attack capability", says Eirik Lie, Acting President Kongsberg Defence Systems.



Photo: Kongsberg

Saab Has Received an Order for Carl-Gustaf

Saab has received a contract for production and delivery of the man-portable weapon system Carl-Gustaf. The order value is approx. MSEK 334 and deliveries will take place during 2017. The order will be booked in the fourth quarter 2016.

The contract includes weapon systems of the Carl-Gustaf M3 version.

The industry's nature is such that depending on circumstances concerning the product and customer, further information regarding the customer will not be announced.

Nammo signs Public Private Partnership Agreement with US Navy

Nammo Energetics Indian Head (NEIH) and the US Naval Surface Warfare Center Indian Head Explosive Ordnance Disposal Technology Division (NSWC IHEODTD) located in Indian Head, Maryland signed today a Public Private Partnership Agreement (P3).

NEIH is a recently established company, 100% owned by Nammo Inc. Nammo Energetics IH is an approved Special Security Agreement company and its principle capabilities will be to support the US Department of Defense with supply of solid rocket motors, propulsion, tactical warheads and demilitarization services of US munitions inventory.

"The Public Private Partnership Agreement is a unique opportunity for Nammo to become part of the US National Technology Industrial Base, says Morten Brandtzæg, CEO of the Nammo Group, "our priority number one will be to create a sustainable and highly competitive operation at Indian Head with a strong focus on our core capabilities and competences - creating jobs in Maryland".

NEIH and NSWC IHEODTD will under the P3 Agreement be able to jointly conduct manufacturing operations. In order to establish a state of the art capability modeled after current Nammo operations, Nammo will make a significant financial capital investment in faci-

ties, equipment and human resources.

"The Navy relies on IHEODTD for a broad set of critical energetic and EOD capabilities. Maintaining our readiness level requires a significant amount of resources that are increasingly difficult to realize in the current fiscal environment" said NSWC IHEODTD Technical Director Ashley Johnson. "Under this 30-year partnership, Nammo Energetics Indian Head will address under-utilized capacity in our Cast Plant to manufacture rocket motors and warheads. It will also provide us options to maintain the unique capabilities needed for our Nation's defense."

"In addition to performing critical work for the nation's defense, Naval Surface Warfare Center Indian Head contributes nearly \$545 million to Maryland's economy," said Maryland Commerce Secretary Mike Gill. "Nammo's manufacturing facility will enhance Indian Head's capabilities, as well as the installation's economic impact on Maryland. This is good news for our aerospace and defense industry, for Indian Head and Charles County, and for Maryland."

Nammo is already present at seven locations in the US and this week's Signing Ceremony is the kick off for location number eight which makes the US one of the most important home market for the Nammo Group.

Saab Partners With Hindustan Aeronautics Limited for Transfer of Technology

Saab subsidiary Saab Grintek Defence (SGD) and Hindustan Aeronautics Limited's (HAL) Avionics Division have signed a contract to deliver transfer of technology (ToT) between South Africa and India.

Announced at Aero India 2017, the contract - valued at ZAR112 million (USD8.5 million) - will see the transfer

of technology for in-country maintenance of Saab's Integrated Defensive Aids Suite (IDAS) system in India.

IDAS has been selected as the electronic warfare (EW) self-protection system for Indian Air Force and Indian Army Aviation Corps variants of the HAL Dhruv Advanced Light Helicopter.



IDAS self-protection system.

Photo: Saab

CAESAR for Denmark

The Danish MOD has announced an order for 15 new CAESAR self-propelled 155mm gun-howitzers, with an option for 6 more. The CAESAR will replace the ageing M109A3DK 155mm turreted self-propelled howitzers currently in service in the Danish army.

Denmark selected the new 8X8 version with the automated loading system and direct fire capability. They will become the first customer of this

version. The new CAESAR self-propelled 155mm gun-howitzer installed on a Tatra T815 8X8 truck chassis, that it makes it possible to increase payload (30 tonnes/30 rounds) and is equipped with a brand new fully automated ammunition loading system. CAESAR 8x8 has a more extensive range enabling it to propose innovative, mobile, deployable artillery, the fire power of which still remains unequalled.



The CAESAR 8X8 self-propelled 155mm gun-howitzer developed by Nexter Group

Photo: Nexter Group

Last MLU 2 life-cycle upgraded Hornet

On 9 December 2016, the last F/A-18 Hornet multi-role fighter to be upgraded to Mid-Life Upgrade 2 was handed over to the Finnish Air Force by Patria.

The MLU 2 upgrade performed by Patria included hardware and system installations and changes required by air-to-ground weaponry. The upgrade was performed at Patria's unit sited in Halli, Jämsä.

Patria performed the MLU 2 upgrade on all of the Air Force's 62 F/A-18 Hornet fighters in 2012–2016. Patria also performed the first system upgrade (MLU 1) on the Air Force's Hornet equipment in 2006–2010 and took care of the final assembly and testing of 57 single-seat F-18 C models when they were purchased.



Finnish F-18 Hornet.

Photo: Finnish Air Force

Patria orders Diamond trainer aircraft

Patria has purchased five training aircraft and two flight training simulators from the Austrian manufacturer Diamond Aircraft Industries GmbH. The purchase consists of four single engine DA40 NG aircraft and one DA42-VI multi-engine training aircraft. Two Flight Navigation and Procedures Trainers (FNPT II) for DA42-VI aircraft are also included in the purchase. The fleet of single engine air-

craft will be used for basic and instrument training, while the twin-engine DA42 will be used for multi-engine training.

The first flight training device will be delivered in April and the first DA40 NG aircraft in June 2017. The remaining fleet and the second simulator will be delivered before the end of August 2017 to Patria's new training center in Tampere-Pirkkala.



Photo: Diamond Aircraft Industries

Patria Nemo Container introduced

Patria launched Patria Nemo Container - the world's first 120 mm mortar system integrated with a container. Patria Nemo Container includes all the equipment required by a mortar unit in a single package. It is delivered with everything that a mortar unit needs: protection for the crew, the weapon and ammunition. The container has its own power unit and air

conditioning. In addition to an access hatch, the container has an escape hatch.

The customer can select NBC (Nuclear, Biological and Chemical) filtration systems, as well as the desired ballistic protection, made either of steel plates or ceramic armour. High-durability steel plating 8 to 10mm thick adds around three tons to the weight of the

container. The container has space for one hundred mortar bombs. It has a crew of three: two loaders and a gunner, who also acts as the commander of the unit. The key benefit of the Patria Nemo Container is its easy mobility, which is unique to mortar systems of this caliber.

The container can be easily moved into a firing position on a high-speed boat, a ship or on a truck; the container can also fire from any of these

carriers and naturally also from the ground. For example, the container's versatile mobility enables coastal jaeger platoons to relocate this independent firing unit during a mission. This is also an excellent solution for protecting military bases. The container can also be purchased as a separate unit without the weapon system, in which case the customer can make cost-effective use of its existing Nemo equipment.



Photo: Patria



Photo: Patria

RBS 70 Simulators for Lithuania

Saab has received an order for RBS 70 simulators from the Lithuanian Armed Forces. Deliveries will take place during 2018.

The new RBS 70 simulator will allow to train a potential missile operator to engage the most difficult targets. The PC-based simulator has a large number of flight paths, and the instructor can create any aerial threat situation with various kind of targets.

The Lithuanian Armed Forces have been an RBS 70 customer since 2004

The Saab portfolio of short-range, ground-based air defence missile systems includes the RBS 70 and the latest version, RBS 70 NG. The RBS 70 system has an impressive track-record with more than 1,600 launchers and over 17,000 missiles delivered to nineteen countries.

Saab signs submarine and surface ship MoU with Polish Armaments Group

Saab announces it has signed a Memorandum of Understanding (MoU) with Polska Grupa Zbrojeniowa (PGZ), the biggest defence company in Poland. The document foresees the development of close cooperation between Saab and PGZ in the planning and delivery of Polish naval programs, including surface ship and submarine construction for the Polish Navy and export customers.

Earlier this year Saab and PGZ signed a letter of intent to cooperate within a range of projects related to Poland's defence modernisation in the naval, air and land domains. PGZ is a leading manufacturer of equipment for the Polish defence forces and will play a key role in Polish defence projects.

"I am convinced that the cooperation between Polska Grupa Zbrojeniowa and Saab will be beneficial both for our partner and for the Polish Navy. Ensuring Polish security, also at sea, is one of the most important tasks for PGZ arising from the Technical Modernisation Plan. The signing of this agreement opens the door for the Polish defence and shipbuilding industries to a wide range of technological cooperation, while for the Polish Navy, it is an opportunity to procure the most modern ships", said Arkadiusz Siwko, CEO of Polska Grupa Zbrojeniowa.

"Saab sees the Polish market as very important and aims at developing an even stronger partnership. We share the same security challenges in the Baltic Sea and together we can work to deepen defence projects partnership and offer an unbeatable industrial offering to the Polish end customer," explains Gunnar Wieslander, head of Saab Kockums.

The Polish Armed forces are currently seeking to develop modern defence capabilities through 15 priority modernisation programs. Importantly these include plans for the purchase of modern submarines and surface ships to boost the potential of the Polish Navy.

Saab is currently building the first A26 submarine for the Swedish Navy as well as working on half time modernisation of existing submarines. The product portfolio includes surface and sub-surface vessels as well as a host of solutions and equipment to match naval needs.

Saab is present in Poland with Sea Giraffe radars and RBS15 Mk 3 missiles for the FAC Orkan vessels, Double Eagle for the mine hunting ship, Kormoran II, as well as solutions for the Special Forces. Saab has a wide portfolio, suited to fulfil the requirements of major Polish defence procurement projects.

UMS SKELDAR for Indonesia

Europe's UAV (Unmanned Aerial Vehicle) provider, UMS SKELDAR, has completed delivery and acceptance tests for Indonesia of the SKELDAR V-200 VTOL (Vertical Take-Off and Landing) UAV. The deal is the world's first delivery of

SKELDAR, the only heavy fuel UAV platform in its class.

The MoD of Indonesia deployed the SKELDAR V-200 as part of performance and acceptance tests during Q4 2016, paving the way for the procurement and pilot training in the country. Indonesia has the world's second longest coastlines and the tests and patrol evaluations confirmed the multi-payload and low footprint of the SKELDAR V-200 across land and navy applications.

UMS SKELDAR is a joint venture between UMS AERO Group and Saab and is Europe's only provider of both rotary and fixed wing platforms.



Skeldar

Photo: Saab

Supacat and Rheinmetall partner to deliver military vehicles to Dutch Army

Supacat has partnered with Rheinmetall MAN Military Vehicles Netherlands (RMMV NL) to deliver 12kN air assault (AASLT) and 12kN light-weight protected vehicles for the Royal Netherlands Army.

The agreement has been signed in support of the Defence-wide Wheeled Vehicle Replacement (DVOW) programme.

Under the agreed terms, RMMV NL will be responsible for producing the vehicles designed by Supacat.

Supacat said that RMMV NL is currently in the process of producing Boxer 8x8 wheeled armoured vehicles for the Dutch Army at the local facility in Ede, Netherlands.

The Royal Netherlands Army comprises various units based in barracks across the country and abroad.

These units are said to protect national borders and offer support after emergencies, such as natural disasters.



The Dutch Army will receive 500 12kN AASLT vehicles and 900 12kN light-weight protected vehicles.

Photo: Supacat

Italian Navy's seventh FREMM frigate

Fincantieri has launched the new Federico Martinengo frigate européenne multi-mission (FREMM) frigate for the Italian Navy at its Riva Trigoso shipyard in Genoa, Italy.

Federico Martinengo is the seventh of the ten frigates Fincantieri is currently building for the navy within the framework of an Italo-French co-operation programme.

The 144m-long multi-purpose frigate is slated for delivery early next year, and features a beam of 19.7m. It will have a full load displacement capability of approximately 6,700t.

The FREMM vessels were developed to replace the Maestrale and Lupo-class vessels, and also feature a high degree of flexibility and have the capability of operating in every tactical situation.

Federico Martinengo will be capable of a maximum speed above 27k, and will be able to offer accommodation for 200 crew members.

The Italian Navy previously took delivery of the Carlo Bergamini and Virginio Fasan FREMM vessels in 2013, the Carlo Margottini in 2014, the Carabinieri in 2015 and the Alpino in 2016.

The ninth and tenth vessels are scheduled for delivery after 2020 under the Italian programme.

Orizzonte Sistemi Navali (51% Fincantieri, 49% Finmeccanica) acts as the prime contractor for Italy in the initiative, while Armaris (DCNS + Thales) is the prime contractor for France.

More RBS 70s for Brazil

The Brazilian Army has contracted Saab to supply RBS 70 very short-range air defence system (VSHORAD).

Valued at SEK105m (\$11.65m), the contract covers delivery of an undisclosed number of RBS 70 man-portable launchers.

Other equipment to be supplied under the contract included training simulators, night vision equipment, multi-spectral camouflage and associated equipment for the weapon's operators and maintainers.



Soldiers operating the RBS 70 very short-range air defence system.
Photo: Saab

The RBS 70 system is already in service with the Brazilian Army and was part of the protection of the 2016 summer Olympics in Rio de Janeiro, Brazil, Saab stated.

Deliveries under the contract are expected to begin this year and continue through to next year.

Saab said that its portfolio of short-range ground-based air defence missile systems comprises RBS 70 and the further enhanced RBS 70 NG.

The RBS 70 NG system is capable of destroying targets within a maximum distance of 8,000m and an altitude of 5,000m.

With all-target capabilities, the system can launch missiles in complex areas, such as urban terrains, and can be operated at day or night in all weather conditions.

To date, 19 countries have procured more than 1,600 RBS 70 systems, including more than 18,000 missiles.

Navistar wins two US Army contracts totalling \$475m for MRAP vehicles

Navistar Defense has secured two foreign military contracts, totalling more than \$475m, from the US Army Contracting Command for mine-resistant ambush protected (MRAP) vehicles.

The first contract requires the company to produce and support 40 MaxxPro Dash DXM MRAP vehicles for Pakistan.

Powered by an International MaxxForce D9.316 diesel engine, MaxxPro Dash DXM is said to be a lighter, smaller and more mobile variant of the MaxxPro MRAP family.

The Dash DXM has Hendrickson independent suspension, the greater manoeuvrability, a tight

54ft turn radius and an increased payload, Navistar stated.

In addition, the vehicle's V-shaped hull has been designed to deflect IED blasts away from the vehicle.

As part of the second contract, Navistar will reset, upgrade and support 1,085 long wheel base MaxxPro MRAP Excess Defense Article vehicles for the UAE.

Work under the contracts will be performed at the company's assembly plant in West Point, Mississippi, US.

Delivery for Pakistan is expected to be completed later this year, with plans to complete the delivery to the UAE next year.



A US Army MaxxPro vehicle

Photo: US Army/Navistar

Saab Receives Order for NLAW

Defence and security company Saab has received an order for deliveries of the anti-tank weapon system NLAW. Deliveries will take place during 2016 and 2017.

The NLAW system combines the simplicity of light anti-armour weapons with the advantages of heavy, crew-operated guided missile systems. With NLAW, a single soldier can destroy a heavily protected modern Main Battle Tank (MBT) with one shot. The soldier can within and beyond the normal dismounted combat range, immediately upon target detection, regardless of attitude, without having to mount the

system, load the weapon and complete a lock-on before launch.

The industry's nature is such that depending on circumstances concerning the product and customer, further information regarding the customer will not be announced.

NLAW (Next generation Light Anti-tank Weapon) is a shoulder-launched, anti-tank missile system that attacks the tank from above. The system is originally developed for Sweden and Great Britain and it meets the requirements for a modern anti-tank weapon system in international operations as well as national defence.

India conducts test launch of BrahMos missile with extended range

India has conducted a test launch of the BrahMos supersonic cruise missile from the Integrated Test Range at Chandipur off the coast of Odisha, India.

Conducted on 11 March, the trial validated the missile's ability to hit enemy targets more than 400km away.

The missile was test-fired from a mobile autonomous launcher during the trial, which met all mission parameters.

The land-attack version of the supersonic cruise missile

can fly at a speed of 2.8 Mach and carry a conventional warhead weighing up to 300kg.

It is said to have three times more velocity, a three to four times larger seeker range, and nine times more kinetic energy when compared to existing subsonic cruise missiles.

BrahMos is said to have an identical configuration for land, sea and sub-sea platforms, and uses a transport canister to transport, store and launch the missiles.

KONGSBERG to upgrade the ULA-class submarines

Kongsberg Defence Systems (KONGSBERG) has entered into agreement with the Norwegian Defence Materiel Agency (NDMA Naval Systems) to upgrade part of the main weapon system of the Norwegian ULA-class submarines. The contract value is 220 MNOK and will be delivered over four years.

KONGSBERG has supplied the Combat System to the ULA-class and has conducted several upgrade programs over the last years which now also

will include electronics and functionality for handling the submarines torpedoes. This upgrade program will contribute to keep the ULA-class operational until the New Generation Submarines are introduced.

"KONGSBERG is pleased to be part of the update program ensuring the ULA-class operational capability until the New Generation Submarines arrives", says Eirik Lie, President (Act.), Kongsberg Defence Systems.

USAF's KC-135 conducts first air refuelling with Romania's F-16

The US Air Force (USAF) has completed the first air-to-air refuelling mission between a KC-135 Stratotanker and a Romanian Air Force F-16 Fighting Falcon aircraft.



A Romanian Air Force F-16 Fighting Falcon makes contact with a US Air Force KC-135 Stratotanker for the first time. Photo: US Air Force / Kate Thornton

The USAF's 100th Air Refueling Wing (ARW) has helped the Romanian Air Force to get certified to receive fuel from all US KC-135s.

The 100th ARW, based at Royal Air Force Mildenhall, sent a 14-person crew and a KC-135 to Romania in support of the mission.

Prior to the latest mission, the Romanian Air Force F-16 has refuelled from an Italian Airbus A330.

The 100th ARW is the only US air refuelling unit in the European and African theatre.

The Romanian Air Force currently operates a fleet of 12 F-16s bought from Portugal.

Helicopter agreement for KONGSBERG

Kongsberg Defence & Aerospace AS (KONGSBERG) and Leonardo today signed a set of agreements related to Maintenance, Repair and Overhaul (MRO) of dynamic components (including various gear boxes) for the NH-90 and the AW101 helicopters.

With the signing of these agreements, KONGSBERG will provide the MRO of dynamic components for a fleet of over 100 designated helicopters flying in Norway, Sweden, Finland, Denmark and Canada.

Leonardo Helicopters (formerly AgustaWestland) and KONGSBERG have maintained a solid business relationship for more than 30 years. The extend-

ed co-operation confirmed by the signing of today's agreements represent potential revenues of about EUR 300 million over the next 30 years for KONGSBERG.

Key elements of the agreements are related to the establishment of advanced test equipment, including a Multi-Purpose Test Bench, which will enable full functional testing of gear boxes for different helicopter types at KONGSBERG's facilities in Norway.

In December 2013, Leonardo signed a contract with the Norwegian Ministry of Justice and Public Security for the supply of 16 (plus an option for 6 more) AW101 search and rescue helicopters (SAR).



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The Norwegian coast guard vessels of the Nordkapp class (KV Nordkapp, KV Andenes, KV Senja) are about to be phased out. By the time the new replacements are in place, the trusty old vessels will have reached a service life of 40 years. The photo displays one of the Coast Guards new NH 90 helicopters coming in for landing on KV Senja. Photo: FMS

NORWAY TO BUY THREE NEW COAST GUARD SHIPS

In the time leading up to 2024, the Norwegian Coast Guard will be procuring three new vessels to replace the Nordkapp class vessels of today. The Government would prefer that the ships were built in Norway.

The project comprises the procurement of three helicopter-carrying, ice-reinforced ships. The project is currently in the offer invitation and submittal stage, and firm contract negotiations are expected to commence in the spring. A list of functional and specific requirements to satisfy the needs of the Coast Guard has been drawn up, and made available to relevant parties. These requirements include, among many, seagoing properties, strength, stability, helicopter capacity, ice-negotiating properties, sensors and communications capability. The vessels

must have the ability to collaborate with and provide support to both civilian and military units. Size and design have not been subject to specification, while a reference design has been drawn up to meet requirements for volume, deck area and seaworthiness.

It will be up to the shipyards themselves to make up a design proposal and make their offer for the construction of the ships. The project will be up for parliamentary treatment in the spring of 2018, and the contract is expected to be awarded soon after this. The construction

period is expected to be 2019 to 2024, with delivery of the first vessel in the series being planned for 2022.

Made in Norway

Five Norwegian shipbuilders have been pre-qualified, and have received RFI's for the building of the vessels. The five yards are:

- Westcon Yards AS
- Fitjar Mekaniske Verksted AS
- Havyard Ship Technology AS
- Kleven Maritime AS
- Vard Langsten AS

A sixth contender, Ulstein Verft AS was also pre-qualified, but has later withdrawn from the bidding contest.

Even though the EEC Agreement's Article 123 states that even defence material should be subject to open bid-



Art impression of the new Norwegian Coast Guard vessels.

Ill. by the Ministry of Defence

ding throughout the EU/EEC domain, the Norwegian government has declared its intention that the boats be built in Norway.

– We regard this procurement to come under the exception to the EEC

Agreement's Article 123, says Birgitte Frisch of the Norwegian Ministry of Defence, and holds that the contract should be restricted to Norwegian industry for reasons of national security.

For Norway, it is essential to maintain national competence and capacity for the building, equipping and maintenance of this type of vessel, not least with a view to preparedness in general. ■■

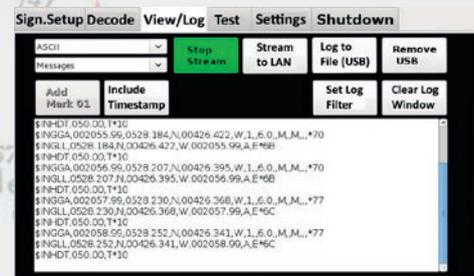
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UNMANNED MINE HUNTING AT SEA IN PREPARATION

Mine hunters at sea will in a few years be completely unrecognisable relative to the mine-sweepers currently performing this risky job. The future, as defined by the maritime expertise of the Defence Research Establishment, will be both unmanned, and by extension, safer. And the start of the new era has already had its sea launch, in the shape of the 11 meters long “Odin”, Christened last August by the Norwegian Minister of Defence, Ms Ine Eriksen Søreide. The vessel enters operations from 2018.

Text and photo: Tor Husby

The “Odin” carries for now the designation of USV (Unmanned Surface Vessel). When it has matured into autonomy, it will be an AUSV. These abbreviations will be with us for the foreseeable future. The “Odin” can carry a load of 3 tons, and will exert a pulling power of 2000 kgs. The first task of the USV will be to carry the autonomous underwater vehicle HUGIN into the scene of operations, keeping

communications with the AUV and the support vessel. When the HUGIN detects mines by way of synthetic aperture sonar, the USV will render them harmless using single-use weapons, developed by KDA. The Odin will also be towing a so-called Influence Sweep over the minefield while the sweep simulates various vessel signatures so that mines that construe a threat are set off. From the perimeter of the mine-ridden area, the support vessel controls the entire operation.



Research Supervisor Morten Nakjem, FFI

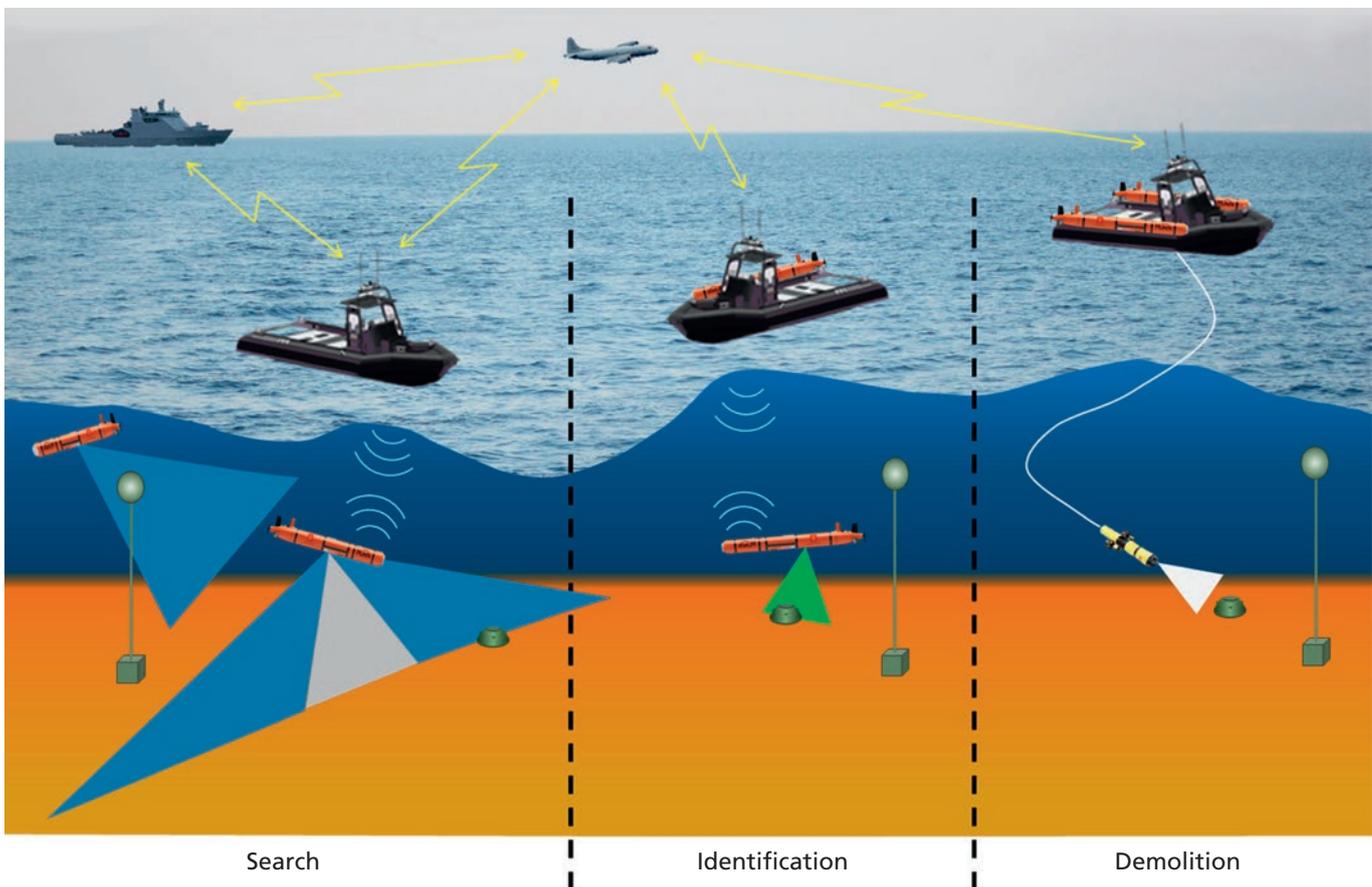
A new Era

– I believe the “Odin” to mark the start of a new era where we deploy unmanned autonomous systems, said the Defence Minister at the Christening ceremony.



The “Odin” USV (Unmanned Surface Vessel).

Photo: FFI



Search

Identification

Demolition

Mine hunting scenario.

Ill. FFI

The “Odin” was constructed by Helgeland Plast at a cost of some 5 million Norwegian kroner (450 KEUR). The Defence Research Establishment FFI has procured the “Odin” as a research vessel, with a view to development and testing of future countermeasures against sea mines. The FFI has no firm plans to build more USV’s at this time. The Ministry of Defence, however, is working on a conceptual solution for maritime mine counter-measures. The use of USV will be a vital aspect of a future concept, says Research Supervisor Morten Nakjem of the FFI.

Until further notice, the “Odin” will be kept under remote control, before the FFI scientists and the NAVY take their giant strides into the autonomous age. On sketches by the Defence Research Establishment, the new system is portrayed as swarms of angry little USV’s and AUV’s in close collaboration on the task.

The future system will not just be less costly than the old. It also protects the personnel against obvious hazards. The researchers and the Navy are coming up on the period of definition, loosely expected to last for a couple of years (2018 to 2020). “Not until about 2025” is the current guesstimate on the date for actual

realisation of the future mine clearing concept. This effort is also a part of the Long-term Plan for the Armed Forces, as approved by the Stortinget last autumn.

Fresh thinking

- An extra inducement to fresh thinking is the fact that Norway holds the lead in various technological aspects with regards to unmanned vessels. Mine hunting is to the Navy what the Engineering Corps is to the Army. It’s all about having control at sea. Sea mines have been pivotal for the outcome of many a maritime conflict. It is our estimate that around one million sea mines are stockpiled globally, and that there are more than 300 different types designed to be set off by distinct and different vessel signatures. Some mines may be “dormant” for long periods, and hard to detect. What is more, the underwater topography is often of a demanding type. For this reason, flexibility in counter-measures is required, such as the hull-mounted sonar on the mine clearing hunters, mine divers, and the Norwegian submersible AUV named HUGIN, which entered the system in 2004. It is based on synthetic aperture sonar (SAS), developed in a joint effort between the FFI and Kongsberg Maritime. FFI is convinced

that the SAS technology will be a vital component in mine hunting over times ahead, says Nakjem.

- HUGIN can accomplish an astonishing lot of tasks, says Commander Per Arne Bakkeli, chief of the Mine Warfare section at KNM Tordenskjold. Until today, the Navy has only had a single unit in operation. In current preparation are contracts to supply five more.

Huge consequences

For the navy, the consequences of the new mine hunting concept will be profound. Both the mine hunters of the “Oksøy” class and the old mine sweepers of the “Alta” class will be gone after 2025, having reached the final end of their service life span. The total Norwegian fleet of these two classes comprises five vessels. Norway is by no means alone in this technical revolt. Some ten nations (including Germany, France, Great Britain, Belgium, the Netherlands to name but a few) are in a similar situation to Norway, and are preparing for a re-structuring of their mine clearing weaponry. Many of these will in all likelihood be co-operating on the procurements. A key issue will not least be the national development of the technology. ■■

IN-MISSION DECONTAMINATION



BX24 used on a protection suit. Both BX24 and BX60/2 are safe in contact with human skin. Photo: Cristanini

Rescue vehicles, military vehicles and equipment can be contaminated with both chemical and biological agents during an operation, while the vehicles and equipment are still in urgent demand. This raises the need for a quick decontaminations/detoxification of the vehicles or equipment while still on site.

For any kind of rescue vehicle, the need for decontamination will be a natural process if the vehicle has been in contact with chemical agents from a gas leakage, toxic smoke from fire, or the car has been used for transporting rescue personnel with polluted protection suits etc.

But the inside of rescue vehicle or rescue equipment, like stretchers, hand tools, medical equipment etc, may also be exposed to biological contamination. This can typically be blood, vomit, urine etc from injured persons being evacuated by the rescue vehicle or on a stretcher.

The Italian company Cristanini presents a simple decontamination kit to counter both chemical and biological agents. The idea is that the kit can be stored in-vehicle, both military vehicles and civilian vehicles like fire trucks, ambulances, police cars, or even rescue helicopters or rescue boats. The kit

gives the operators the tools for a quick decontamination/detoxification of the inside of the vehicle or the rescue equipment on site during missions, or before leaving the site after the end of missions.

A typical scenario might be decontaminations/detoxification of the seats in a rescue vehicle after bringing out a group of evacuees, and before the vehicle is sent back into theatre to pick up new groups of evacuees.

The main part of the kit comprises the two decontaminants, BX 24 and BX 60/2, certified for both decontamination of chemical agents and detoxification of biological material.

BX60/2 is for use on fabric, like car seats or cloths, while BX 24 will typical be used on smooth surfaces like plastic car seats, floor mats or other smooth surfaces of the car interior. The kit can also be used for decontamination



The kit for in-operation decontamination and detoxification of car interiors, personnel protection suits, tools and equipment. Cristanini expects both a civilian and military market for the kit.

Photo: Cristanini

of protection suits and equipment used during the operations.

The rescue crew themselves can easily use the decontamination kit inside the vehicle to achieve a quick decontamination during an operation. When the operation is over, cars and other items get a final treatment by a specially designed vacuum machine working with steam at 140 degrees Celsius, with simultaneous suctioning of liquids and solid residues. ■

NORWEGIAN NEW ARMoured TRANSPORT VEHICLES

The Army is to get new armoured transport vehicles. The old, non-armoured vehicles will be phased out. The vehicles will be armoured and lengthened, to provide increased mobility, protection and load capacity.

The existing Army vehicles, designated M548, are without armour, and have deficiencies in protection, mobility and load capacity. For this reason, 18 ageing, armoured M113 vehicles are to be refurbished and lengthened into new armoured transport vehicles carrying the designation of M113 F4. The vehicles will form a part of the Northern Brigade's support system.

The lengthened version that is now being built, is an important prerequisite for the future conclusion of the projects Combat Air Protection, Artillery Location Radar and Jamming Vehicles. All the vehicles are also to be prepared for the installation of a crane as well as a remote-controlled weapons station (RWS).

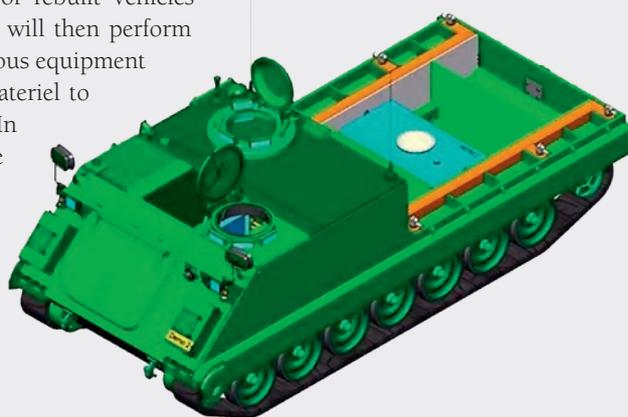
The task of rebuilding the vehicles will be performed following a competitive

bid between various suppliers. Furthermore, the Bjerkvik Technical Workshop (BTV) will play a key role in receiving elderly M113 vehicles from the Army, and preparing these for consignment to the provider that is eventually selected. BTV will also be receivers of rebuilt vehicles from the provider, and will then perform final installation of various equipment before returning the materiel to the care of the Army. In the first round, a suite of 18 vehicles are being rebuilt.

An option for a further 18 vehicles will be negotiated into the contract, and this option may be exer-

cised based on the conclusion of the land power plan conclusions.

Even if the starting point is elderly M113 vehicles, they will after the modernising stand out as highly modern, with high on-road and off-road mobility, with a high level of protection for this class of vehicles. Among the tasks of the armoured transport vehicles will be to ensure that the CV90 vehicles get necessary supplies during off-road operations. ■



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“BE PATIENT AND GO LOCAL”

Patience and political awareness are key to success on export markets. That is the experience from a variety of Danish defence companies.

By **Andreas Krog**

“How to achieve success on export markets?” That was the underlying theme at the Danish Defence Annual Conference 2017 in Aalborg in the beginning of February. The two-day event is the largest, international defence conference in Denmark with almost 300 participants.

A number of different Danish companies presented their experiences from a wide variety of markets.

All over Europe

One of the companies on the stage in Aalborg was Scandinavian Avionics Group, represented by the founder and CEO Hardy Truelsen.

Scandinavian Avionics Group make fleet management control systems, ground radios for control towers, navigator and guidance systems for ships, electronic flight bag solutions and UAV ID-transponder systems. The company has done satcom and cockpit upgrades on board a number of military aircraft and helicopters.

The customized products are designed to meet a certain demand or niche within the field of electronics, primarily aimed at the aviation industry. However, The Scandinavian Avionics Group also offers development programs for land mobile and maritime applications.

The company is headquartered at Billund Airport in Jutland in the western part of Denmark, and also has subsidiaries in Norway, Sweden, Greece, Malaysia, Czech Republic, Bahrain and India. Scandinavian Avionics Group's customer base is geographically spread over all of Europe, Africa, CIS, the Middle and Far East.

Increasing monopolism

Ten percent of the revenues come from US customers, and Scandinavian Avionics also have agreements and close cooperation with leading US avionics manufacturers.

The American market is important for a lot of Danish defence companies, and is one of the first markets companies take aim at entering. Hardy Truelsen however identifies a number of challenges relating to

doing business in the US and cooperating with US partners.

Hardy Truelsen said: “We see an increasing monopolism from some USA partners and suppliers concerning technical data in relation to product installations and especially after sales support and maintenance of the products.”

Honeywell, Rockwell Collins, L3 Communications and Garmin are among the major US suppliers.

“Partner and supplier policies are also severely challenging for us and our US partners' joint success because many customers can for several reasons not rely on one single support source. The reasons can be political, technical and financial.”

Long and costly training

It also challenging to recruit the right manpower in the US.

“Technical, engineering and certification staff with required qualifications are in limited supply, and often subject to very long and costly training exercises, externally as well as internally,” Hardy Truelsen points out.

Scandinavian Avionics Group's business activities have not been influenced dramatically by political changes over time, and Hardy Truelsen does not expect severe changes in the near future either.

Main Danish F-35 supplier

Denmark's by far largest defence industry company, Terma, also got the opportunity to address the conference. Terma has an annual revenue of around 1.4 bn. Danish Kroner (200 million USD) and 43 percent of the revenue comes from customers in North America.

In North America, the company works closely with especially Lockheed Martin, as the main Danish supplier to the F-35 program. Terma also supplies parts and technology to Boeing, Gulfstream, Northrop Grumman, Raytheon and General Dynamics. Including the private companies, Terma also works closely together with the US Navy, US Air Force and Air National Guard.

Be patient and become local

On the US Market, Terma often uses a business model where they deliver Danish know-how to a US prime contractor like Lockheed Martin. The prime contractor then installs Terma's system on their platform like a fighter jet or transport aircraft and promote the product on the global markets.



Almost 300 people attended the Danish Defence Annual Conference 2017 in Aalborg in the beginning of February. Photo: Charlotte Dalqvist / Censec

Jørn Henrik Levy Rasmussen, Senior Vice President responsible for market development at Terma, points to four key lessons with regards to entering the US market: "Know your value proposition and be patient – it takes time to get access. Prepare to understand American regulations and framework. And finally; invest in America and become local."

Terma has 1300 employees, of which 1100 are employed in Denmark. Outside the Danish borders, Terma has offices in UK, the Netherlands, the United Arab Emirates, Germany, Belgium, India, Singapore and four locations in the US.

Award winning distributor

Another speaker at the Danish Defence Annual Conference was Aage Terp, Senior Vice President responsible for Global Account Operations at Danimex Communication.

The Danish company is an award-winning distributor of radio communication solutions and equipment throughout the world, with over 30 years of experience within the communication industry. Danimex does business with humanitarian organizations, NGO's, defence, security

and government organizations as well as modern industry.

The product portfolio ranges from professional and commercial radio series to satellite and energy solutions, wireless broadband infrastructure, control room solutions and everything in between. The primary brand being sold by Danimex is Motorola Solutions.

Customers in Africa

Danimex is headquartered in Sønderborg in the southern part of Denmark, with offices in the United Arab Emirates, South Africa, Afghanistan and Kenya. The company however operates in Europe, Africa, Middle East, Afghanistan and wherever their customers takes them.

A large part of the revenue comes from doing business with customers in Africa including many NGO's, relief organisations and the Kenyan army.

Aage Terp pointed to the broad challenges related to doing business in Africa, where it matters little if you are a defence company or working within other sectors.

"First of all you need to take the political changes and challenges into

account in a whole other way than in other markets. You also need to focus on the security and the African business culture."

Cluster for foreign defence industry

Danish companies were not the only ones speaking at the conference. The organisers had also invited Linda Thomson, president of Johnstown Area Regional Industries. This is a public organisation, promoting Johnstown in the western part of the state of Pennsylvania in the US as a good place for Danish and Nordic countries to establish a foothold in North America. The Johnstown region is working hard at getting to be a cluster for foreign defence industry companies in the USA.

The city of Johnstown has a population of 20,000 while the region has a population of about 220,000. Linda Thomson pointed to Johnstown's close proximity to markets with 50 percent of the US population located within an 800 kilometers' radius of Johnstown. The region has abundant natural resources, ample subcontractors for component manufacturing, and easy access to major metropolitan areas including Washington D.C. ■■

GERMANY TO BUY TRITON DRONE

According to German MOD sources, Germany plans to buy high-altitude MQ-4C Triton unmanned surveillance planes built by U.S. company Northrop Grumman Corp for deliveries after 2025.

The new drones will replace the Euro Hawk program, which Germany cancelled in May 2013 after it became clear that it could cost up to 600 million EUROS to get the system approved for use in civil airspace.

The plan is to buy the first Triton in 2025 and the other two the following year. The UAVs will be equipped with Isis, a SIGINT system that was mainly developed by the Airbus/Hensoldt. Isis is capable of locating enemy airborne radar from a high altitude or intercepting enemy communications.

It was not immediately clear how many planes the ministry would buy, or at what cost. Under the cancelled program, it



Germany wants to buy Triton UAVs. The photo displays a US Navy Triton during trials.

Photo: Northrop Grumman

had planned to buy five Euro Hawk aircraft for 1.2 billion EUROS.

Experts do not expect to run into any problems winning aviation approval for the new aircraft, which is launched from land and is programmed to fly autonomously as high as 60,000 feet to gather a wide array of intelligence data.

With the procurement of the Tritons, the Bundeswehr wants to close a gap, which has existed since 2010, when the Breguet Atlantic manned aircraft was taken out of service. ■■

Northrop developed the Triton, a marine-based variant of its initial Global Hawk surveillance drone, for the U.S. Navy. Ministry sources said the aviation approval for Triton would be less costly because it was baked in from the start of the program.

According to the German MOD, the German Federal Aviation Administration will have access to detailed results and documentation of the previous approval-process of the Triton in the U.S. ■■



ARMY TO RECEIVE MOBILE GROUND BASED AIR DEFENCE SYSTEM

Last year, the Norwegian Defence conducted testing of the air defence system at the Vidsel shooting range in Northern Sweden

Photo: Torbjørn Kjosvold/FMS

The ability of the Norwegian Defence to protect military units from air attack is now being enhanced, through the Army's acquisition of a Mobile Ground Based Air Defence System.

The system will provide protection against airborne attack, in order to give Army units the greatest possible freedom of movement. Since the beginning of the 2000's, the Norwegian Army has been without a ground based air defence system as such.

Army Ground Based Air Defence is a highly mobile, short-range air defence system based on some existing elements in today's structure in combination with the acquisition of some new elements. The system will reuse NASAMS' command and control and its unique network solutions.

The new acquisitions are primarily short range capacity to be integrated onto the Army's modernised armoured transport vehicles. These units are to be integrated with the firing control and communications solutions already in use with the Air Force.

Kongsberg Defence & Aerospace AS (KDA), suppliers of NASAMS to the Air Force, will also be system supplier and total integrator for Ground Based Air Defence for the Army. The procurement is therefore conducted as a direct buy with a targeted request for proposal to KDA.



The Army presented its new Ground Based Air Defence at the Akershus fortress this winter. Using a launcher installed on a Humvee vehicle affords the air defence great mobility and agility. The missiles are Amraam missiles from the American Raytheon.

Photo: Torbjørn Kjosvold/FMS

The cost framework for the acquisition is 948 million NOK, or 90 MEUR, and deliveries will stretch from 2018 to 2021. ■■

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