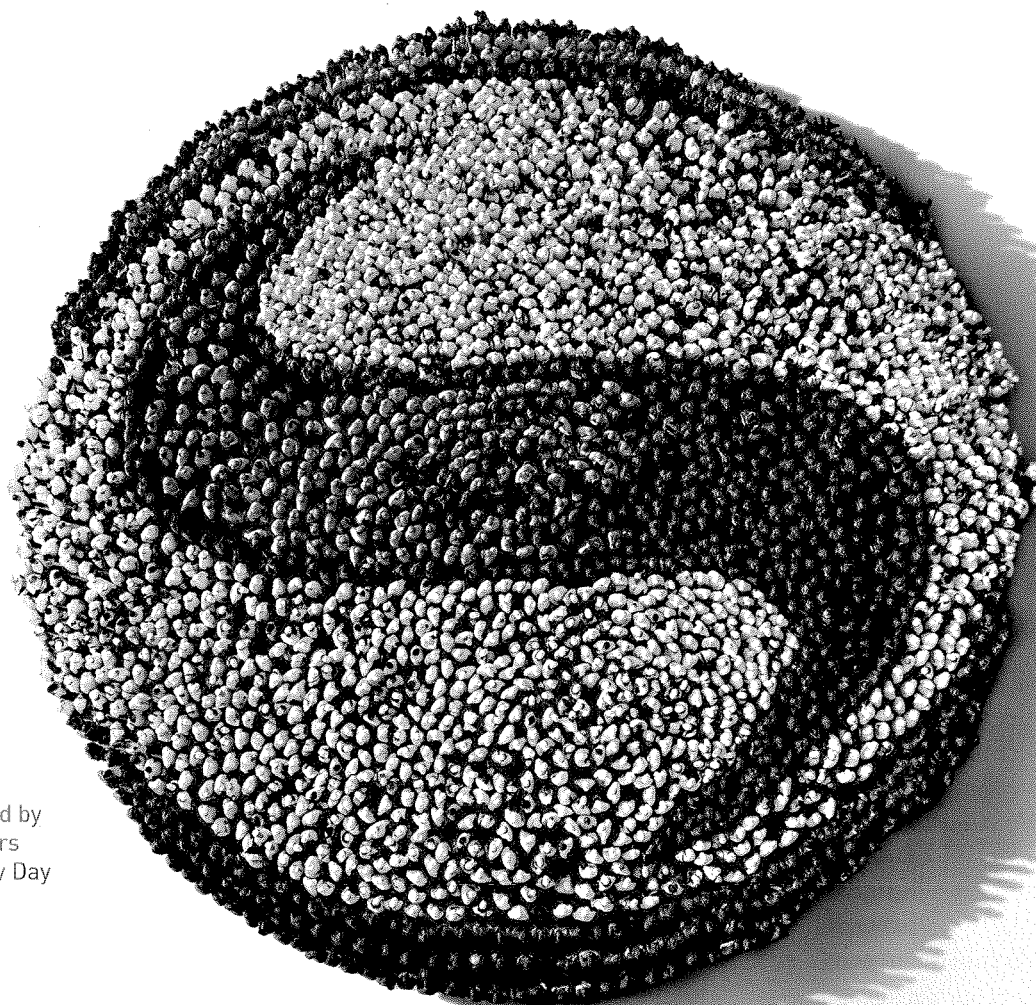


# Safran: French group, global success



Human logo formed by  
3,000 new managers  
at Safran Discovery Day  
on June 6, 2012.

**60,000** employees

**6,000** new employees in 2012

**4,000** interns and apprentices

**11.7 billion** euros in consolidated revenues, **75%** in export markets

**11%** of revenues invested in R&D

Employee stock ownership, **17%** of share capital

Our systems and equipment are at the cusp of innovation and technology, from airplane, helicopter and rocket engines, to aircraft nacelles, landing gear and power transmissions, and from navigation systems to biometric identification and much more.

**Innovation & Talent: the engines powering our future.**



KEY MISSIONS, KEY TECHNOLOGIES, KEY TALENTS





# Crisis Management

The capacity to provide a real-time situation assessment of moving and stationary objects on the ground as well as an all-weather around-the-clock intervention capability are critical for the support of NATO and EU forces during operations. The mix of UAS and fighter aircraft will make the difference.

Photo: Billy Johnston/U.S. Air Force

What is important is a combination of systems and the interaction between them

## Air power for forces protection

Interview with Håkan Buskhe\*, CEO & President, Saab, Stockholm

**The European:** Mr Buskhe, you are CEO and President of Saab, an aerospace, defence and security company founded 75 years ago in Trollhättan, nowadays one of the most successful and important companies in the aerospace and defence sectors. May I ask you to elaborate on Saab's structure and its economic data, for example turnover?

**Håkan Buskhe:** The company is rather unique as it was founded in 1937 at the behest of and on the basis of a resolution adopted by the Swedish Parliament. With the Second World War looming and the hard times ahead it was obvious that there would be a shortage of equipment, which Sweden procured from international suppliers, so Parliament decided that the country needed its own capacity for the production of fighter aircraft.

**The European:** I believe this is unique. So you started from scratch; how many aircraft did you produce?

**Håkan Buskhe:** Since then we have produced 5 000 aircraft. During the cold war we produced one fighter aircraft per day. Thus Sweden is home to one of the largest aircraft producers in the world. Moreover, Saab has developed many different types of aircraft. The company was also involved in the automobile business, but soon sold that part of its activities, and also the computer business.

**The European:** Sweden spent a lot of money on defence during the Second World War and following that the Government supported Saab for the development of fighter aircraft like the Gripen. Has the state retired from that sector since the end of the cold war?

**Håkan Buskhe:** As development costs were constantly increasing it was decided during the mid-seventies to crack the cost curve; this is what prompted the launch of development work

on the Gripen, a new technology, as a new way to reduce the lifetime cost of an aircraft.

**The European:** Did you export the Gripen?

**Håkan Buskhe:** Yes, we are now in the 2nd generation of Gripen and are starting to develop the new Gripen version, called the Gripen E/F.

We have sold the Gripen aircraft to five countries: South Africa, Thailand, Hungary, the Czech Republic and of course Sweden, and the test pilot school in Great Britain is using the Gripen for end flight evaluation and training. In total we have built around 260-270 Gripen, of which some 150 are currently in service within the Swedish Air Force.

**The European:** I have the impression that you are currently strongly geared to exports with your full range of products.

**Håkan Buskhe:** Before the cold war 80% of Saab's sales were to Sweden, but after the end of the cold war the Swedish defence budget was cut and Saab needed to re-orient its activities towards the export market. Today exports account for 75% of our total turnover, with all our products being sold to more than 100 countries. We have also consolidated most of the Swedish defence industry, so today Saab produces everything from aircraft to cruise missiles, ground-based air defence systems, sensors, torpedoes etc.

**The European:** What is your turnover?

**Håkan Buskhe:** Our turnover today is roughly 2.7 billion €; profits stand at 7.5% and our net cash position at 600 million €. We have 10000 employees in Sweden and about 4000 employees abroad.

**The European:** I would like to turn to a more political issue



before coming back to your systems. In light of the EU's efforts to establish a European Defence Technological and Industrial Base (EDTIB) and a fully-fledged European Defence Equipment Market (EDEM) in the future our readers would certainly be interested to know Saab's position on cooperation. Are you in favour of such a consolidation process?

**Håkan Buskhe:** As I understand it, the EU is among other things encouraging the establishment of centres of excellence. But this means that it would be the politicians who decide where production is to take place, which to me is reminiscent of the economic policy of the former Eastern Bloc. I am attached to the idea of free trade and open competition based on a Level Playing Field, which for me is the best way to find out where such "excellence" is located and to determine who should produce what, including on the European defence market. The EU's and the Commission's job should rather be to foster better conditions for competition.

**The European:** That sounds reasonable. Against that backdrop, on the basis of which criteria do you choose your cooperation partners?

**Håkan Buskhe:** There is indeed a good technology base in Europe, with many skilled companies. I believe that from a defence industry perspective and for the development of that industry the EU needs to understand what the defence industry can offer other branches in terms of high tech. Having said that, this does not mean that there is no responsibility within the industry itself.

**The European:** What does that responsibility entail?

**Håkan Buskhe:** We have to move forward, we have to be innovative, we have to increase our efficiency. We need to develop more effectively and to help the 27 nations obtain more cost-efficient high-end products.

**The European:** So what needs to be done?

**Håkan Buskhe:** There are two things we have to do: we have to recognise that there are many European countries with technological excellence that we need to further develop. For us as a group of nations this is really an asset, but we as an industry must also address the challenge of cost-efficiency in the defence and security sector.

**The European:** We already spoke about the efforts being made by the EU Commission. The newly created EU Defence Task Force should allow small and medium-sized companies to be better integrated into cooperation with big companies without losing their identity. Might this be interesting for Saab and is it consistent with your strategy?

**Håkan Buskhe:** Yes, but cooperation does not solve every problem and does not mean more efficient products and production. Again, it is important to promote an open defence industry, through pressure on both the political and industry



First Gripen flight for Saab CEO Håkan Buskhe

Photo: Saab, Stockholm

sides. I think that this will automatically lead to an environment in which companies will start working together, because then there will be a "natural" selection of companies in terms of production, cost efficiency, technology etc.

**The European:** Allow me to come back to Saab and to your fighter aircraft: just a few weeks ago you won a tender in Sweden for some 50 systems worth about 10 billion and some months ago Switzerland chose the Gripen as the aircraft most adapted to its requirements. Is it becoming a rule for European forces to turn to the Gripen following its first successes in Hungary and the Czech Republic? And why do you think there is a certain run on your products?

**Håkan Buskhe:** We have proven that the Gripen is one of NATO's best aircraft. In 2010 a Czech squadron won the Silver Tiger Award at the NATO Tiger Meet using Gripen fighters.

**The European:** Do you think nations will need to rethink their requirements in view of their shrinking budgets and to adapt to a "smart defence" approach, which means not necessarily procuring the most expensive systems but rather those that are best suited to the mission at hand while at the same time still being affordable?

**Håkan Buskhe:** I think that both the defence industry and the forces believe in a totally wrong paradigm: that what is expensive is necessarily good.

**The European:** But your Gripen is good and not that expensive. How come?

**Håkan Buskhe:** We have an extremely good aircraft that compared to our competitors' products is above all extremely cost-effective. And I think that this is the future for everyone:



Skelder

Photo: Saab, Stockholm

we need a product that can “win the war”. We cannot compromise on quality but at the same time we cannot make our nations bankrupt by building excessively expensive products. This is how you put the industry in the right context with respect to society – we are here to help. Other industries, for example the automobile and computer sectors, are offering more for less. We can do this too at Saab.

**The European:** Let me turn to the issue of EU-NATO armament cooperation. In the EU we talk about “pooling and sharing” and within NATO about “smart defence”. I think there is a degree of compatibility between the two concepts, but in my view what the problem of insufficient armaments cooperation boils down to - besides the political issues - is the question of military requirements. In Europe it would appear that our CHODs (Chiefs of Defence) are unable to arrive at compromises on military requirements because of a concern to protect their national industries. Do you believe that industry can help by defining those requirements?

**Håkan Buskhe:** I am strongly in favour of our defence forces trying to define common products, their common use and a common supply chain, in order to enable us to develop products for less. I think this is the way forward for Europe and the right way to go. It will also help create a competitive environment in which industry can meet European forces’ requirements on the basis of such common definitions.

**The European:** I agree, let us hope that nations will become less strongly protective of their own industries.

**Håkan Buskhe:** Let me turn now to operational questions: Sweden was engaged with its JAS Gripen alongside allied forces in Libya, its first participation in such an operation since the UN peacekeeping mission in the Congo in the 1960s. What are the lessons learned? Did cooperation work? Were there any deficiencies? For us as a nation, having our rather large air force involved in a combat situation was of course very interesting. It is true that the last such deployment by our air force was in the

Congo in 1962. 50 years later, Libya. As you know our Gripen is totally NATO compatible. So it worked very well, indeed there are lessons learned, processes that need to be fixed, but at least I got the feedback that it worked well.

**The European:** Has there been cooperation on Unmanned Air Systems? Saab is strongly involved in the unmanned aircraft sector. Where do the advantages of UAVs lie in your view: in reconnaissance, in surveillance or in their use on the battlefield?

**Håkan Buskhe:** I think it is a combination of all those things. The functions we have developed – our flight control system, computer capacity, smarter weapons integration and overall surveillance capabilities – can be integrated into systems that are unmanned. So for me it is not just a matter of one vehicle flying around performing one task, but rather there is interaction between different types of systems, many of which will be unmanned; but you will also have manned systems.

**The European:** And what are your arguments for this?

**Håkan Buskhe:** One argument is that the human brain can cope with other assignments in a fighter aircraft than just flying around. First of all I see many companies in Europe that are catching up with the US and I see a trend towards greater interaction among aircraft. UAVs have to be seen as a new and interesting system, not as a vehicle without a person sitting in it.

**The European:** From what I see there is a widespread tendency not to engage for the development of the next generation of an aircraft. Do you think there will be two or three more fighter aircraft in Europe, or possibly only one?

**Håkan Buskhe:** I sort of predict that. Diversity in some ways is a good thing, but on the other hand industry also needs to be efficient. From an operational perspective it may not be needed and I think at the end of the day the requirements of defending our nation and Europe should dictate what should be produced and not what industry is able, structurally speaking, to deliver. From a European perspective we have a very skilled industry, that is what we should pay attention to and not just scrap knowledge.

**The European:** Let me jump to another of Saab’s areas of excellence: computer-based simulation for training. I can imagine, with countries’ shrinking budgets, that such systems are becoming increasingly popular. Are you able to combine the training for fighter aircraft and UAS?

**Håkan Buskhe:** Indeed we are able to combine the training; moreover this is in line with what I mentioned earlier, the combination of systems. Interlinking of the different domains – naval, land, air – to get more intelligence is also where the future lies.

\* Hakan Buskhe has been President and CEO of Saab since 2010. He was born in 1963 and holds a MA and Licentiate of Engineering degrees. Prior to the actual position he was CEO of E.On Nordic AB



Protection, Mobility and Capability are the cornerstones for our vehicle design

## A post-Afghanistan strategy for armoured vehicles

Interview with Lutz Kampmann, Vice President Marketing & Business Development at GDELS

**The European:** Mr. Kampmann, one of General Dynamics European Land Systems' (GDELS) core businesses is the development and production of armoured wheeled and tracked vehicles. For many years, your customers have been using your vehicles very successfully in Afghanistan. What are the products in your portfolio and where do you have subsidiaries?

**Lutz Kampmann:** We have developed and produced various types of vehicles that are currently used by soldiers in Afghanistan. These products in service there represent only a small selection of our product portfolio. When designing our products, we understand that any armed force needs a vehicle that can be used for at least the next 20 years. A lot can happen in such a period of time. Therefore, we initially design our systems for all types of terrains, climates and environments. Flexibility is the key for a successful product.

Our production facilities are located in Germany, Austria, Switzerland and Spain. In addition to our own facilities we run production facilities with subcontractors and partners in Belgium, the Czech Republic and Romania.

**The European:** How is your vehicle portfolio divided up?

**Lutz Kampmann:** It is divided into four product lines: Wheeled Vehicles, Bridge Systems, Tracked Vehicles and Artillery & Ammunition. Within the Wheeled Vehicles product line we produce Light Tactical Vehicles and Wheeled Combat Vehicles.

The Light Tactical Vehicles EAGLE and DURO are available in 4x4 and 6x6 configurations. The De-Dion suspension gives them unrivalled mobility and their modular armouring concept allows us to adapt the vehicle protection levels to the expected threats.

The Wheeled Combat Vehicles, PIRANHA and PANDUR, are hull-based. The heritage of those vehicles goes back over 60 years. During this time we have gained valuable in-service and combat experience with our vehicles.

The GDELS Wheeled Vehicles are specifically designed and produced for military applications. Therefore our vehicles are able to show an extraordinary performance in rough environments and under extreme conditions and the latest version of the medium tracked vehicle, the ASCOD 2, is considered to be the most modern infantry fighting vehicle in its class.

**The European:** So over the years you have inherited a variety of vehicle systems. Do they still fit into your concept?



### Lutz Kampmann

Lutz Kampmann has been Vice President Marketing & Business Development at General Dynamics European Land Systems, Spain, since 2011. He was born in 1964 and holds a Masters Degree in Material Science/Welding Technology (Dipl.-Ing.) from Clausthal University, Germany. Before taking up his current post he was Vice President Sales & Marketing at General Dynamics European Land Systems, Austria (2009–2010). Prior to

that he was Vice President Wheeled Vehicles (2006–2008) and Director of Program Management at MOWAG GmbH (a General Dynamics Company), Switzerland (2003–2006); Chief Operating Officer at Swiss LEM Hochdorf, Switzerland (2000–2003); Executive Director, Material Development at Algroup Alusuisse, Switzerland (1992–2000); and Systems Engineer at MBB/ERNO, Germany

**Lutz Kampmann:** Our basic vehicle concept is centred on the three main drivers – protection, mobility and vehicle payload. Our vehicles, other than for example the Mine Resistant Ambush Protected (MRAP) vehicles, are always designed to meet the “Protected Mobility” approach. The first generation was highly protected but not very agile in off-road conditions.

**The European:** And what about affordability?

**Lutz Kampmann:** Mobility, capability and survivability still remain the cornerstones of our vehicle design. However, affordability has become an increasingly crucial element. Not the initial investment for a vehicle is important, but the total costs of ownership over the entire life cycle. Low total cost of ownership of vehicle fleets is one of our key objectives. Even if the initial sales price per vehicle might appear high, in the long run we will enable our customers to have more funds available for improved infrastructure, thorough training and other operational needs. This is the spirit of spend to save.

**The European:** You mentioned that you are adapting and modernising your concept. In my opinion, “lessons learned” should be applied. But do you have a strategy on how to develop your systems in a “post-combat Afghanistan” era in order to meet new operational requirements in the future?

**Lutz Kampmann:** First of all, I would like to dwell on how we gain our knowledge to implement the “lessons learned” process. As mentioned before, GDELS products are used all over the world. Thus we gain and analyse information from a large number of nations that specified not only Afghanistan



photo 1: EAGLE 4x4



photo 2: PIRANHA 5 8x8



photo 3: EAGLE Family (4x4 and 6x6)

Photos: GDELS

requirements. In a strategic planning process we identify and analyse potential surging conflict scenarios and derive our modular product portfolio accordingly. Because of the complexity of many of our products, we believe that the best manner to cooperate with our clients is by establishing strategic partnerships.

*The European: What is behind the strategic partnership?*

**Lutz Kampmann:** This means that we go far beyond simply delivering goods and services. A strategic partnership is based on trust and mutual benefit. This type of partnership ensures an extensive exchange of information and a much more efficient approach to cooperation than just working on a pure commercial basis. Both sides talk with each other on all levels, ensuring a fruitful exchange of experience and knowledge.

*The European: So your products were not designed for a specific role and are thus not limited to a certain mission profile?*

**Lutz Kampmann:** No, the basic design purpose was and still is to enable governments to defend their national interests by force if necessary, whilst protecting their people as far as possible. I fear that as long as humans desire their neighbour's wealth, there will be conflict. Because of continuing globalisation and its consequences, it is more than likely that each and every government will eventually encounter asymmetric warfare in its political sphere of influence. Urgent procurements will no longer be commonplace. However, there is an ever-increasing need for the type of products offered by GDELS.

*The European: Let us talk about future platforms.*

**Lutz Kampmann:** The "one platform fits all" approach is what everybody is dreaming of. I would say the "one platform" approach is a "one family" approach. A good example is the EAGLE or the PIRANHA family of vehicles. If we have a closer look at the EAGLE family we will find a product that covers the whole range of up to 15 to. Gross Vehicle Weight (GVW). The EAGLE can be configured as a 4x4 or 6x6 and all types of variants from Open Top to Ambulance and Recovery are available with scalable protection kits.

*The European: What is the advantage of this "family of vehicles" concept for the customer?*

**Lutz Kampmann:** The main advantage is a significantly reduced cost of ownership! Instead of having a vehicle type for every mission role, we offer a vehicle family that can cover all roles. A common platform requires less training of the user and the mechanics. In addition to the reduced amount of training, a far smaller stock of spare parts is needed and this provides overall cost savings through standardisation and reduced Integrated Logistics Support (ILS).

*The European: Let me come back to ILS. How do you differentiate yourself from the competition in this area?*

**Lutz Kampmann:** As our products are specifically designed military products and not based on commercial components, we as the OEM are able to provide parts and services independently without any major obsolescence issues.

*The European: Could you give us an example?*

**Lutz Kampmann:** The PIRANHA drivelines are an example: We have the design authority and are the manufactory of all the drivelines used on PIRANHA's, LAV's and Stryker's. We are therefore in more or less constant production for those drivelines – even for legacy products. Another main focus of our business is to design products that are easy to maintain.

*The European: And what about upgrades?*

**Lutz Kampmann:** In addition to the availability of parts and the ease of maintenance, the modularity and compatibility (family concept) allows an easy and cost effective approach to upgrade protection, mobility and payload. The strategic partnership with customers enables us to upgrade products of our portfolio in a sustainable way with lowest total cost of ownership.

For instance, if a customer is running a fleet of PIRANHA 3 vehicles with an 18 to driveline, we can offer solutions to upgrade the vehicle with a 22 to or 25 to driveline. Such an upgrade provides additional payload that can be used, for example, for additional protection.

*The European: Mr. Kampmann, thank you for this discussion.*



Container solutions tailored and adapted to the mission

## “Bespoke Suit” made from steel

by Horst Schuchmann\*, FHF GmbH, Bremen

Containers are experiencing a boom. Not only are they needed for all kinds of logistic transport, they also play a major role during crisis-management operations, where they are used not only to ensure the safety of personnel and to optimise work stations, but also to house medical services during operations and in disaster zones.

### FHF has developed to market leader

With a company history spanning in excess of 20 years, FHF GmbH based in Bremen, Germany, has developed into a market leader in the design and production of special and customised containers, complemented by the integration of customer-specific systems and components.

FHF implements individual customer's requests through:

- Conception, design and construction of new solutions – completed in close cooperation with the customer;
- Adaptation of standard containers to the customer's requirements.

The flexible utilisation of containers allows a variety of functional container applications, both as an individual or as a comprehensive (independent) container plant. With many years of experience and expertise FHF has extensive know-how of developing solutions for these applications. All functions of a mobile solution, such as accommodation, sanitary facilities, kitchens, utilities, laundry, water and sewage disposal, can be supplied by FHF as a single source. FHF can also supply comprehensive facilities operation capabilities.

### Military applications

For military applications, FHF has developed a number of different functional containers, which have been supplied globally. These include Service Container for system support, workshop containers, medical containers and special containers for use on ships.

A world first is one recent example of the performance of FHF. In just a few months, an extendable 1:3 Shelter incorporating integrated hydraulic leveling features was conceived, designed and manufactured. The integration of power generation, CBRN protection and ventilation allows autonomous operation – both on a vehicle and when ground dropped, individually or as part of a series of containers forming a comprehensive command centre.

Since autumn 2010, FHF has been delivering a unique adaptive protection system for ISO containers to the Bundeswehr, concerning protection against mortar and rocket fire.

### Protection

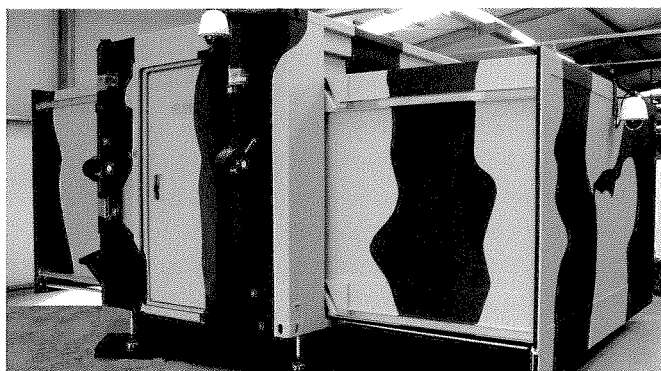
The flexibility of the adaptive system allows for a variety of installation options (create larger rooms, multiple floors) with a constant level of protection. Through the bolted design it can be dismantled, replaced, stored or re-assigned easily, making this system an optimal solution also from an economic point of view. This system can also be utilised on the newly developed 1:3 – Shelter, with minor adjustment. Even a short term or temporary requirement can be covered by FHF.

In addition to individual containers, such as switchgear, (power generating units), workshop containers, supply containers, laboratory container or alternative energy (e.g. solar) for the independent operation of facilities implemented, FHF also constructs container systems (for example power supply) for schools, hospitals, industrial plants or bank buildings. With more than 100 employees – supported by vendors for specific trades – FHF constructs approximately 1000 container systems / year, with the export market accounting for almost 98% of their total business.

\*Former career officer in the German army. For the last 6 years he has been working as an independent consultant in the field of Military Logistics – and he is a consultant for FHF GmbH



Autonomous workshop with integrated power unit



Worldwide unique innovation ready to deliver to the customer

photo: FHF GmbH

The next generation of armoured vehicles is a Protected Mission Module Carrier (PMMC)

## FFG's new PMMC G5

by Andreas Beer, FFG GmbH, Flensburg\*

Changes in security conditions over the last decade have created a need, these days, for worldwide military missions focused on peacekeeping or peace building and the protection of human rights, but also the fight against international terrorism.

### Survivability and manoeuvrability

As regards survivability, the current scope of missions requires innovative vehicles with both high operational and tactical manoeuvrability and the highest available protection level. To meet these requirements FFG has developed the PMMC G5. The PMMC G5, with a weight of 25 tonnes, has been especially designed with the focus on outstanding protection capabilities. Even the basic PMMC G5 vehicle offers high-level mine protection as well as ballistic and IED protection. Through further add-on protection the PMMC G5 becomes the best-protected vehicle in its weight class. As a tracked vehicle with a very robust hull it is functional on any terrain worldwide. Its special engine management system, air filtration concept and air conditioning system for the crew compartment make for the best desert operation performance and mission fulfilment under very high ambient temperatures.

### New standards and multi-role capability

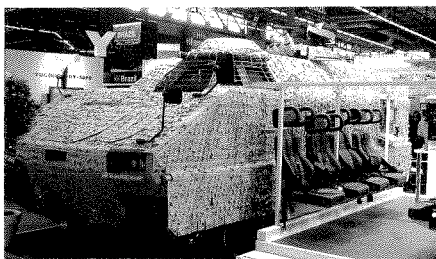
With its huge payload and an all-round protected inner volume of 14.5 m<sup>3</sup> the PMMC G5 sets new standards for armoured vehicles in this vehicle class and offers the user new possibilities with regard to interior sets, crew size and all kinds of equipment. For self-defence purposes the PMMC G5 is prepared for the integration of weapons stations. As regards situational awareness, the driver has an outstanding view through protected glass, the rear area is equipped with periscopes and there is an integrated 360° camera system. With the approval of local authorities the special design of the driver's station allows the driver to drive on public roads without a commander, an innovation for tracked vehicles. Furthermore the PMMC G5 offers a multi-role capability that is of a new type worldwide: the basic PMMC G5 vehicle comprises the complete hull without a roof, but with the suspension system, the engine compartment, the complete driver's station, radios, batteries, a fire-fighting system for the engine compartment, a fire-suppression system for the crew compartment, the air-conditioning system, the heating system, the NBC protec-

tion system and storage devices. The fully standardised mission modules consist of the roof plate and all interior equipment necessary to complete the configuration of a given vehicle variant. Defined and standardised interfaces make for an easy change of mission module. In this way it is possible, for example, to switch very quickly between an armoured personnel carrier and an ambulance. All stand-by mission modules can be stored in standardised containers. This multi-role capability

reduces life cycle costs to a new standard and has the further advantage of providing armed forces with new tactical and operational capabilities. It is no longer necessary to transport a huge number of different vehicle variants abroad; all that now needs to be transported are the basic PMMC G5 vehicles together with a defined number of mission modules in their containers. During the mission the field commander is free to equip the basic vehicles with the different mission modules he tactically needs. With its modular concept the vehicle can be adapted to every possible vehicle variant. Thanks to this FFG concept the PMMC G5 has enormous future growth potential.



PMMC G5 in field tests



The PMMC G5 at Eurosatory 2012

### The PMMC G5 is attractive to forces

Due to the extensive use of MOTS and COTS products and a very robust vehicle design in combination with easy service and maintenance, which can also be carried out in the field, the PMMC G5 constitutes a very cost-effective vehicle solution with low life cycle costs. This makes the PMMC G5 especially attractive to all armed forces needing to replace the existing vehicles in their inventory.

\* Andreas Beer, FFG Sales Manager

### FFG Flensburger Fahrzeugbau Gesellschaft GmbH

FFG is an independent manufacturing and servicing company with nearly 500 employees, with its HQ in Flensburg. FFG has been a reliable industrial partner to the Bundeswehr and globally more than 40 other armed forces around the world. The core areas of FFG expertise include the manufacture and industrial maintenance of armoured tracked and wheeled vehicles as well as system engineering and the integration of all kinds of military systems. With its subsidiaries FTN Fahrzeugtechnik Nord GmbH, JWT Jungenthal Wehrtechnik and Rexion, FFG is a one-stop shop for all issues involving armoured vehicles.





# Maritime Security

The Horn of Africa continues to be a focus of attention for the international community. The European Union has now adopted a strategy for establishing peace in this region. The systematic civil-military coordination during the planning and implementation of EU action is beginning to bear fruit. The military intervention against pirates' land bases in Somalia was a decisive turning-point.

The EU strategy will help to reach incremental progress towards peace

## An EU-Strategy for the Horn of Africa

by Dr Charles Tannock MEP, European Parliament, Brussels/Strasbourg

The Horn of Africa is one of the most conflict-prone and tense regions in the world. The countries of the region (continue to face a myriad of internal issues that exert pressure both within their borders and upon their neighbours and has led to a region characterised by instability and strife; tensions between Ethiopia and Eritrea and Somalia, tensions between Eritrea and Djibouti, absence of the rule of law, drug smuggling and piracy, terrorist activity by the Lord's Resistance Army (LRA) and Al Qaeda, and famine and poverty are just some of the many problems that paint a bleak picture of a region plagued by problems and to which no easy answers can seemingly be found.

### A new international approach

Yet despite the plethora of these entrenched challenges, the Horn of Africa continues to be a focus of attention for the international community. In February this year, international actors gathered at the London conference on Somalia with the aim of delivering a new international approach to the country. In October 2011, the EU published its five pronged strategy for the Horn of Africa. In the European Parliament's Foreign Affairs Committee I am the Rapporteur charged with preparing a resolution on an EU strategy for the Horn of Africa. Furthermore, the EU has recently appointed not just one but two special representatives in an effort to promote regular dialogue between the EU and countries within the region. Such recent developments attest to the focus that the international community continues to place on the region for a number of reasons.

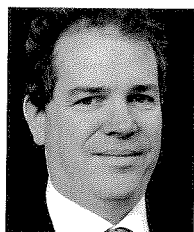
### The importance of a stable Horn of Africa

Firstly, a stable Horn of Africa is of paramount importance to the global economy. Africa itself presents huge economic potential. It has a fifth of the world uncultivated arable land

available, a growing middle class keen with rising purchasing power, a growing labour pool expected to be the largest continental workforce by 2040 and vast reserves of raw materials and resources such as oil, gold and copper. A stable horn of Africa is therefore of importance to a stable and economically productive continent.

Secondly, the Horn of Africa has remained a blot on the international conscience in terms of fundamental human rights for far too long and for which solutions are now demanded, not asked. Poverty is rife and due to a particularly bad drought in 2008/9 and its resulting famine it is estimated that over 13 million people are now in need of emergency assistance in the entire Horn of Africa. Moreover, we are now reaching a point in which young people growing up in towns such as Mogadishu, have only ever known violence and war.

Furthermore the lack of stable democratic and economic prospects for the population, particularly the young, coupled



### Charles Tannock MEP

Dr Charles Tannock MEP was first elected to the European Parliament in 1999. He is currently Vice-President of the EP Delegation to the NATO Parliamentary Assembly, UK Conservative Foreign Affairs Spokesman and ECR coordinator on the

Foreign Affairs Committee and a Vice-Chairman of European Friends of Israel. He was educated at Balliol College, Oxford, and Middlesex Hospital Medical School. Before being elected as a member of the European Parliament he was a Consultant psychiatrist at University College Hospital.

with an absence of the rule of law, will continue to provide fertile ground for encouraging criminal activities, including piracy and drug smuggling, and sustain Al Qaeda affiliated terrorist groups such as Al-Shabaab. Unless these issues are addressed, the scourge of piracy will continue to plague the Gulf of Aden and threaten the security of the global merchant marine sector. Already this illegal activity is costing the world shipping industry an estimated £4.1 billion per year and in 2011, 555 seafarers were taken hostage. Recent raids by pirates have also shown that the range and sophistication of the pirates' operations is constantly increasing and requiring more and more effort and resources from maritime counter piracy operations such as EUNAVFOR's Operation ATALANTA.

### The right strategy

The creation of a stable and prosperous Horn of Africa is therefore a complex and demanding task, but with the right strategy I believe incremental progress can be made. Firstly, we must ensure that while the international community should stand ready to provide assistance when required, the political resources and political impetus come from within the region itself, led by the Horn of Africa nations. Ethiopia, Kenya and Uganda have all provided valuable military and political support to the efforts to achieve stability in the region, and their successes in retaking Mogadishu in August 2011 as well as the retaking of Kismayo on 1 October this year prove that a viable solution for security and stability in the region can and should be African-owned and African-led. That said, the EU has to continue to provide technical assistance to such forces through training missions. It is imperative that such training is given so that regional security forces can themselves deal with the threats faced. Already we have seen success through EUTM Somalia with the training of security personnel in

Uganda. This strategy is now set to continue with the launching of EUCAP Nestor with the aim of strengthening the Rule of Law in Somalia by supporting the development of a coastal police force and judiciary as well as the sea going maritime capacity of Djibouti, Kenya and the Seychelles.

### Solutions are not purely military

However, despite the advances in EU CSDP missions we remain fully aware that solutions in the Horn of Africa will never, and should never, be purely military. Political coordination needs to be a priority and as such the Intergovernmental Authority on Development (IGAD) can play a key role as a regional player in developing a system of good governance. It can help develop effective political dialogue and consensus-building mechanisms amongst all its member states and promote a regional institutional framework. Matters on which to provide coordination are all too pressing such as coordination over water resources, with the ongoing negotiations between Ethiopia, Sudan and Egypt over the Grand Renaissance Blue Nile Dam project proving a case in point. Despite the region's many problems, there is reason for cautious optimism on the prospects for enduring peace and stability. We have seen that EU and African Union troops can work together to achieve common aims. Pockets of stability, such as Somaliland, have proved to be capable of developing effective judiciaries, democratic institutions and security forces for combating disruptive forces. The recent elections in Somalia to replace the Transitional Federal Government and the near peaceful split of Sudan into two sovereign states gives rise to the hope that with assistance from international partners coordinated by the Horn of Africa's own governments, democracy, stability and prosperity will one day be achieved.

## BOOKS:

### SENTINELLE DES MERS Regard sur la Marine Nationale au XXIE Siècle

All empires were built or sunk by sea. France has only had three statesmen able to understand the political and strategic dimension of the sea: Richelieu, Louis XVI and Napoléon 3rd. French Navy people are mostly thinkers, strategists or painters but rarely wrote about challenges from the sea. Taken between "publish or perish" or "write and betray", this might explain why French politicians fundamentally ignore maritime challenges. The book "Sentinels of the sea"<sup>(1)</sup> remains a "French" exception and was

therefore a topic during last Euronaval defence and maritime exhibition. According to Commander Philippe Metzger, "the evolution of the French Navy shows both a technological and a cultural mutation. New ships like the FREMM multi-mission frigates, off-shore patrol boats (OPV) like L'Adroit or the forthcoming Barracuda generation of nuclear subs are figurative of tomorrow's navies. New format of crews and levels of competence are structuring the human dimension of navies for the next decades".

#### A sailor's view

Each page of this kaleidoscopic account of the sea has its own weight while being so narrowly tied to the previous or following one and provides a mix of thoughts, testimonies, hints and outright descriptions that blow seawater spray on the reader's hands, whetting his reading appetite. The accounts unravel on a backdrop of all possible navy hues, building a huge panoramic picture. This opus casts a fresh look on an institution whose traditions have survived transfor-



Philippe Metzger, Alain Zimeray  
Emmanuel Desclèves, Benoît Lugan  
Préface Didier Decoin  
Éditions Marines; 300 x 240 mm,  
ISBN: 978-2-35743-092-1

mations and whose backbone is made up of those sailors who have carried over the tales, and wrought the character and values, of the France's "Marine Nationale" in the 21st century.

Joël-François Dumont



A smart response to new threats on the seas

# A new corvette for multiple types of engagement

by Dorothee Frank\*, Editor technology, Behörden Spiegel, Bonn

The Netherlands has participated in most NATO missions. In theatres ranging from Afghanistan to the Horn of Africa, Dutch troops, planes and ships have made a valuable contribution in cooperation with their partners. The focus on military missions (most of them abroad), on the one hand, and an increasingly tight defence budget, on the other, has led to a new project: the Oceangoing Patrol Vessel HNLMS Holland.

## The need for a new patrol vessel

This new corvette is the result of a study conducted by the Netherlands Ministry of Defence, which identified a shortage of Dutch naval capabilities adapted to missions in narrow seas, which require boats that are smaller and faster than frigates.

The study also pointed to a possible increase in the number of counter-piracy operations in the China Sea and Indian Ocean and to the likelihood of more and longer-lasting missions in the Mediterranean Ocean in the wake of the Arab Spring. Moreover, since (almost) no-one foresaw the Arab Spring, the study was relatively reserved about other possible future areas of engagement. It concluded, therefore, that what was needed was a platform that could perform multiple types of missions, from mine-clearance to pirate hunting.

The Holland is a corvette that could be described as coming somewhere between the German S-boat and the MKS 180: it is bigger and slower than the former, but smaller than the latter. The lower speed is a necessary corollary to the larger size needed to accommodate the containerised modules and the helicopter deck, although in terms of size the Dutch corvette is closer to the Braunschweig corvette than to the MKS.

## Holland-Class

**Length:** 108 metres

**Beam:** 16 metres

**Draught:** 4.55 metres

**Displacement:** 3,750 tonnes

**Maximum speed:** 20 kts (about 37 km/h)

**Engine:** 2 x 5,400 KW

**Crew:** Regular crew of 50 soldiers plus 40 additional crew (for example a medical team). The corvette has temporary room for up to 100 additional people for a limited period.

**Armaments Guns:** 76mm Oto Melara and 30mm Marlin rapid-fire. 50 machine guns.

**Additional capabilities:** Helicopter deck for one NH-90.

Two FRISC speedboats. One Fast Rescue Boat.

**Commissioning:** the first corvette, the HNLMS Holland, was commissioned on July 6th 2012. Three more ships are being built at the moment.



The HNLMS Holland

Photo: Netherlands Ministry of Defence

## Plug-and-play technology for multiple missions

What is so unique about this corvette is that it is totally based on the so-called plug-and-play technology, from the i-mast (built separately and simply "stuck on") to the mission capabilities. Thus every part of the ship can be used for other future systems, thereby reducing the cost of future projects. Thanks to what are very effective sensors for such a comparatively small ship the corvette is suited to almost every type of mission, including, for instance, reconnaissance operations in the Mediterranean Ocean in order to monitor the situation in North Africa and the Middle East.

The modular design of the corvette is in keeping with the uncertainty of future engagements. Thus it can become a medical support ship with 40 medics and surgery facilities for use in disaster areas, or else an evacuation vessel capable of transporting up to 100 passengers to a safe haven. Or with its speedboats and helicopter it can be deployed for counter-piracy operations. The Holland class, then, is typical of the new era of defence technology: a non-specialised vessel that can be adapted to multiple missions. In an unstable world that makes it difficult to predict the nature of future NATO missions this one-model-fits-all concept would seem to be the right solution. The HNLMS Holland is currently undergoing tests with promising results. Four corvettes are planned, with the last one being commissioned in 2013. Many nations have already shown an interest in the HNLMS Holland, proving the relevance of the Dutch Navy's state-of-the-art concept in today's uncertain security situation.

\*Dorothee Frank has been Editor for security policy and defence technology at the Behörden Spiegel in Bonn since January 2009.

What seemed impossible just a few years ago has become a reality

# I-MAST: a revolution in naval vessel construction

by Rainer Jentzsch\*, Key Account Director, Navy & Shipyards, Thales Deutschland, Stuttgart

Excellent communication links are pivotal for naval vessels. Ships must be able to communicate with one another, with onshore stations, and with aircraft and helicopters. Steadily growing communications demands are leading to the deployment of more and more systems on board ships, which significantly impact the ships' topside design. This causes problems such as electromagnetic interference (EMI) and negatively affects the field of vision of systems and sensors. Ultimately, these factors limit a ship's operational performance and here the concept of Thales's integrated mast comes into play.

## Technical challenges and risks

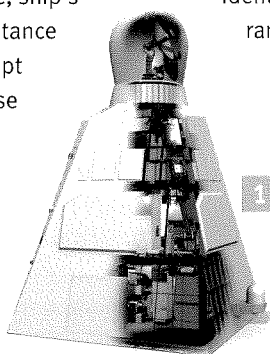
The traditional topside design of a ship makes designing, building, integrating and testing naval vessels and their sensors, weapons and communications systems difficult. Electronic control cubicles, radio receivers, radio and radar transmitters, signal and data processing equipment, power supplies and cooling units must all be installed below deck. Radar wave guides, cooling lines and cables for the power supplies and data lines must be installed to connect the control cabinets with the topside systems. All of these factors present to shipyards, electronic equipment manufacturers and customers with significant technical challenges and raise the risk associated with the project design phase, ship's delivery reliability, system integration and acceptance tests. Thales has developed an innovative concept called the I-MAST, which not only addresses these problems, but also enhances the performance capabilities of the entire weapons system.

## The end of traditional topside design

By positioning all sensors on a single integrated mast, the company has been able to put an end to the dictates of traditional topside

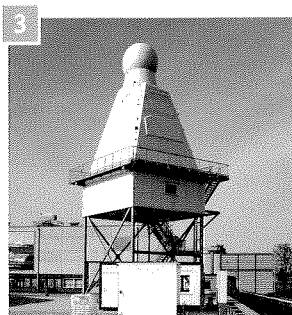
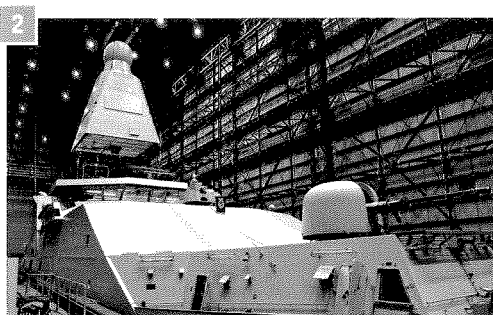
design. The process of building, configuring and testing the sensors and communication systems can now be completely independent of the ship's construction cycle. Furthermore, the paradigms associated with configuring the ship's key sensors are changed completely. No longer is it necessary to supply individual items of equipment for installation on board ship at the yard, followed by exhaustive and costly tests during a lengthy installation process, first on the individual devices themselves and then on the integrated system; instead, the entire sensor and communications suite is delivered as a prefabricated, integrated and pretested unit to the shipyard, where it can be installed on board as is and risk-free during the final phase of the construction process.

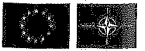
The development of the I-MAST and the associated quantum leap in performance was primarily made possible by the technical progress that has been made in reducing the size of the electronic components. What seemed impossible just a few short years ago is today a reality: in addition to an integrated communication antenna system (ICAS), an SHF SATCOM system and non-rotating S-band surveillance radar (SEA MASTER 400), a mast with a surface area of sixty-four square meters can accommodate a high resolution medium-range radar system (SEA WATCHER 100), a non-rotating friend or foe identification system (NR-IFF) and an electro-optic close-range surveillance device (GATEKEEPER).



- 1: A schematic sectional view of the I-MAST
- 2: Installation of the I-MAST at Damen Schelde Naval Shipbuilding
- 3: The second I-MAST is presently being built by Thales in Hengelo. It will be installed on the second Patrol Ship "Zeeland" early 2013.
- 4: Thales I MAST 400 on board of the patrol vessel "Holland"

Photos: Thales





## SEA MASTER 400

SEA MASTER 400 is a non-rotating S-band surveillance radar system (NATO E/F band) with four faces. It was designed to provide air surveillance, helicopter control, surface surveillance and weapons control functions simultaneously. The system uses phase-controlled multi-beam technology, which enables it to provide critical situational and overall threat awareness in one highly automated operating mode. SEA MASTER 400's ultramodern systems architecture is based on proven multi-beam and Doppler processing principles that rely on high update rates to provide simultaneous functions that are independent of environmental conditions and interference. Among other things, features include a very wide search area with high elevation coverage, reliable detection of small targets, rapid automatic target tracking, few false alarms, as well as helicopter detection and approach control.

## SEA WATCHER 100

SEA WATCHER 100 offers high resolution surface surveillance on the open seas and in coastal regions. An active phase-controlled X-band radar system (NATO I/J band), it is able to automatically detect and track the most challenging surface targets, such as mines, periscopes, swimmers and small watercraft, even during inclement weather. SEA WATCHER 100's operation is fully automated and is based on advanced algorithms for beam control and transmission scheduling, which guarantees both high Doppler resolution and high data update rates. SEA WATCHER 100 simultaneously uses three different search patterns with different update rates; as a result, the optimum search patterns for close, medium and long-range surveillance are automatically applied. SEA WATCHER 100's modular design, which can accommodate from one to four fixed antenna surfaces, is ideally suited to the I-MAST concept. The version with four elements provides continuous 360° surveillance of the water surface from a minimum distance of eighty metres to the radar horizon under all weather conditions.

## NR-IFF-ANTENNE

The non-rotating NR IFF friend or foe detection antenna uses a cylindrical antenna array mounted at the top of the mast and is designed to work together with standard IFF interrogators and transponder systems. The system was optimised to work in conjunction with a fixed primary radar system. It features very high bearing accuracy in Mode 5/S and meets specifications for longer target detection in Mode 5/S Level 2.

## GATEKEEPER

GATEKEEPER is the most recently developed member of Thales' passive surveillance systems family. It is an electro-optic system with infrared and colour TV cameras that offer users a 360° panoramic view for situational assessment and surveillance of their own ship's surroundings in real time. Its target tracking system is capable of following even very small tar-

gets. GATEKEEPER was designed to be used as an independent and automated security sensor system for the immediate vicinity of the user's own ship, whether it be in harbour, at anchor or sailing through unsafe coastal regions. The system provides around-the-clock surveillance. This reduces the number of persons required on board and the crew can remain inside the ship in a protected, airconditioned environment instead of keeping watch on deck. GATEKEEPER has up to four sensor heads, each of which has one uncooled infrared camera and three TV cameras with a combined azimuth angle of 120°. The 360° panoramic image is displayed at various operator consoles. Users can zoom in on section views of the displayed image. GATEKEEPER can also be used as a standalone system for naval units or other objects such as maritime drilling platforms or other valuable onshore assets and depots/camps for protection against asymmetric threats or pirates.

## ICAS

The I-MAST is not only equipped with sensors, but also with ICAS, a communications system developed especially for the integrated mast. ICAS uses flatpanel antennae mounted on the side of the mast, each of which covers a 90° section. Four antennae in combination thus provide 360° coverage. The ICAS infrastructure, which enables the radios used by the Navy to be connected to the ICAS antennae mounted on the side of the mast, is built into the mast itself. The ICAS infrastructure consists of two housings so that several systems can utilise the antennae simultaneously. The unique thing about ICAS is that it is able to simultaneously amplify and transmit several communication signals at different frequencies without trans-formation. In summary, the I-MAST concept offers:

- operational performance enhancement
- unobstructed 360° field of vision for sensors
- easy to integrate into a vessel without risk
- reduced personnel levels
- flexible I-MAST configuration and subsystem selection
- lower lifecycle cost.

## First: I-MAST for Royal Netherland Navy

In November 2011 the first Integrated Mast (IM400) has successfully passed the Factory Acceptance Test at Royal Netherlands Navy. Since the I-MAST consists of various subsystems, the actual FAT comprised several tests. After the successful tests the contract partner accepted the first Integrated Mast. Following the FAT, the I-MAST was shipped to Damen Schelde Naval Shipbuilding and successfully installed on the first patrol vessel "Holland". The second I-MAST is presently being built by Thales in Hengelo. It will be installed on the second Patrol Ship "Zeeland" early 2013.

\* Rainer Jentzsch, a business management graduate, is Key Account Director Navy & Shipyards, in which capacity he is responsible for all matters pertaining to the German Navy and to all shipyards located in Germany. Before joining Thales Deutschland in 2010 he spent 20 years in the Marketing & Sales department of Thales Nederland B.V.

The future of COMINT and SIGINT in a naval environment

# Closing the gap of unexploited reconnaissance capabilities

by Sven and Richard Boger, boger electronics GmbH, Aulendorf

New threats and risks caused by changing operational areas and operational concepts require new reconnaissance possibilities to protect ships on their missions. While in the past the enemy came with big ships and was clearly recognizable, the enemy now comes in sneakers and wooden boats – but there is a fact they have all got in common: the need for communication. This is precisely the point, where our systems come in...

## Reliable Detection of Communication

With our automatic COMINT (Communication Intelligence) and SIGINT (Signal Intelligence) Systems it is possible to detect attackers in a very reliable way, even if they come in a wooden boat. Terrorists and pirates mostly use simple and cheap walkie-talkies, to coordinate themselves. These speech-emissions can be detected fully automatically and if required for detailed reconnaissance, recording of the emissions is possible. Even reconnaissance and monitoring of coastlines are possible with our systems, independently of environmental conditions, like rain, fog or other physical disturbances. While most of terrorists' conversations are still analog transmissions in the VHF-frequency ranges, we are already prepared for future technologies. With decoding capabilities for digital modes like TETRA, dPMR, NXDN, DMR etc. our systems are well prepared for future threats, in order to detect or to prevent for example smuggling or illegal immigration. While our systems are in use in land based vehicles and stationary applications in various regions worldwide, the demand for COMINT and SIGINT on ships is growing. In the meanwhile our systems have been approved for naval environments. A number of systems have been successfully installed and passed all acceptance tests.

### boger electronics GmbH

boger electronics, a family-owned enterprise established 1978, is one of the leading suppliers for complete COMINT-Systems in the HF-/VHF-/UHF- and SHF-Frequency ranges, as well as for system components like wideband communication receiver, Signal-Processing Software and special products for communication monitoring and communication surveillance. The Monitoring-Systems of boger electronics are in use for many European armies as well as for armies all around the world, especially in the Middle East region.



### Richard Boger

Richard Boger, founder in 1978 and shareholder of boger electronics GmbH, Aulendorf. Richard Boger was born 1951 in Schwäbisch Hall. He is general manager of boger electronics swiss GmbH, Gais and has been the technical director of boger electronics GmbH in Germany since 1978.



### Sven Boger

Sven Boger, head of sales and marketing, boger electronics GmbH, Aulendorf, since 2010. Sven Boger was born in 1986 in Ravensburg. He studied Industrial Management at the University of Cooperative Education in Ravensburg and graduated as Bachelor of Arts in Industrial Management and Bachelor of Honours in Business Administration in 2010.

## Latest Reception Technology

For many years boger electronics has been developing receiving systems for military applications and gathered a lot of experience. It is therefore able to provide single components like own-developed wideband receivers up to 9 GHz (our BO-receiver range) or customized antennas including corresponding signal-distribution up to 40 GHz as well as complete receiving systems. Suitable for our systems we provide corresponding software applications like wideband / narrowband rf-recording (iq-data) of a specific spectrum or of a specific signal for signal intelligence purposes as well as Signal-Classification including automatic speech-recognition. Our intelligent receiving-systems are the ideal supplement to other reconnaissance systems like ships radar etc. and enrich the ships capabilities for detection of unusual objects.

## Result

Using state-of-the-art receivers in combination with powerful signal-processing and – analysis tools is the ideal complement to customary reconnaissance tools and enriches the capabilities of future ships, like patrol vessels etc. Our monitoring-systems capabilities, which are well approved and in use in land based vehicles, can be adapted to the naval environment.



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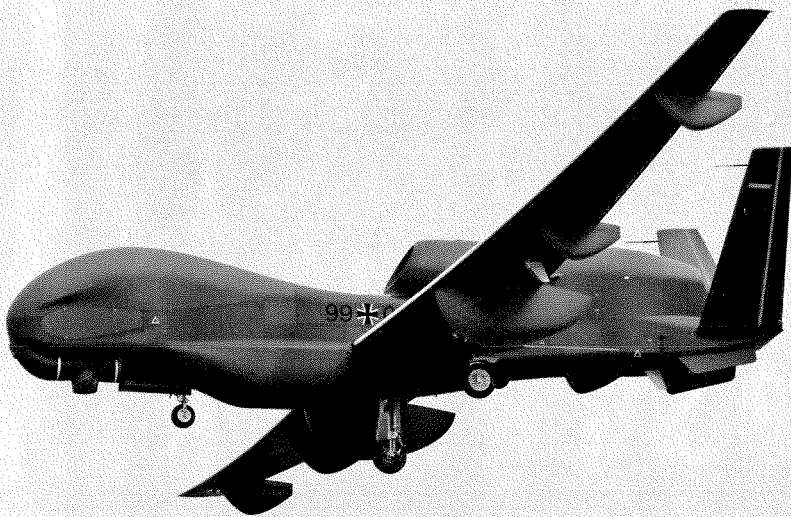
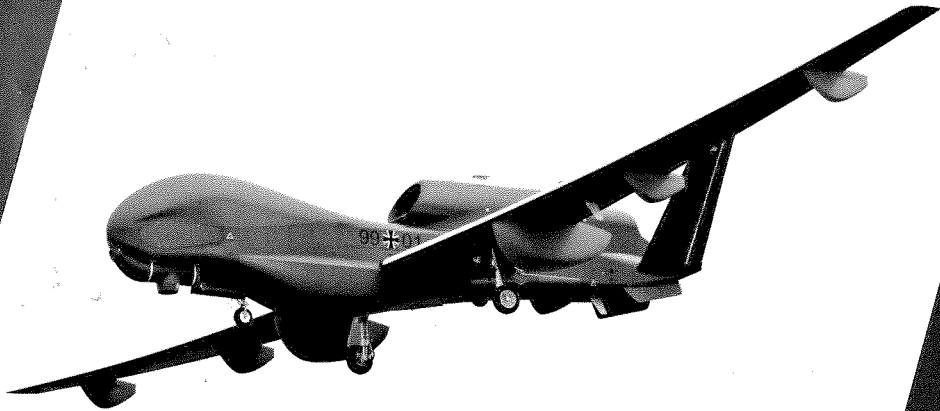


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