



*TransHospital® State of the art design of a complete Mobile Rescue Centre (Role2)  
Here the mobile hospital for the Slovenian Army*

*TransHospital® Computer Tomography Container. 1 to 3 expandable Shelter with integrated EMOTION 6 CT.*

## ADVANCED APPLICATIONS REQUIRE MOBILE SYSTEMS

# Mobility, protection, self-sufficiency – Mobile Systems – a strong partner for tomorrow's mobile systems

The medical care of those wounded or injured in war and disasters is in a state of constant change. Today military physicians are better trained than ever and are equipped with advanced state-of-the-art medical equipment. The same is true in the area of pharmaceuticals. In addition, immediate medical care of the wounded is supported by means of advanced logistics, Telemedicine and other IT solutions. Today patient care, which in the past took place in very basic field medical treatment facilities, can be provided in modern rescue centres and field

hospitals with modular and containerized structures corresponding to the quality of a modern, small hospitals are available. It is the patients who benefit. EADS Corporation has developed outstanding modular field hospital solutions which have been used for almost 30 years; which are constantly being modernized and modified, and are already used in many countries.

**MCIF** has collected information locally and conducted an interview with those that manage them.

► **MCIF:** Many of our readers know the name EADS. They have probably already travelled with an Airbus, have seen satellite pictures, heard the weather forecast from an EADS Astrium satellite, or have had professional contact with many products from the EADS group.

► **Bauer:** *Our area is one of the three major pillars of EADS Corporation. The names of these three pillars are space, aeronautics and defence systems. We belong to the last one.*

► **MCIF:** However, you are of course integrated into the corporation's network ...

► **Bauer:** *... and we benefit from all the advantages that come from belonging to such a high-technology corporation. We as systems providers certainly profit from the research and development in all different technological areas as well as from the wide-ranging experience we have within our company.*

**MCIF:** How many employees does EADS Corporation have?

► **Bauer:** *Currently about 117,000 employees with total sales of almost 40 billion euros. There-*

*fore it is good to know that the individual areas in such a large corporation as EADS quite naturally benefit from the synergy effects between them.*

*The Defence and Security sector of the corporation is principally devoted to all security-related issues beginning with border control, homeland security solutions and of course also for large corporations, via the classical defence business with products for national defence, and even other government tasks insofar as they are related to security and defence.*

► **MCIF:** How did it happen that your Mobile Systems department within EADS began to work on this modular concept that has developed into a such successful program?

► **Bauer:** *First of all, we as the Mobile Systems sector within the Defence & Security line, consider ourselves to be, so as to speak, a system house. We as the Mobile Systems sector are working on systems capability solutions for very complex mobile infrastructures. This is a very complex system task that goes far beyond what is necessary in terms of know-how in order to be able to offer an individual product solution.*

*The origins of Mobile Systems are as early as the 1970s. Through the previously mentioned cooper-*

*ation in the defense and security area, there were orders and product development for the military and cooperation with the German army. One of these orders was the development and production of a special telecommunications cabin. This cabin was developed as early as the 1970s on the basis of a mobile systems concept which at the time brought us a lot of compliments. The idea of a systems approach was born from this positive experience and we can consider it as the hour that Mobile Systems was born.*

► **MCIF:** So then the development of a mobile containerized system for caring for the wounded was the logical next step in the development of this idea?

► **Bauer:** *Absolutely, however what was more important of course was the fact that the situation as a whole had also changed: The classic wars with their scaled defense systems that included the national hospital structure have been replaced today which was due to the completely new kinds of threats. Conventional military conflicts, such as we knew them in the last century, are hardly conceivable today in this form. Instead we now have so-called asymmetric warfare, there is terrorism, and there are an alarming number of civil wars and many disasters, such as the tsunami several*



*Tentainer® - Lightweight, airdropable and highly integrated. The Tentainer® is the new hybrid housing solution which consists of a light shelter container basis and a roof of tent.*

*EADS is heading for the development of a TransProtec® version usable for the protected transport of injured people (interior view).*

years ago, strong earthquakes, but also technically induced large-scale accidents, plane crashes, dam collapses, to only name some of the possibilities. Epidemics and pandemics today attract not only global interest but often have global implications, and they will be – to come back again to our product area – more effectively challenged if we have the corresponding products and systems available.

- ▶ **MCIF:** You offer solutions for these different war and disasters in order to make it feasible to take the best possible care of the injured and to make caring for them mobile so that it can be moved to the corresponding areas!
- ▶ **Bauer:** That is one point of view. However, you are right: Response to a military or disaster activity is all the more effective if it can be implemented as fast and seamlessly as possible. This means a higher mobility level and this in turn means also the availability of airborne mobile equipment that guarantees rapid transportation and relocation. And this is also true for medical care. High mobility is the answer to environmental disasters, natural calamities and large-scale terrorist attacks. We call this First Responder Capability. And in military operations, the products must of course be highly mobile, light and airmobile. Here we require a Remain Overnight Capability. When, for example, troops must be brought in after the reconnaissance commandos and they have to stay for a longer period of time, then we need a mix between, on the one hand, high mobility, and on the other a quasi robust containerization. In the meantime, we have developed for this purpose, besides the well-known containers, new products such as the Tentainer® and the ISO-Tentainer®.

*Photo right: The armored Transport Shelter "TransProtec®" with a capacity of 18 soldiers*

- ▶ **MCIF:** Are we going back to tents?
- ▶ **Bauer:** These are of course not tents in the traditional sense of the word. The Tentainer® as a symbiosis of a tent and a container combines the advantages of a light and quickly deployable tent with the robust substructure of a container. On the one hand, this construction represents a further development in mobility and at the same time corresponds to our way of thinking about the systems, according to which we offer first of all modular solutions with the above-mentioned properties of light deployment, etc. The completely situation-adapted solutions range from mobile hospitals in a fully containerized system to pure Tentainer® type solutions. There are obviously situations in which the mixed systems have advantages.
- ▶ **MCIF:** What are the main differences between the various systems, their advantages and disadvantages?
- ▶ **Bauer:** If you have the time and opportunity to deploy high-level pre-integration in the field, then of course fully containerized deployment offers the advantages of particular stability and reliability. Many factors can be taken into consideration here for elegant solutions such as the climatic, logistic and organizational aspects of the task. In addition, full-container deployment offers high protection technology against CBRN (chemical,

Biological, Radiological, and Nuclear) weapons; they are more weather-resistant, have ballistic protection and a well-regulated energy supply. Of course, on the one hand, the more robust and resistant such a system is, the heavier and more voluminous it becomes. On the other hand, as we have already pointed out above, the weight, volume as well as the transportation and deployment are of importance in short-term and rapid operations. Other modules need to be generated here. This can be done either on the basis of a tent or by using the mixed form.

For instance, in an initial entry operation and also in a rapidly beginning operation, a Tentainer® can offer advantages with its low weight, short deployment time and high pre-integration level. The Tentainer® has, thanks to its great volume optimization and low weight, the advantage of being easily airmobile both with CH53 and NH90 helicopters and the new A400M transport aircraft of the EADS family. It can be air-dropped and is much better than a pure tent system by a quantum leap.

- ▶ **MCIF:** Then this also means that you will have to come together with your clients and with the future users of your systems to achieve a very detailed dialog in order to discuss and work out together which solutions are ideal for which conceivable deployments. However, not everything can be foreseen, predicted and planned...



► **Bauer:** ... Exactly. It is exactly for this reason that our modular system solutions and mixed forms are suitable for deployment when it is necessary to react to very disparate circumstances.

► **MCIF:** Let us take the equipment in your containers, be they the classical 20-foot container, the Tentainer® or any hybrid form. To what extent do you have (from a technological point of view) sufficient flexibility for the various medical technology solutions that are preferred by the clients?

► **Bauer:** Of course the medical equipment that the clients want is integrated, including the equipment the physicians that will use it have greater experience handling best in their everyday work. Of course if they suddenly have to use surgical or medical devices they are not trained for it may have fatal consequences. We always integrate the medical equipment that is favored by the client.

► **MCIF:** But you advise them?

► **Bauer:** Certainly. We have high-level consulting skills. We have precise knowledge of the medical equipment market, our know-how in this sector is well-founded; we consult accordingly and try to work out an optimal solution together in dialog with the client.

► **MCIF:** And how are you doing consulting in countries that only have a limited budget at their disposal?



A Mobile Rescue Station (Role1) for first aid support in the disaster management in Banda Aceh/Thailand after the Tsunami catastrophe in 2004.

► **Bauer:** It is obvious that it is easier to work out solutions with countries that are accustomed to; want and can use a high standard of medical technology in military or disaster situations. We are most experienced in this area.

It is without a doubt that we are in a very good position to adapt our systems to our customer's national requirements. These requirements are of course variable and driven by the local situation and infrastructure. We are very interested in finding solutions to the various tasks and challenges as well as very open to dialogue in offering our experience and know-how to potential clients.



Interview partners (from left to right): Mr. Heinz-Jürgen Witzke, Publisher MCIF; Mr. Bernd Gessler, Key Account Manager Germany; Mr. Jens Bauer, Vice President Mobile Systems; Mrs. Sarah Möhrle, Marketing & Sales EADS Defence Electronics; Mr. Olaf Kortenhoff, Project Manager MCIF

► **MCIF:** Where are your mobile systems used today?

► **Bauer:** Our largest area of use is the German army (Bundeswehr). The German Medical Corps has more than 400 containers. Germany participates in numerous international operations; a strong example is in Afghanistan. When Germany participates in international relief operations, Germany usually assumes general or at least partial responsibility for the medical support. This can also take place in cooperation with other nations, as is well demonstrated by the Afghanistan example.

► **MCIF:** 400 containers, that is a large number and it means that you can do a lot with them?!

► **Bauer:** This is simply the advantage of the modular system. You can combine the individual modules not quite in any combination but nevertheless in many different ways, and, for example, one can configure up to four complete field hospitals or many smaller medical facilities, or certainly any desired combination of configurations.

They include of course all modules for power supply, water supply, air conditioning, etc., and in addition, all components such as laundry, kitchen, etc. In order to make it easier for our clients to set up a TransHospital®, we have also in our portfolio some special tools for planning and reconnaissance. The planning tool provides complete plans with measurements, material lists, assembly plans as well as layout plans for the power and water supply/waste water. Escape and rescue routes are also automatically determined. In this way, substantial support is provided for pre-deployment planning.

In addition to the German army, we have also supplied other NATO countries; as well as delivered a well received mobile hospital to the United Arab Emirates. Due to a service contract we are in constant contact there. A rescue station – to also mention such examples – has also been delivered to Libya.

And we are in contact with a great number of

nations that want to better equip their healthcare services and adapt them to the modern requirements. For several years now we have focused special attention on the US market. The concept developed by us is in our opinion – as well as on the part of our US partner – suitable for introduction in the various organizational forms of the medical services of the US armed forces. Of course, the basic system must be tailored according to the corresponding requirements. Hence, we are already prepared to found our own company in the USA which will work in particular on the mobile system solutions.

Generally speaking, we are glad about the often firmly expressed interest in our modular systems from different parts of the world. And of course we are interested in presenting our solutions where there is an opportunity to do so. For example, at the large CIMM (Capability In-Maturity Model) events, such as the one last year in Tunisia and another one to be held in October 2009 in Malaysia, or just recently at the Asia Pacific Congress for Military Medicine in Singapore.

► **MCIF:** Can people contact you directly besides at such large events?

► **Bauer:** As a matter of principle, every EADS branch around the world is available for enquiries. Being part of a corporation also provides this advantage. Of course we are happy to receive any direct contact that is made.

(Note by editor: See contact information on page 43!)

► **MCIF:** Development is always moving forward, and the requirements are also constantly changing and must be redefined. What are you preparing yourselves for now?

► **Bauer:** The principal challenge of the future will be how to run the equipment and systems with as little energy as possible. We are fully focused and already working on this aspect. With our TransEnergos® product family of especially developed energy supply and air conditioning

systems, we are working constantly on improving the usages and operation costs of our systems.

And there are also many other projects we are working on, sometimes alone and sometimes in cooperation with other development departments in our corporation. Of course we also develop systems together with our partners from the industry that deliver the individual modules, components and materials to us. The medical technology is thereby only one part of the whole; the material that our containers and Tentainers® are made of can always be optimized further. And air-conditioning technology can be added to that.

We are working of course with new materials and technologies, for example for the Tentainer® with completely new tent fabrics with improved insulation values for all systems with composite materials, for armor protection with new granulates, and with much more.

- ▶ **MCIF:** There is also – for example in the German armed forces – a ship-based variant.
- ▶ **Bauer:** Yes, we have one group supply ship of the German armed forces, a large ship, which contains, along with the logistic functions, a naval rescue centre which consists of a containerized hospital deployed on the deck. The medical service of the German armed forces was deployed with them, for example, in Banda Aceh, Indonesia, after the tsunami disaster. We were able to observe there how the leading medical officers had to battle with the land-based supply situation, which at the beginning was in a very desolate state in terms of hygiene and infrastructure, so the patients that needed particularly intensive care could be transported by helicopter to the naval rescue centre on the ship. In this way, up to 40 or 50 patients per day could be provided with high level medical service in a stationary facility which in this case and at this time was completely impossible on land. This was a first-class solution that was ideal for the affected patients. At this time one such ship is patrolling the Horn of Africa, and many countries participating in the Enduring Freedom Operation are particularly impressed by the high standard we are able to offer there.
- ▶ **MCIF:** Is your concept of mobile systems also a clear response to asymmetric warfare?
- ▶ **Bauer:** Absolutely. One must say good bye to the days when large tank battles could take place and where you operated with fixed battle lines which is very different from today where they are uncommon. Our fundamental conceptual way of thinking and acting in systems is certainly also an advantage

because completely different areas could be redeveloped in a completely new way. We are, for example, very proud of our containerized armored personal carrier, TransProtec®.

I am not talking about battle tanks; what I have in mind is the safe transportation of personnel from point A to point B. From our point of view, in this respect there is no better system worldwide than our TransProtec. We are able to transport 18 people, and we have solved all economic and protective technology issues at a world-class level.

The TransProtec® can of course be converted into a patient transport system as well as for emergency medical care of severely injured personnel.

- ▶ **MCIF:** Mr. Bauer can you also tell us about civilian deployment scenarios?
- ▶ **Bauer:** Besides the assistance at sea, we were also active on land during the tsunami with another product for disaster relief in Banda Aceh. We donated one Mobile Rescue Station. The rapid deployment of our station in the disaster area made for quick and unconditional help for the injured in the field possible. As we can see almost on a daily basis in the media, climate change causes increasing numbers of natural disasters. During such disasters, very large numbers of people need professional help in the shortest period of time. We at EADS can respond to these requirements with our mobile systems. So we were also able to help with the deployment of our rescue station during the hurricane Katrina disaster in 2005 in Long Beach Mississippi. Mobile Surgical containers are also currently being used by the German armed forces on Lake Constance. In one clinic in the city Constance, the surgical department is no longer operational due to a fire, and while the clinic is being renovated mobile surgical containers are acting as alternatives. We as Mobile Systems can already see that our products can help in different everyday life situations. This underlines our commitment as a company to mobility and readiness for rapid action and encourages us to continue our work.
- ▶ **MCIF:** Do you have other considerations about the future?
- ▶ **Bauer:** An example for the application of our concept is the subject of Virtopsy®, i.e. autopsy without a scalpel, for which our containerized system can be used ideally. With the help of our TransHospital® CT containers, we are able to examine the type of the injuries and determine the cause of death at a very early stage, for example we can determine whether in the case of a mine injury the impact of mine itself was the caused of death or it was caused by the effects of shrapnel

within the vehicle. This can enable quick responses and improvements, and it is also important to be able to perform such a Virtopsy® as close as possible to the place of the accident.

World events happen on an ongoing basis. Unfortunately, we can be quite sure that from our perspective today the diversity in our world will not bring an end to the various forms of threats – small, large and man-made disasters, civil wars and terrorist attacks, or in any case not so quickly and. We at EADS along with others feel committed that we have to and want to meet these challenges. We offer solutions which simplify and above all improve the aid to those affected – the



Jürgen Heimerdinger, Key Account Manager of the Export Department at Mobile Systems, in conversation with the General Surgeon of the German Army Medical Corps, Generaloberstabsarzt (Lieutenant General MD) Dr. Nakath

patients – to the greatest possible degree. Now and in the future.

In our own way we will respectively advance our systems for early detection and early warning as well as support our clients around the world, and, as I already mentioned, propose solutions in a dialog with them.

This can even mean mobile rescue and hospital solutions, which are used by the military, non-governmental organizations or other institutions and can practically be brought into action from anywhere in the world. For our part, we are now working on the future possibility of implementing these solutions ourselves. This means that we can imagine achieving a standby capability that we would be able to offer help when needed, even at great distances.

- ▶ **MCIF:** We at MCIF will continue to follow and report the developments, and we wish all the best to you and above all to the patients!

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