HINTSTEINER
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LIGHTWEIGHT SOLUTIONS FOR THE DEFENCE INDUSTRY

HINTSTEINER GROUP

www.hintsteiner-group.com

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CONTENT

WE ARE PUSHING THE LIMITS

As a high-tech company, the Hintsteiner Group is specialized in the production, processing and surface finishing of prototypes and small series out of carbon composites and plastics and supplies well-known companies and industry leaders from the fields of security technology, motorsport, automotive, aviation and other industry. From research & development, through engineering, to production and surface finishing, Hintsteiner Group offers everything to successfully serve the industries mentioned above. Great care is taken to ensure customer satisfaction.

FOUNDED IN 1981

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HINTSTEINER / CARBON SOLUTIONS

FOUNDED IN 2002

Specialized in the production of composite components

HINTSTEINER / TOOLING COMPONENTS

FOUNDED IN 2002

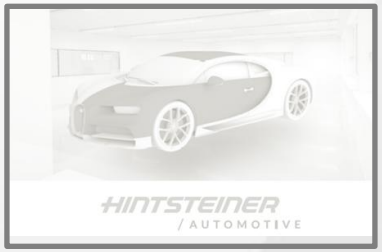
Specialized in the production of plastic components

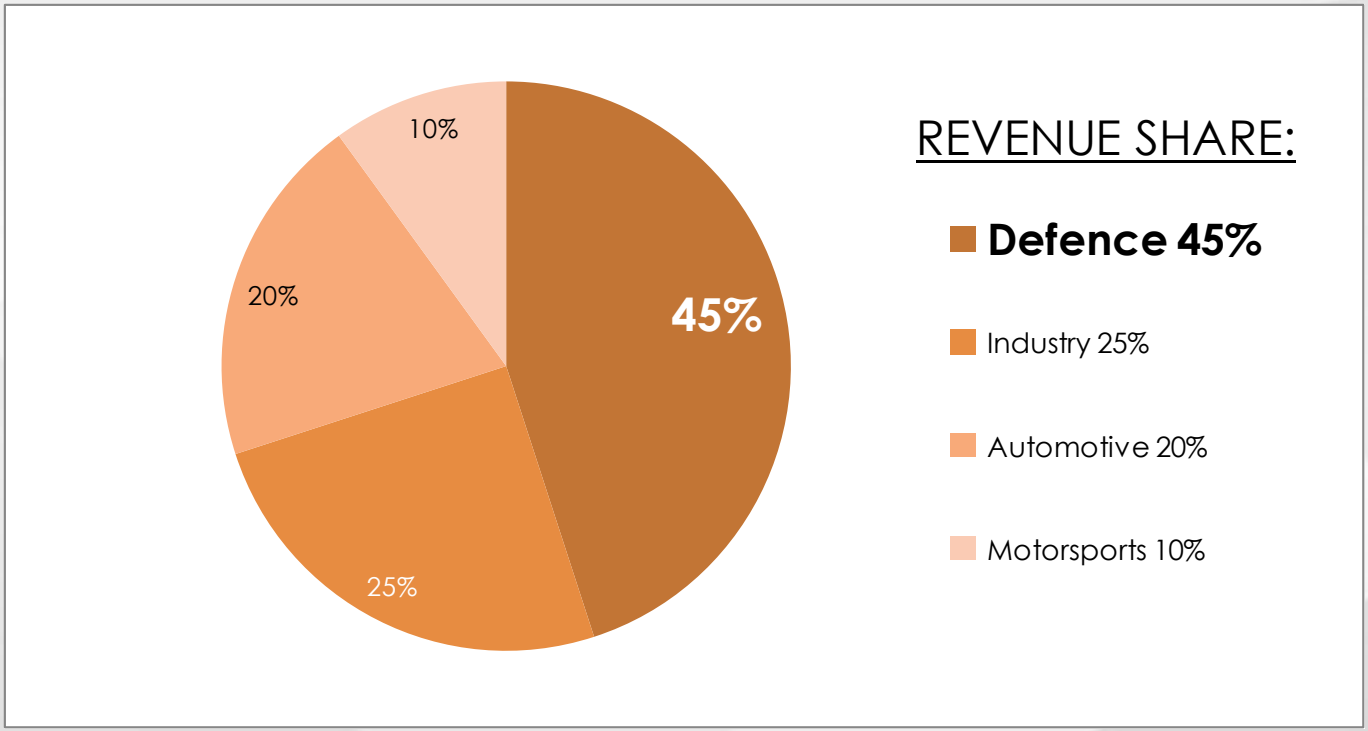
HILITECH

FOUNDED IN 2015

Specialized in the production of interior parts for the aviation sector

HINTSTEINER GROUP - COMPANIES





HINTSTEINER GROUP - SECTORS

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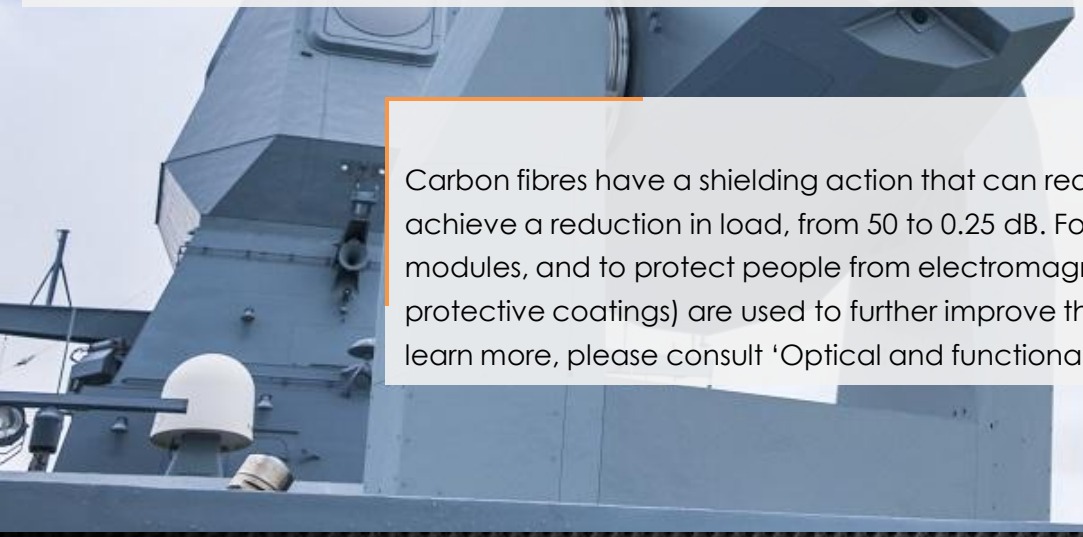
CFRP is a genuine lightweight

A decisive property of carbon is its outstanding 'specific strength', an expression of the ratio of weight to material strength. Carbon is characterised by its ultra-light weight and its extreme strength. Substantial savings in operating costs can be achieved by reducing the weight of mobile equipment and of military vehicles. In addition, the use of carbon can increase payload capacities and reduce maintenance costs. On turret systems and weapons stations, a weight reduction translates into faster acceleration times. Also, drives and mounting blocks do not need to be so robustly constructed because they are no longer required to move the basic load of heavy aluminium or steel structures.



CFRP protects against electromagnetic radiation

Carbon fibres have a shielding action that can reduce exposure to radiation by 95.5%, and can also achieve a reduction in load, from 50 to 0.25 dB. For this reason, carbon can be used to shield electronic modules, and to protect people from electromagnetic fields. Specialist surface coatings (known as EMC protective coatings) are used to further improve this shielding effect. We offer various types of coating. To learn more, please consult 'Optical and functional surface treatment'.

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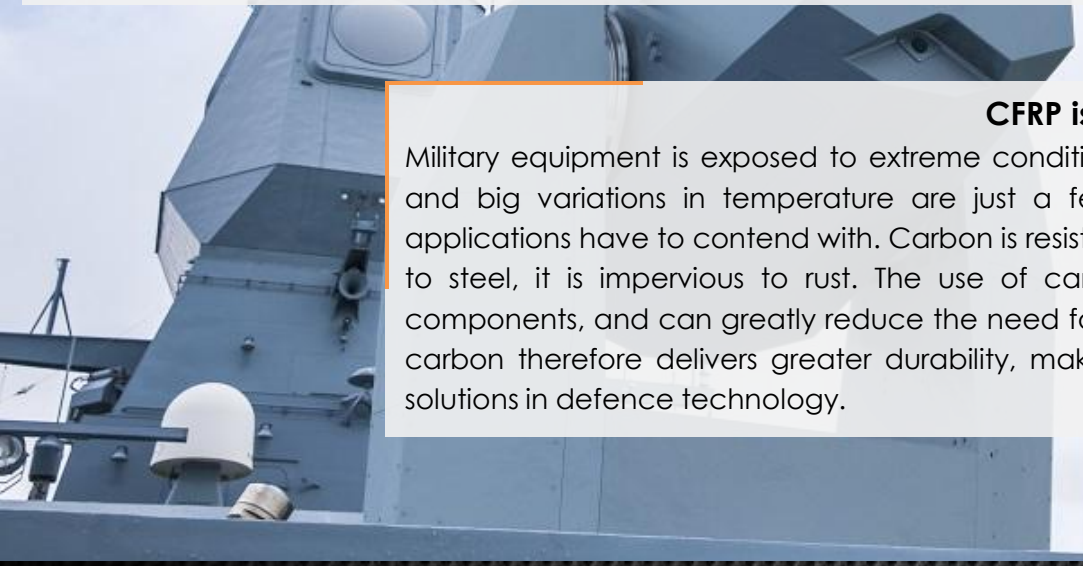
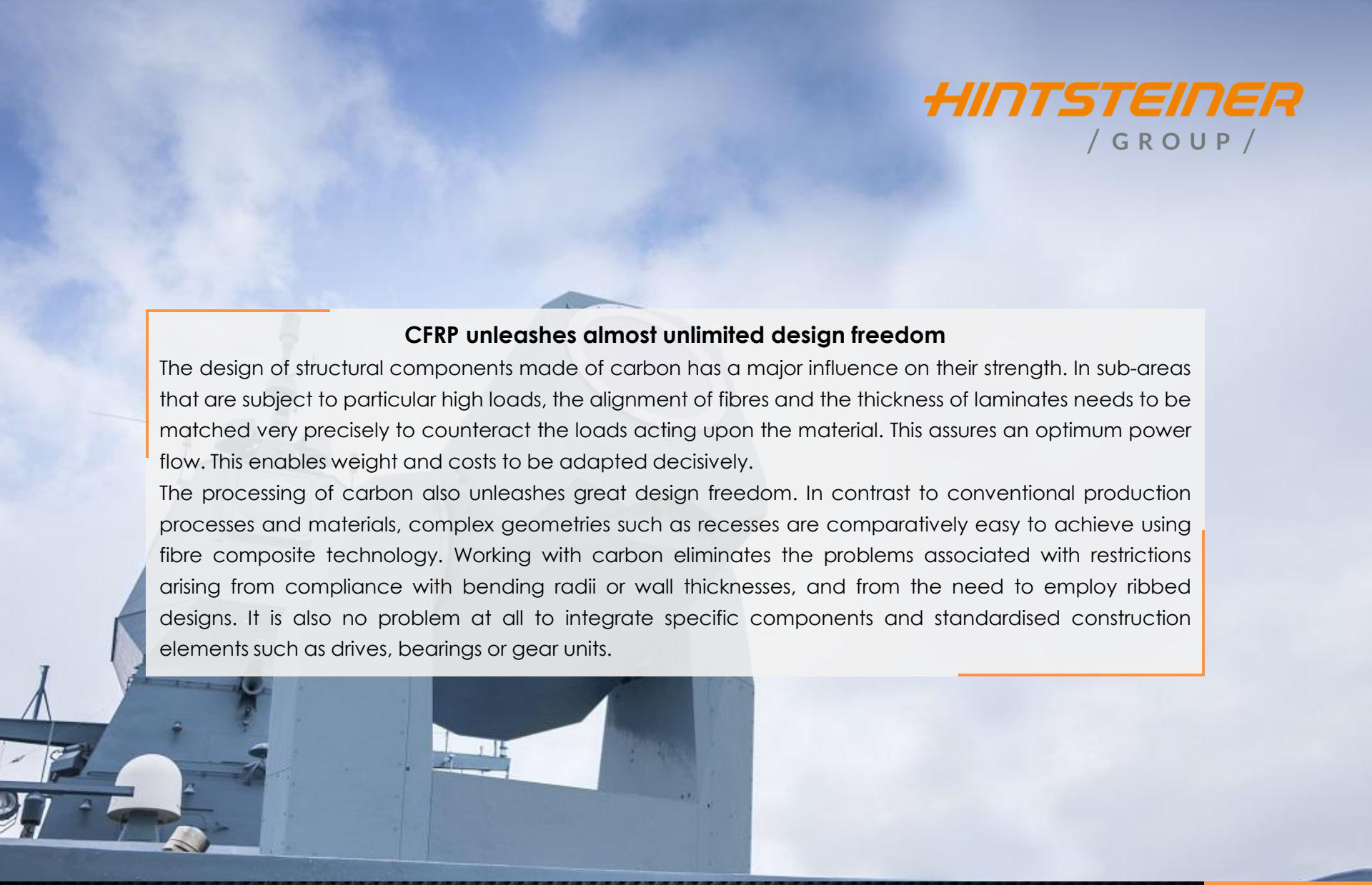
CFRP makes light work of exceptionally dynamic stress loads

Vibration and oscillations can cause big problems, especially with turret systems and weapons stations. At high rates of fire, vibrations build up automatically in response to recoil and in most cases, this has an adverse impact on the complete weapons station. These vibrations affect targeting accuracy, to the detriment of shot pattern precision. This also applies high levels of stress to additional attachments and components. Accordingly, oscillation and vibration are major sources of interference for viewing systems and fire control systems. Due to the high resistance to vibration of carbon, appropriate use of this material makes it possible to prevent most of these vibration-related issues.



CFRP is almost entirely resistant to environmental factors

Military equipment is exposed to extreme conditions in the course of active deployments. Humidity, dirt and big variations in temperature are just a few of the factors that hardware solutions for military applications have to contend with. Carbon is resistant to corrosion and to contact with fluids, so in contrast to steel, it is impervious to rust. The use of carbon can therefore extend the service life of military components, and can greatly reduce the need for costly repair work. Compared to aluminium and steel, carbon therefore delivers greater durability, making it the perfect material for innovative and resistant solutions in defence technology.



CFRP unleashes almost unlimited design freedom

The design of structural components made of carbon has a major influence on their strength. In sub-areas that are subject to particular high loads, the alignment of fibres and the thickness of laminates needs to be matched very precisely to counteract the loads acting upon the material. This assures an optimum power flow. This enables weight and costs to be adapted decisively.

The processing of carbon also unleashes great design freedom. In contrast to conventional production processes and materials, complex geometries such as recesses are comparatively easy to achieve using fibre composite technology. Working with carbon eliminates the problems associated with restrictions arising from compliance with bending radii or wall thicknesses, and from the need to employ ribbed designs. It is also no problem at all to integrate specific components and standardised construction elements such as drives, bearings or gear units.

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Platforms and launcher systems

The advantages of this material described above mean it can be used in the manufacture of large **launchers** and pivot-mounting systems and platforms. The weight reduction achieved through the use of lightweight components made of carbon enables these components to accelerate more rapidly, to be more agile, more precise, need shorter braking distances and to achieve substantial savings in relation to fuel costs.

Equipment for soldiers

Tough and confusing terrain, as well as extreme climatic conditions, take a heavy toll on security forces. By employing weight-saving hardware solutions in the **equipment** used by security forces, it is possible to increase the mobility and performance capability of soldiers by a significant margin. Viewing systems, radios, backpacks or entrenching tools are examples of the items of equipment that a soldier carries. Using lightweight components for those items of equipment makes it possible to reduce the weight they have to transport, thereby assuring lower levels of physical stress on each soldier.

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Amphibious components

CFRP can be used in conjunction with polyurethane foam or epoxy foam to manufacture extremely lightweight amphibious components. This enables troops to mount and remove those amphibious components to / from military vehicles by hand within just a few minutes. This facilitates very rapid water launches. When returning to land operation, the amphibious components can be removed just as rapidly. Since these amphibious components are not hollow, they are better able to withstand the penetration of foreign bodies, for example if they come under direct fire. Consequently, the amphibious capabilities of a vehicle are hardly compromised at all. In this way, military vehicles can be converted into amphibious vehicles, enabling combat troops to cross bodies of water quickly and safely.

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Exoskeletons

Exoskeletons are assistance systems that are becoming more prevalent in military applications. These are systems that security forces wear directly on their bodies and that operate mechanically on the human body. The intention here is to enable security forces to carry heavier loads, but to be exposed to lower levels of physical stress. Consequently, an individual only carries their own weight, and/or a proportion of the weight of the exoskeleton. These need to be designed to be as light and ergonomic as possible while also being able to withstand maximum levels of load. CFRP is exceptionally light, it is very rigid and strong, and exhibits almost unlimited design freedom. Consequently, this material is a perfect candidate for the structural and load-bearing elements on exoskeletons. If required, those elements can also be equipped with or clad in soft foam to improve the comfort as well as the feel of the skeletal assistant of the individual soldier.

Picture: Lockheed Martin

Military infrastructure

Global deployments and a vast array of diverse scenarios call for flexible components for military infrastructure. Water tanks, cisterns, fuel tanks and mast systems are just a few examples of the applications that benefit from being made of lightweight materials. Specialist knowledge in relation to lightweight components and the ability in highly sensitive areas to carry out repair services are our core competences. Depending on the nature of the damage, the renovation of containers and/or components made of those plastics or fibre composites can involve the use of vacuum infusion lamination, adhesive bonding or welding. With the help of mobile RIM systems, insulation materials or oxidising metal structures (e.g. pipework) can be renovated or protected.

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Engineering and production of prototypes and small series

With our decades of experience in the production of components made of innovative fibre composite materials and plastics, coupled with our wealth of experience in the implementation of prototypes and small series for the defence industry, we are there for you with design and manufacturing solutions. With us, you are on the safe side because we manufacture to exceptionally high standards of quality and in-depth knowledge, in full compliance with technical military standards.

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BODYWORK COMPONENTS:

- Bonnets
- Prototypes - armor plates
- Demonstrator construction
- Ventilation griller
- Air ducts
- Design elements
- Door systems
- Door handles

STRUCTURAL COMPONENTS:

- Tower systems
- Bogies
- Launcher systems
- Platforms

ELASTIC COMPONENTS:

- Fenders
- Stop Bars

ENGINE COMPARTMENT:

- Silicone and molded hoses
- Air collector
- Liquid container

Spare parts and services

New technological processes and comprehensive technical expertise enable us to supply customers with spare parts in a quick and simple way. Maintenance work on modules, involving replacement of certain components, is not only faster than purchasing a new unit, it is also much less expensive. The Hintsteiner Group supports you accordingly globally with technical service support for the entire range of systems you operate. If you only have old technical drawings (blueprints) or documentation for your components, it can often be a problem to obtain new ones. Using our 3D scanner, we can establish the dimensions of components and can then manufacture them to a high standard of quality. The same applies to the definition of materials and material designations that have changed in the course of time. Through new qualification and material research procedures, we have a field book of military materials that enables us to determine a very diverse range of plastics and alloys.

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On-site GRP repairs and installation work

Conventional materials have big problems coping with high salt content, aggressive chemical environments and extreme climatic conditions. This is why metallic materials soon reach their operational limits when they encounter the ambient conditions at sea or in tropical climates. Added to that, weight reduction is becoming ever more important. As well as CFRP, much greater use is also being made of GRP (glass fibre-reinforced plastic).

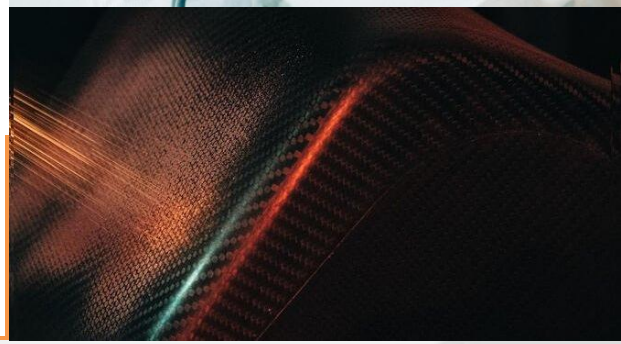
Supporting structures, observation platforms, water tanks, transmitter masts, containers, storage vessels and pontoon bridges are just a few of the applications implemented using GRP. The light weight of these applications means that they can be constructed and dismantled fairly easily. In the aforementioned applications, the corrosion resistance, acoustic insulation and the thermal and chemical resistance of GRP deliver big advantages when compared with solutions made of metal.

Optical and functional surface treatment of lightweight parts

Due to the strong position that the HINTSTEINER Group holds in the creation of components for defence technology, we are committed to equivalent levels of surface treatment for military applications, specifically in relation to components for military vehicles.

Reliable surface protection is another key element to maintaining the value and functional capability of military equipment and vehicles. Because vehicles of this kind have long operational service lives, surface protection is very important, which is why we dedicate so much attention to it. The right choice of surface technology and the use of the right surface materials are intended to prevent secondary damage caused by defective surface protection.

In addition to conventional paintwork and powder-coating, HINTSTEINER Group is experienced in thermal spray-coating processes. With our special processes, high functional surface finishes, such as **EMC-shieldings**, can be provided to our customers.



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Production of composite components:

- Tooling
- Prepreg-Autoclave-Technology
- SMC – Sheet Moulding Compound
- Lost-Core-Technology
- CNC-Processing
- Surface Finishing

Production of plastic components:

- Injection Moulding
- Vacuum casting
- RIM – Reaction Injection Moulding
- Moulded silicone hoses
- SLA/SLS - 3D-Print
- Aluminium die-casting
- CNC-Prototyping

TECHNOLOGIES USED

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TECHNOLOGIES USED

COMPOSITES:

- CFRP
- GRP
- Aramide
- Natural composites
- Design composites

PLASTICS & OTHERS:

- Polyurethane
- Rubber – Shore A
- Hard Foam
- Soft Foam

MATERIALS USED

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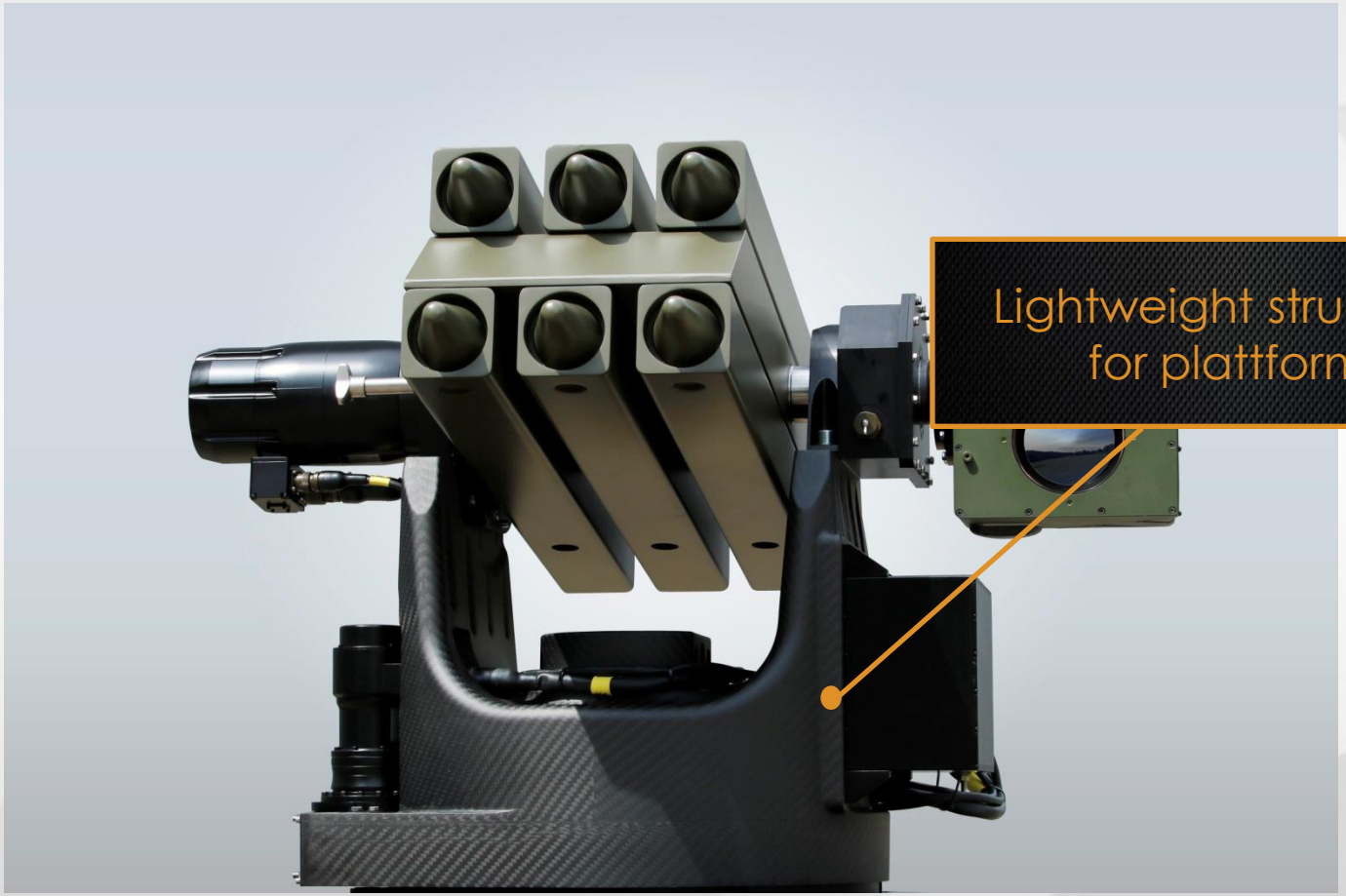
Lightweight structures
for plattforms

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Structural components

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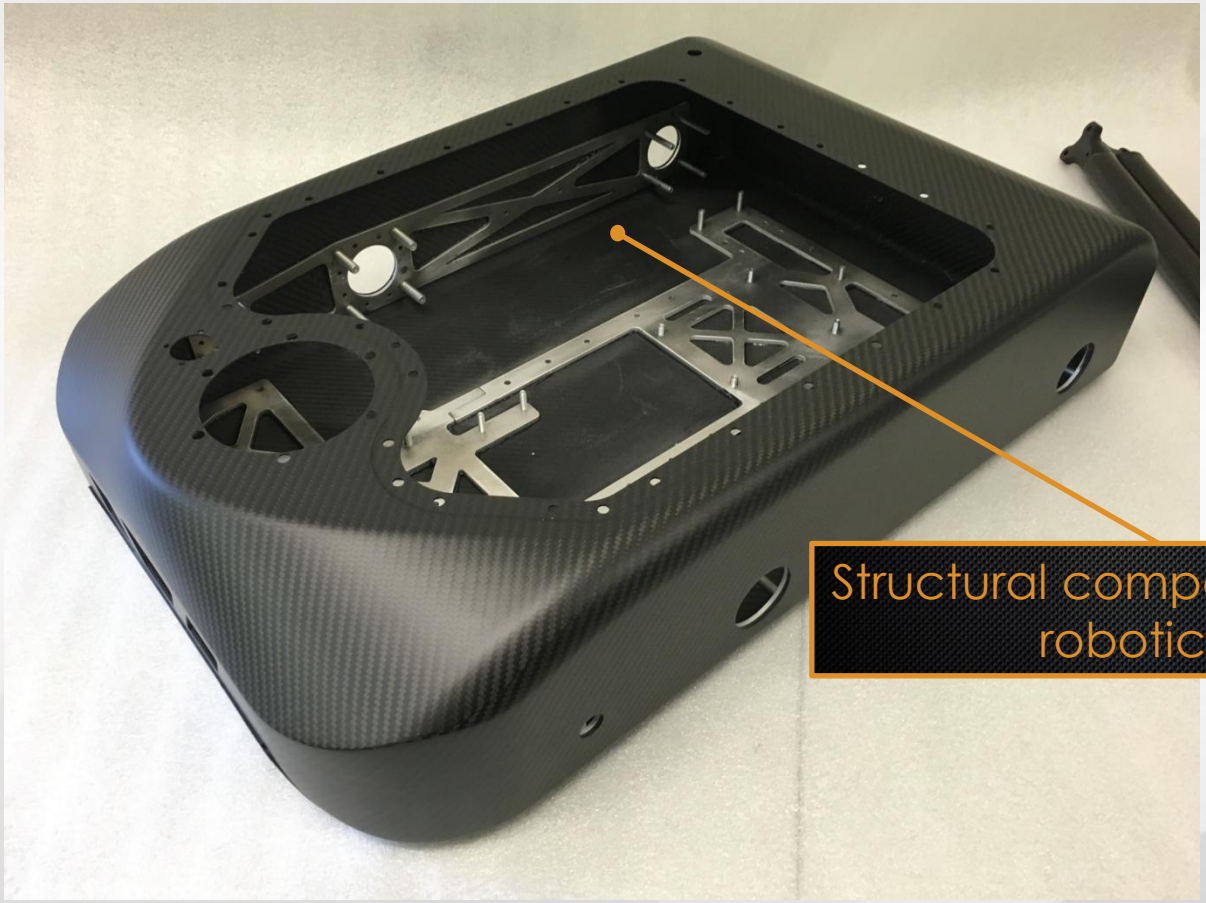
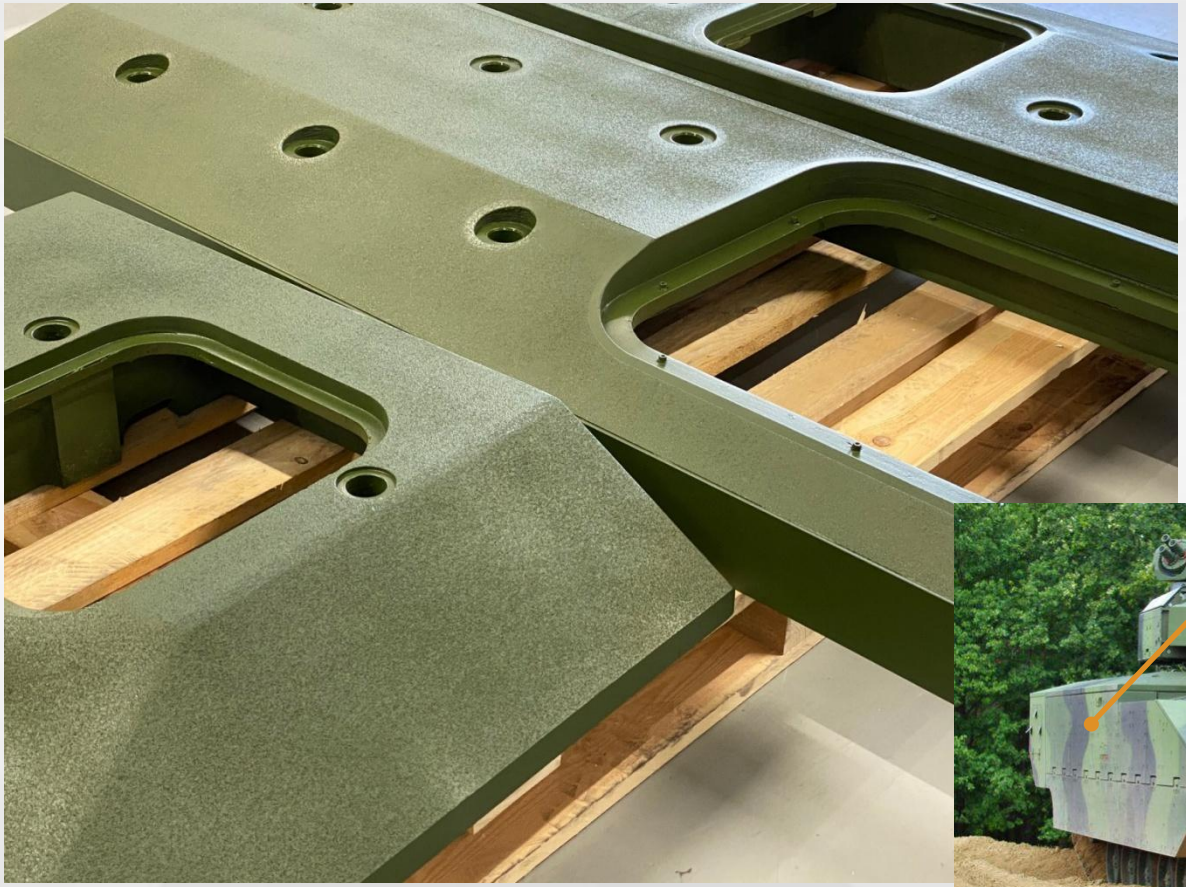



Explosion tested
Air ducts



MockUp-
armouring for
field trials

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Anti-Slip Surface Finishing

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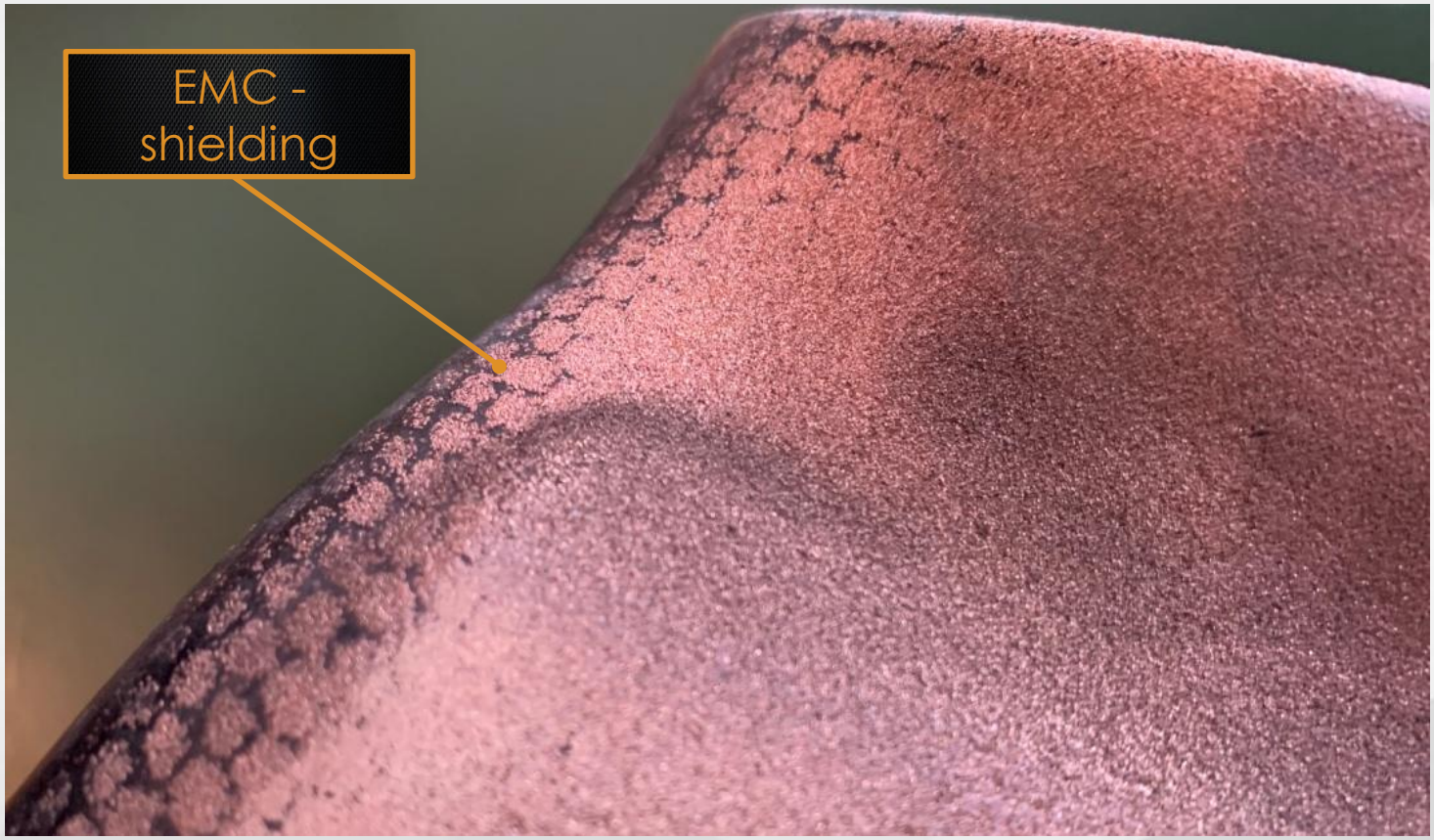

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