

**FY-COMPOSITES**



**YOUR PARTNER IN COMPOSITES**

**When Performance Makes Difference**

Positive winds to  
your business





# Serving in Three Business Areas

FY-Composites Oy is a leading company in the development of composite structures and components. Since 1986 it has served exacting customers in numerous challenging projects. Its highly-successful solutions and structures have been designed and developed together with customers. Its novel and high-class manufacturing methods have resulted in top-quality products that meet strict customer requirements.

Powerful modelling and analysis tools, combined with a thorough knowledge of advanced composite materials, create a solid basis on which to develop technically and commercially optimal solutions for customers.

Materials expertise and versatile manufacturing technologies enable results that meet customers' toughest demands and desires.

FY-Composites' advanced technologies and materials development, combined with its skilled and motivated personnel, yield added value for customers' value chains.

## **Structural composites**

Business area in which we offer structures and components for demanding applications in mechanical engineering, transportation, construction, etc. FY-Composites' broad experience and expertise allows it to implement a wide variety of projects, from small components to large ship superstructures.

The structural composites business area serves customers who are looking for materials that are

lightweight, but strong and stiff. Our composite structures are also corrosion-resistant and maintenance-free.

Their ability to integrate various properties and give greater freedom for structural design make composites an ideal solution in many application areas.

## **Ballistic protection**

Composites have been used for a long time in ballistic protection. Users have learned to value the unique properties of composite products in protecting against bullets and fragments. Our range of ballistic protection products includes helmets, visors, armoured panels and shields – in other words, lightweight armour to protect personnel, vehicles, ships and special equipment.

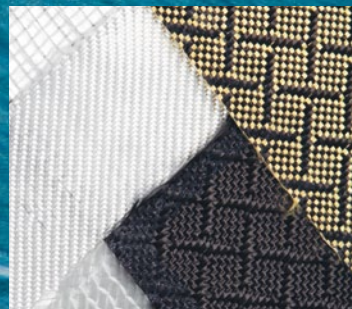
We are not limited to the current product range, however. Our long experience of the area and expert knowledge of materials make us a reliable partner in designing and producing products for all customer needs.

## **After-sales service**

Our third business area specialises in serving customers when there is a need for complex repairs to damaged composite structures. Spare parts delivery and training are also part of our after-sales service.



# Composites for extreme conditions





# Why Composites

If there can be no compromise on the excellent performance of a structure or material, it is worth considering composite materials as an alternative to conventional materials. Composites outperform conventional materials in many ways:

## Light weight

Composite structures are lighter than those made of conventional materials. This results in handling advantages, more effective loads and quicker moving parts.

## Mechanical strength

The good mechanical properties of composite materials, combined with their light weight, enable optimal structural designs.

## Stiffness

Their excellent stiffness enables the construction of large structural components.

## Dimensional stability

Composite structures maintain their dimensions through a wide temperature range, resulting in more accurate assemblies.

## Chemical resistance

Composites tolerate different chemical environments – both acids and alkalis – exceptionally well.

## Corrosion resistance

This property reduces maintenance costs and extends product life.

## Integration of properties

The flexibility that composites bring to design makes it possible to integrate and optimise those particular properties that customers want and require.

## Energy absorption

Their excellent ability to absorb energy makes composites superior for ballistic applications, especially where mobility is important.

## Materials and structures

Composite materials consist of two main elements – fibres (e.g. glass, aramide and carbon) and resins (e.g. epoxies, vinylesters and phenolics) – which, in combination, provide the final product with optimal properties.

Sandwich structures result in optimal construction and properties. Sandwich structures consist of a lightweight core material in the middle and fibre/resin laminate on both sides of the core.

If the final product does not require the properties of a sandwich structure, a solid laminate structure is the best solution.

If the product requires, other materials can be combined to composite structures. As an example is the use of ceramics in ballistic protection.

## Manufacturing technologies

In addition to selecting the right design and optimal materials, it is also important to select the right manufacturing technology in order to achieve the desired properties and cost competitiveness.

FY-Composites has several manufacturing technologies available. Depending on the desired properties, materials, design and number of products, the manufacturing technology can be chosen from hot pressing, vacuum infusion, resin transfer moulding (RTM) and prepreg curing. Hand laminating is used for the joints of large structures and moulds.

Reinforced thermoplastics technology also belongs to our field of expertise. This allows us to provide our customers with a wider range of technological alternatives.

A black and white checkered racing flag is shown waving in the wind against a bright blue sky filled with soft, white clouds. The flag is held by a hand visible in the bottom right corner, and its diagonal stripes create a strong sense of movement and direction.

Together  
with us you  
improve your  
competitiveness

# Partnering

Our expertise in composite structures creates a strong basis for close and fruitful co-operation with the customer in customer projects. Likewise, our expertise and knowledge of composites goes a long way towards ensuring our customers' commercial success.

We have 20 years' experience in turnkey deliveries of composite structures. In most cases, these projects have included extensive R&D and design efforts, as well as high quality manufacturing. This experience helps us to rapidly understand and implement customers' new, complex projects. This allows our customers to be more competitive in their own business environments.

The commitment of our personnel to agreed actions guarantees full customer satisfaction with the structures, components and services we deliver.

Our commitment to the customer doesn't finish when the structure is delivered. Since composite structures have long life cycles, many unexpected events can occur. Our maintenance services take care of the customer and any structural changes or needs to repair damage throughout the life cycle.

Our driving force is customer needs. We design and manufacture systems that provide the best technical and commercial value for our customers.



# FY-COMPOSITES

## Quality

FY-Composites Oy's certified quality system conforms to the ISO 9001 and AQAP 2110 standards. The certificates cover development, design, manufacturing, installation, after-sales service and the marketing of composite structures and products.



**AQAP 2110**  
certified firm

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