

WE'RE ALWAYS AT THE CORE OF YOUR MARINE SOLUTION





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Diab was founded in Sweden in 1950. Ever since the beginning, and throughout our steady development into a global company, we have been dedicated to constant innovation and promoting a widespread adoption of structural core materials.

Our products and solutions have been used in applications for marine, wind, aerospace, and industry for decades and are qualified according to relevant industry standards. With a complete range of high-performance core materials, numerous finishing options and kit operations in combination with engineering services and expertise, we present probably the widest and most valuable offering in the sandwich composite industry.

LIGHT, FAST AND TOUGH

Whether you manufacture sailing boats, super yachts, fast motorboats, or large commercial vessels, it's all about maximizing performance. Low weight, which is one of the main advantages of structural core materials, increases speed, reduces fuel cost and allows for a higher payload. Core solutions from Diab offer the highest strength-per-weight ratio for all marine applications. Our engineered materials make your boat light, fast and tough, and with the help of our technical expertise, structural engineering services and applications training, you can achieve maximum performance and cost-efficiency.

LET'S GET CIRCULAR

ndustry-leading competence and the broadest range of stronger, lighter, smarter ndwich cores and buoyancy materials. Since our start over 70 years ago, we have developed, improved, and fine-tuned our products. Now, we are on an ambitious journey to fully embrace a circular economy, creating a whole new level of sustainability.

Diab is the only company in our industry reducing our carbon footprint in line with Science Based Targets. That means we have a documented plan to reduce the carbon footprint of our products approved by UN Global Compact Science Based Targets.

However, our effort to reduce our carbon footprint goes beyond managing Diab's sustainability performance. We also work with our supply chain (Scope 3) because supporting our suppliers in lowering their emissions benefits our products, which helps our customers' applications. It's a chain effect that works in both directions.

DIAB'S CIRCULAR BUSINESS MODEL

ers our carbon footprint in line with the Science Based Targets and, thereby, our customers' carbon footprint. We have high sustainability goals, use renewable energy in our plants and are researching bio-based raw material alternatives.

h recycled raw



The customer can use a recycled product in their application, lowering their carbor footprint. The low we to a lower footprint du life cycle. Our material extreme life span, mak the life cycle assess

Our products can easily l reused because Diab is t provides clear information about the included materials. That ma reuse foam from one a of life to produce new fo

MAKE THE MOST **OF YOUR APPLICATION**

THE SANDWICH TECHNOLOGY

Composite materials are made from two or more materials with significantly different physical or chemical properties, that when combined, form an overall structure with characteristics different from the individual components.

The basic idea is simple; the execution is a bit more advanced. Two thin, strong and stiff skins, of fiber reinforced plastics or solid material, are attached to a lightweight core by press-bonding or lamination. This allows each element forming the composite panel to be designed to minimize weight and maximize strength and stiffness, or other desired features. The result is a component with a very high stiffness-to-weight and high bending strength-to-weight ratio. A Diab sandwich has all the advantages of conventional materials, such as steel or wood, but none of the disadvantages, such as heavy weight, corrosion, or design limitations.

> LIGHTWEIGHT SUSTAINABLE

FIRE RESISTANT STRONG

CREEP RESISTANT IMPACT PERFORMANCE FATIGUE RESISTANT SMART DESIGN RADAR TRANSPARENT FLEXIBILITY NONMAGNETIC

INSULATING

NO/LOW MAINTENANCE PROCESSABILITY NONCORROSIVE/NON ROTTING CHEMICAL RESISTANT

MASTERS OF SANDWICH CORE

In a typical sandwich panel the skins are taking tension and compression loads, and the core carries the shear forces. Our PVC and PET cores are engineered foams that absorb and distribute the loads exposed to the sandwich, static or dynamic . They have a stable closed cell structure resistant to water ingress, corrosion and decay, an important characteristic in harsh environments. A variety of grades can be used to give the final product additional desired features, such as fatigue and impact resistance, fire resistance, insulation, radar transmittance and many more. Diab offers the widest range of high-quality sandwich cores, but our true strength goes beyond the material. You can draw from our knowledge when it comes to anything from sandwich design

to efficient production methods. With our experience and expertise you can make the most of your application, existing or new.



THE RIGHT CORE MATERIAL FOR YOUR NEEDS

Every application and manufacturing method has its special demand on the material used. To be able to get the most out of your product, Diab offers the widest range of core materials and grades with unique properties that will suit the needs of your marine applications today and tomorrow.

DIVINYCELL - PVC

The unique composition of our PVC foams yields impressive mechanical performance to a very low weight.

Divinycell HM

Divinycell HM is our ultra-performance core designed for fast marine hulls where extra toughness is required. Divinycell HM combines all the qualities of Divinycell H, plus a very high shear elongation. As a result, Divinycell HM is a very tough product, capable of absorbing high dynamic impacts such as slamming loads.

Divinycell HM's very high elongation (above 40%) exceeds the minimum requirements of ISO12215, GL and ABS rules to allow for reduced safety factors in structural calculations, providing a lighter, yet strong structure. Divinycell HM offers a high operating temperature, reducing the risk of print-through on dark hulls.

Divinycell H

Divinycell H needs no introduction. This closed cell structural core has set standards in the marine industry for decades. With its long-term, proven performance and exceptional mechanical properties it is the product of reference for naval architects and manufacturers

Divinycell H has the highest strength-to-weight properties in the market and excellent fatigue

resistance. It has a superior resistance to a wide range of chemical products and because of the fine close cell structure it has a low resin absorption. Furthermore, it is compatible with all polyester, vinylester and epoxy resins used in the marine industry and is totally safe to use, with no release of harmful products when cut or machined.

Divinycell HP

Divinycell HP brings all the advantages of Divinycell H together with high temperature resistance for prepreg processes or temperature critical components such as dark topsides. It can handle processing temperatures as high as 143°C (290°F).

Divinycell MC

Divinycell MC is the innovative next generation structural core with best in class mechanical properties and low weight. The unique microcell structure renders substantial weight reduction of the laminate, thanks to lower core density in combination with exceptional low level of resin uptake.

Divinycell MC is a premium structural core, suitable for weight critical applications in marine applications. Other key features include excellent adhesion/peel strength, low water absorption and good thermal and acoustic insulation. DIVINYCELL HM Outstanding toughness and strength.

DIVINYCELL H Excellent mechancal properties and low weight.



DIVINYCELL PR Made of up to 45% postconsumer PET, and additional post-industry recycled PET.

DIVINYCELL - PET

Thermoplastic recycled and recyclable PET foams suitable for many different marine applications.

Divinycell PL

Divinycell PL is our high performance PET material range. Divinycell PL is recyclable and based on post-industry recycled PET.

A true circular sustainable product for a variety of applications and processes, including infusion, prepreg and press bonding.

Divinycell PL has very low resin uptake, high compression and shear properties and high dimensional stability at elevated temperature. Divinycell PL230 is particularly suited for high strength demand, and application like local inserts, providing very good screw retention.

Divinycell PR

Divinycell PR is a sandwich core made of up to 45% post-consumer PET, and additional postindustry recycled PET to boost performance. A true circular sustainable product to meet environmental needs and commitments, suitable for a variety of applications and processes including infusion, prepreg and press bonding. Divinycell PR has good compression and shear properties with high dimensional stability at elevated temperature. A closed cell structure with low resin uptake and good thermal insulation properties. **DIVINYCELL HP** Meets demands in higher temperature processing. DIVINYCELL MC The innovative structural core with best in class mechanical properties and low weight.



Find the right material with our Core Selection Guide at www.diabgroup.com

BALSA

PROBALSA

High-density organic

end grain balsa wood.

core material made from

Balsa materials are particularly easy to work using conventional woodworking tools. They can be drilled, milled, turned and sawn to close tolerances.

ProBalsa

ProBalsa is an end grain balsa core material suitable for use in areas above the water line. It is produced from high quality balsa wood and offers a cost competitive product with very high compressive strength.

Thanks to our accurate process and quality control during raw material selection, storage and block assembly, we can ensure high quality and consistent properties of our ProBalsa sheets.

ProBalsa is available coated or uncoated and is compatible with all resins used in the marine industry.



Alongside the broadest range of core materials, we also offer you a comprehensive array of added value products, such as kits with pre-cut parts and surface finishing options for form and flow.

WITH THE OPTIMAL FINISHING YOU CAN GET A COMPETITIVE EDGE

The right combination of core material, laminate and finishing affect performance and quality of the final product. Finishing refers to the machining of structural core materials. You can choose from a wide range of cuts, grooves and perforations in different variations each serving a specific purpose for the core to adapt to curvature, or for air evacuation & resin distribution in vacuum assisted manufacturing process. With our long experience in composite design and manufacturing methods, we can recommend the finishing suitable for each purpose.

OUR FINISHING OPTIONS:

Flow

To evacuate air and distribute resin in vacuum assisted processes requires perforations and/or grooves in the core surface. Proper design of the flow finishing will ensure good wetout of laminate and proper core bonding. Grooved and perforated cores can also remove the need for an additional distribution medium.

Form

Formable finishing options enable the core to conform easily to the surface in complex mould shapes. A number of form finishes are available both with and without scrim backing, and with either one or two direction cuts in the core.

Flow & Form

A combination of both of the above, used where the core needs to adapt to the shape of the mould and also has to distribute the resin as part of the production process.





KITS TO BOOST YOUR PERFORMANCE

A kit consists of pre-cut parts that are shaped as necessary and then numbered to fit exactly into their designated places in the mould. By eliminating the on-site shaping and cutting of sheets, you can reduce build times, save labour and material costs, and reduce waste. Easy assembly and exact fit in the mould mean you can consistently achieve a high quality in less time.

The kit can consist of everything from flat sheets to precise 3D shapes made with CNC routing. The design is based on your requirements for component weight, cost and quality level, as well as the geometry and manufacturing process selected.

OUR KITTING OPTIONS

Industrial kitting

High quality kitting that meets your needs for speed and efficiency. We use a well- defined kit process that enables us to provide the most competitive offering, top service, and quick turnaround times. Depending on the requirement, we can choose from multiple solutions to optimize weight or cost.

Advanced kitting

Diab's innovative advanced kits offer optimized fit in the mould, reduced resin consumption, and improved laminate surface finish. Combining Diab knowledge of kits and infusion and by creating custom software specifically for the task, we can optimize the cuts required in the core to allow it to perfectly fit the local curvature of your mould, while minimizing resin uptake.

KNOWLEDGE THAT OPTIMIZES YOUR SOLUTION

MAKE THE MOST OF YOUR APPLICATION WITH OUR EXPERTISE

Diab Application Center is our powerful team of engineers, product specialists, and process specialists ready to team up with you to realize the total value of composites.

PRODUCT SUPPORT

We are here to support you with selecting the suitable core material for your application, advice on finishing the best fit for purpose, and essential advice on different manufacturing processes. Product support always comes for free with the purchase of our products.

COMPOSITE CONSULTING GROUP (CCG)

Our experience in sandwich core materials and related manufacturing processes is well documented. CCG provides specialized composite technology and engineering services to improve your product further. With broad competence within everything from design and structural engineering to process optimization – including flow modeling for closed molding, tooling design, and infusion training - we ensure that you can realize the total value of composite designs.

KIT ENGINEERING AND PRODUCTION

Diab uses a well-defined kit process that enables us to provide the most competitive offering, top service, and quick turn-around times. Whether the kit consists of flat sheets or 3D machined parts, we look at surface requirements, tolerances, weight limitations, and it all affect the approach we take for each kit design.

COMPOSITE PART & PROTOTYPE PRODUCTION

limit other daily operational activities. Our experienced engineers and fabricators can quickly bring your concepts to reality, whether you are in a start-up or existing business with a lack of resources or equipment.

TESTING

Understanding the material and its behavior in a variety of environmental conditions is key to optimized design. Let us help you characterize your composite solution, core materials, and sandwich structures with our own calibrated testing equipment and network of authorized test labs for exotic test method

Prototyping and short production runs have high investment costs and can

PROOF OF OUR EXPERIENCE

We are privileged to have participated in product innovation and development for some of the world's leading companies in the marine industry. The advances they have been able to make using sandwich composites and other solutions are truly exciting.

SWEDISH SEA RESCUE SOCIETY

Diab has delivered material for producing life saving boats for more than 25 years. Over 100 boats have been produced by Swede Ship Composite AB. The specific boat is donated from the family Rassy, 1 of 3 boats. 15,7 m long with a top speed of 34 knots.

XSHORE

The power of silence with electric boating. Innovative design and digital solutions with cutting-edge sandwich technology makes XShore the choice for sustainable boating.

SANLORENZO: THE ITALIAN FASHION AND THE SEA

The SanLorenzo yard is one of the biggest Italian yards and it is going to leave a permanent fashionable trace in the marine market. Its design, lines, interiors as well as the advanced technical choices are highlighting it as one of the most important in the world. Diab is a long term technical partner and supplier, able to address the whole range of grp structures towards a radical kitting choice. Kits are allowing the yard to have the highest quality of surfaces as well as fast layout and production cycle, reduced overall costs and optimization of the warehouse stocks.

NEW CARBON FIBER CATAMARAN FROM BRØDRENE AA

Closely following the award-winning "Vision of the Fjords" and its sister-ship Future of the Fjords, Brødrene AA's new carbon fiber catamaran is called "Rygerdronningen", constructed for Rødne Fjord Cruise to take tourists on sustainable sightseeing tours through the famed Lysefjord in Rogaland, Norway.

ADVANCED COMPOSITE KITS FROM DIAB HELP THE SHOGUN 50 FROM ROSÄTTRA BOATYARD SET SAIL

With an Advanced Kit from Diab together with carbon fiber laminates, and support from CCG, Rosattra Boatyard has created an impressively light boat. Rosattra Boatyard knows what it takes to make a fast sailing boat that is also comfortable enough to use as a second home for summer holidays. When the request came for a fast and easy-to-handle sailing boat, the experienced boat-builders chose to design it using an Advanced Kit from Diab together with carbon fiber laminates, and with support from CCG.

FISHING BOAT SEINGEN FOR THE FISHERY OF THE FUTURE

Fishing company Fjordbakk AS in Norway has this year acquired an exciting new fishing vessel Seingen from boat builder Mundal Båt. Mundal Båt has previously supplied larger fishing boats and commercial vessels in composite material.





XShore - The future is electricc and sustainability is core

New carbon fiber catamaran from Brødrene AA.

Fishing boat Seingen for the fishery of the future.

DIAB AT A GLANCE

WORLDWIDE SUPPLY AND SUPPORT

Ensuring security of supply, cost efficiency, flexibility, and local support, Diab combines a global manufacturing, sales, and engineering presence with local know-how. We follow our customers and anticipate their needs, positioning ourselves in locations to best support them. Our seven manufacturing sites and fourteen sales companies in strategic locations around the world offer our full range of materials and services.

SALES UNITS

DIAB'S MANUFACTURING PLANTS

- MANUFACTURING PARTNER
- HEAD OFFICE

FOUNDED 1950 IN SWEDEN

> MANUFACTURING SITES

> > WIND

14 SALES **COMPANIES**

OUR FOCUS AREAS:





INDUSTRY

our knowledge!

Take advantage of At www.diabgroup.com you can get exclusive access to our expertise via MyDiab. And with our interactive Core Selection Guide it's easy to find the best core for your application.



800 coworkers









Member of UN Global Compact Approved CO₂-reduction targets from the Science Based Targets Initiative

Diab

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Diab is a world leader in sandwich composite solutions that make customers' products stronger, lighter and smarter. Diab provides a range of core materials, cost-effective kits and finishings, along with in-depth knowledge on composites. Diab also provides engineering services for composite technology through Composites Consulting Group (CCG). Diab is a participant in the UN Global Compact.