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Sustainable Composites

FROM IDEA TO PRODUCT



Introduction

The industry faces major challenges in a time of global competition and increased sustainability requirements. In order to survive and grow, the industry must change to more environmentally friendly and efficient processes and products. This places new demands on subcontractors, who must adapt to the new conditions and customers' needs.

Manufacturing in composites can be part of the solution for industry and its subcontractors. Composites are often lighter than traditional materials, which can help reduce greenhouse gas emissions because they can replace heavier materials that require more energy to produce and transport. Composites can also be more durable, which increases the lifespan of products.

Mixing natural materials into composites (biocomposites) can also be a way to reduce the use of virgin resources, as residual products from agriculture or the forest industry can be used.

Composites are already used today in many different industries, for example in aviation, vehicles, construction, energy and sports. But there are still great opportunities to develop new composites and new applications for them. To do so, research, innovation and collaboration between industry, subcontractors, academia and other actors are required.

The test bed for sustainable composites manufacturing offers a development environment where this is possible.



Our offer

Sustainable composites - from idea to product

Ideation & Consulting

We help you understand if your ideas are viable. What problem or need do you want to solve or meet with the composite? What properties and functions should the product have? What challenges and risks can you encounter in the development process?

Material selection & Design

In these closely welded steps in the development chain, we help you with making material and design choices adapted to conditions and requirements specifications. You can also get help with finding new applications for existing material and processes.

Process development

We help you to predict the component's mechanical properties before it goes into production. You are offered the opportunity for virtual manufacturing which minimizes the need for full-scale testing with a lower cost / lower risk as a result.

Testing & Verification

We verify and test material properties, tools and tool functions. When we trim a process already at an early stage, costly changes that may otherwise occur further down the line, are minimized.

- We give access to expertise and equipment necessary for material development, manufacturing, testing and verification.
- Provide point efforts or provide tailor-made support throughout each step of the product development process.
- Our digital environment is constantly evolving to provide the best possible sense of participation and presence.
- We protect your ideas by signing an NDA and you own the IPR.

[Read more here =>](#)

When do composites provide competitive advantage?

Choose composites when your customer:

Requires a strong and stiff material

Composites can be both stronger and have higher rigidity than traditional materials, such as plastic or metal.

Demands for lower weight

Composites can be a way to reinforce weak points without requiring large volume or adding extra weight.

Requires corrosion resistance

Composites are highly resistant to corrosion, making them an ideal choice for applications where they are exposed to moisture or other corrosive substances.

Requires a long service life

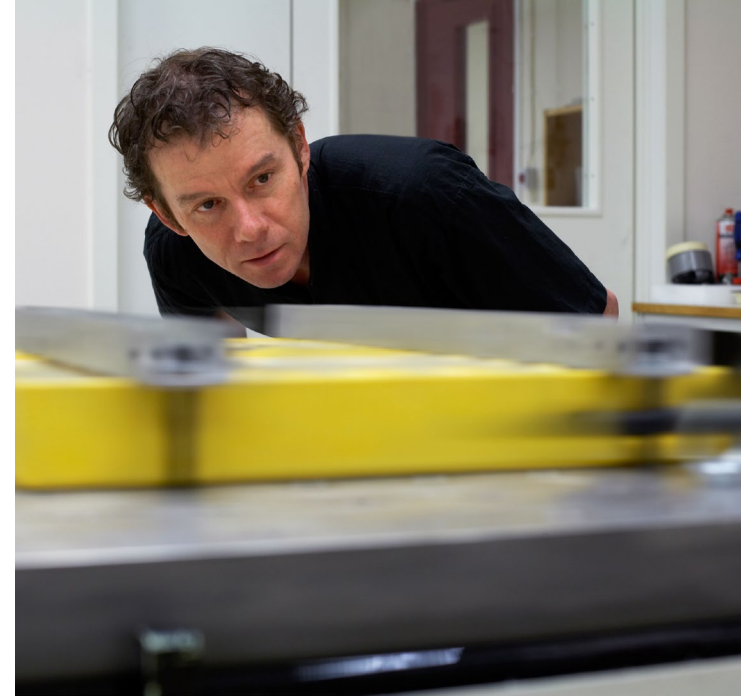
Composites have good fatigue properties, which makes them particularly suitable for products with requirements for a long service life.

Has high demands on design and appearance

Composites can be molded into complex shapes, which can give your customer a unique product with a flexible design.

Has demands on circularity and sustainability

Composites provide lower weight, which results in reduced fuel consumption and more energy-efficient production. Sustainable composites contain a higher proportion of renewable natural resources compared to traditional materials, which reduces the extraction of virgin raw materials.



Our clients

Our most common assignments come from:

- Startup companies
- Small and medium-sized enterprises
- End-manufacturers in several application areas

Those who already manufacture in composites (e.g. by optimizing processes, further developing materials and manufacturing methods).

Those who are completely new to composites (can a product idea be realized in composites?)

Industries

- Aviation and space
- Vehicles
- Boats
- Wind turbines
- Sports equipment



Why hire RISE

- Lower risk
- Avoid binding capital in equipment and competence
- Shorter time to market
- Assured delivery capacity
- Industrialization knowledge

” As a start -up, we have had a great need for help both in terms of knowledge and equipment. It has therefore been invaluable to be able to utilise RISE’s expertise and accumulated knowledge when it comes to fibre , toolmaking, and much more, as well as their equipment, which we could not have afforded to buy ourselves. ”

Anders Breitholtz,
CEO and founder of PaperShell



Your ideas are safe with us

- We protect your ideas by signing an NDA.
- You, as the client, own the IPR upon completion of the assignment.
- We are a neutral collaboration partner where you can safely develop composite solutions together with your customers, material suppliers, financiers and research actors.



Examples from our activities



”There is no point in verifying the material with the customer if there is no possibility of upscaling at the level that is needed”.

Anders Breitholtz,
CEO and founder of PaperShell.

THE ROLE OF RISE

To contribute with expertise and equipment and to serve as the company’s development department.

PAPER SHELL

Fast Path from Idea to Industrialisation

Challenge

To develop a bio-based material that can replace fossil-based plastics, composite materials as well as aluminium. Importantly, to make (or execute?) the process all the way from idea to industrialization in a short time.

Result

A bio-based material that is as strong as many fibre composites and as weather-resistant as some plastics. With different compression moulding methods, components can be customised and then used in vehicles, furniture, and sports equipment, among others.

[Read more here =>](#)



THE ROLE OF RISE

Investigate how use of vehicle components in composite can contribute to the path towards reduced carbon dioxide emissions

PROJECT ZERO

Reduced environmental impact in vehicle manufacturing using composites

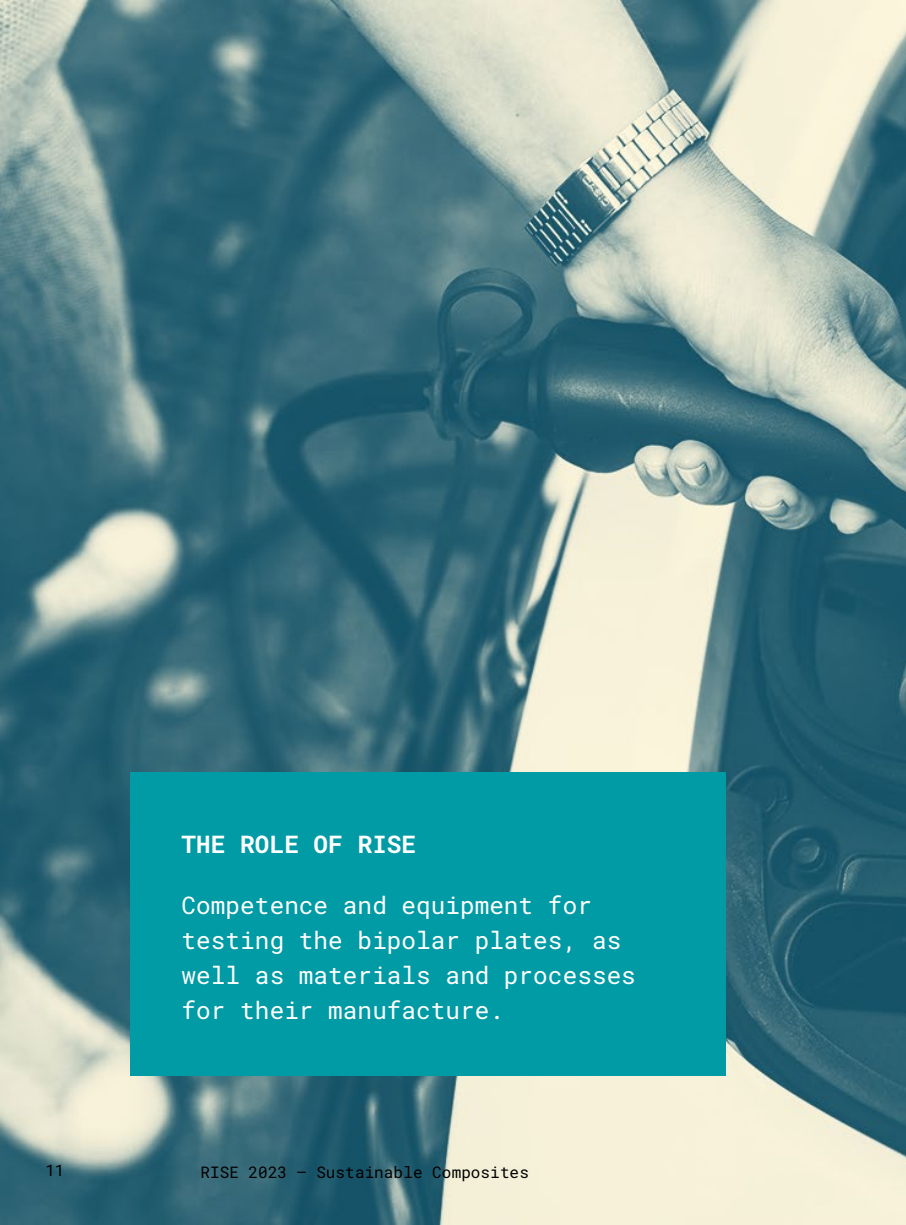
Challenge

Road transport today accounts for the largest share of carbon dioxide emissions which most of it occurs in the use phase followed by the production of the vehicle's components. Sustainable composite materials can contribute to lighter and more energy-efficient applications and products with a reduced climate footprint.

Solution

In our test bed for sustainable composite manufacturing, we analyze, test and evaluate the entire value chain for sustainable composites towards the automotive industry.

[Read more here =>](#)



THE ROLE OF RISE

Competence and equipment for testing the bipolar plates, as well as materials and processes for their manufacture.

ELECTRIFICATION/SSAC

Composite bipolar plates

Background

In a hydrogen-powered fuel cell, a chemical reaction takes place between hydrogen and oxygen, which produces electricity to power an electric car – while the residual product is no more hazardous than water vapour. For the process to work, so-called bipolar plates are needed in the fuel cell.

Solution

The composite concept of bipolar plates gives the plates good properties for a fuel cell and will allow for mass production in a way that is scalable and cheaper than the materials used today, such as metal or graphite.

[Read more here =>](#)

“At RISE we have experience helping companies from an idea for a new sustainable product, process or material, to verifying product properties or the cycle times of the intended process,” says David Engberg, program manager for the Testbed of sustainable composite manufacturing at RISE. “In our test bed for sustainable composite manufacturing, we can evaluate manufacturing processes in conditions equal to the intended production process, which allows process parameters to be optimised, tools to be fine-tuned, and prototypes to be manufactured before the customer’s own production has begun. This minimises the risk to the customer when purchasing new production equipment or when developing new sustainable products”.



Contact me for more information on what we can offer that matches your needs:

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RISE RESEARCH INSTITUTES OF SWEDEN

RISE is Sweden's research institute and innovation partner. Through our international collaboration programmes with industry, academia and the public sector, we ensure the competitiveness of the Swedish business community on an international level and contribute to a sustainable society

