

Material recovery from recyclable fibre-reinforced-plastics - Innovative recycling process for cleavable epoxies

Summary

Profile type

Technology offer

Company's country

Germany

POD reference

TODE20260128011

Profile status

PUBLISHED

Type of partnership

**Commercial agreement with
technical assistance**

Targeted countries

• World

Contact Person

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Term of validity

28 Jan 2026**28 Jan 2027**

Last update

28 Jan 2026

General Information

Short summary

A German university of applied sciences offers a recycling technology for carbon or glass fiber reinforcement and thermoset matrix composites based on epoxy resins. The process makes an energy-efficient, economical, and sustainable material cycle possible for the first time. High-quality fibers and polymer powders can be completely recovered and reused. Industrial licensees with an interest in refining the technology (TRL2) in cooperation with the university are sought.

Full description

Fiber-reinforced plastics (FRPs) such as composites made of carbon or glass fiber reinforcement and thermoset matrix (CFRP/GFRP) are increasingly important in lightweight applications, meaning that sustainable, economic recycling processes are, too.

Scientists at a German university of applied sciences have developed a process step that greatly increases recycling efficiency for FRP parts based on cleavable epoxy matrix systems. The thermoset matrix in a laminate to be recycled (worn-out part, production waste, discard, etc.) is decomposed in an acid solution, releasing the matrix's fiber reinforcement and converting the thermoset matrix into a thermoplast-like substance that is easy to process (in injection molding, for instance).

Conventional recycling processes for recovering this basic material require a great deal of equipment, material, time, and energy. The fiber reinforcement is subjected to great stress, damaging the material structure and giving rise to short fibers. The matrix's recyclate is greatly contaminated by acid inclusions. This impedes recycling of these valuable materials. The new process gently separates fiber reinforcement from the matrix. It is based on pump operation, and uses a very thin acid solution. This saves a great deal of time, energy, and material. The matrix recyclate thus recovered is also very pure.

The technology opens new options for economic, industrial recycling of CFRP and GFRP laminates based on cleavable epoxies. Aerospace, automotive, wind energy, and sports equipment manufacturing companies and the overall lightweight sector will profit from this invention. High-quality recyclates (fiber and plastic) can be used immediately, reducing disposal and material costs and allowing ever-more-stringent sustainability requirements to be met.

Companies in the above sectors are sought for licensing and refining the technology (TRL2)

Advantages and innovations

- Higher recyclate quality
- Simple method organization
- Enables direct use of recovered material
- Saves time, energy and resources

Technical specification or expertise sought

Stage of development

Concept stage

Sustainable Development goals

• Goal 12: Responsible Consumption and Production

IPR Status

IPR applied but not yet granted

IPR Notes

The invention has been registered with the German Patent and Trade Mark Office, and other subsequent international applications can be made in the priority year

Partner Sought

Expected role of the partner

The invention is currently in the form of a laboratory set-up. Interested companies are offered the opportunity to license and refine this technology in collaboration with the university of applied sciences (in the form of cooperation projects funded by third parties, for example).

Type of partnership

Commercial agreement with technical assistance

Type and size of the partner

- **SME 50 - 249**
- **Big company**
- **SME 11-49**

Dissemination

Technology keywords

- **10003004 - Recycling, Recovery**
- **02007005 - Composite materials**

Market keywords

- **08001004 - Fibre-reinforced (plastic) composites**
- **08004002 - Chemical and solid material recycling**

Targeted countries

- **World**

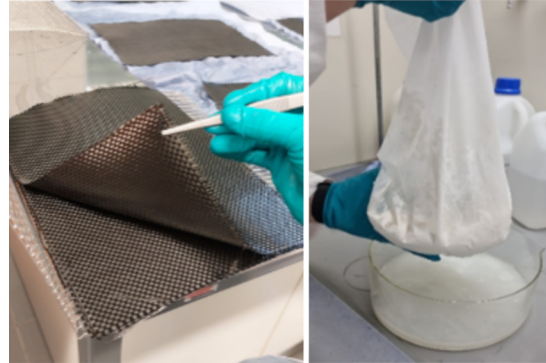
Sector groups involved

Media

Images



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