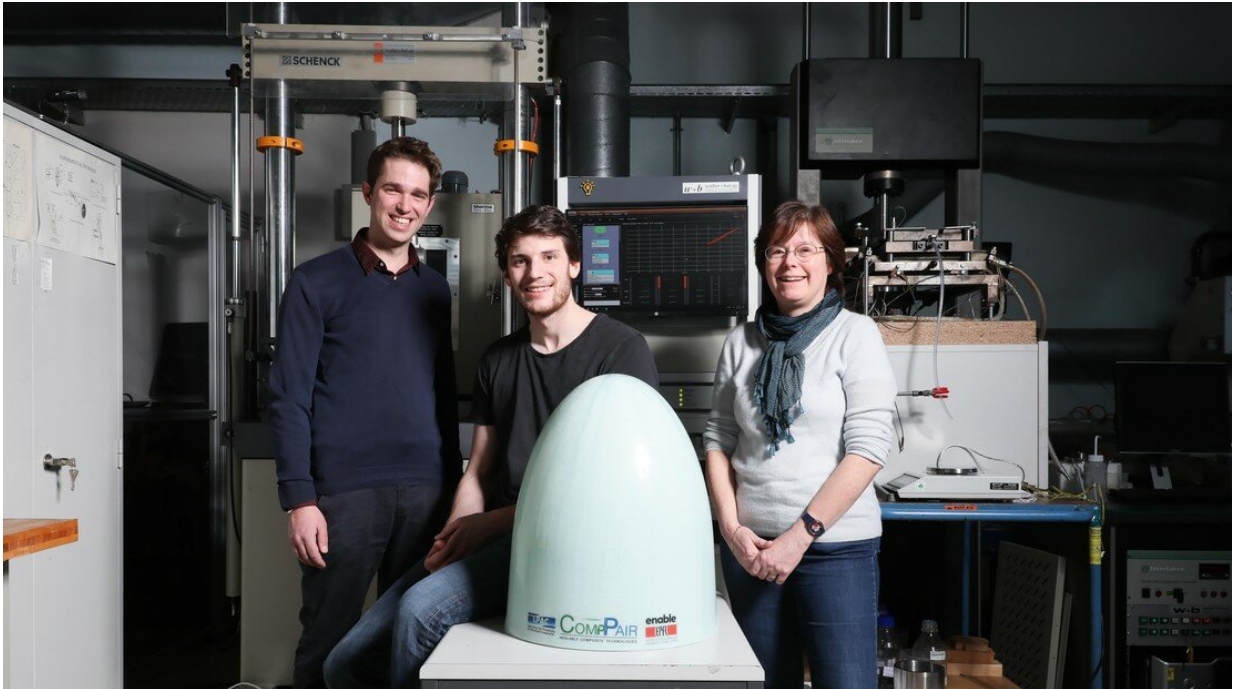


A self-healing composite

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Credit: Ecole Polytechnique Federale de Lausanne

Researchers from EPFL's Laboratory for Processing of Advanced Composites have developed a material that can easily heal after being damaged. This cutting-edge composite could be used in aircraft, wind turbines, cars and sports equipment.

When a wind turbine blade or an airplane is hit by something, the damaged part has to be either replaced or patched with resin. Replacing

the part is expensive, while repairing it with resin can make it heavier and change its properties. But now, thanks to a new, patented [technology](#), researchers at EPFL have found a way to quickly and easily repair cracks in composite structures.

"With our technology, a repair agent is incorporated in the [composite material](#)," says Amaël Cohades, a researcher at EPFL's Laboratory for Processing of Advanced Composites (LPAC). Cracks in the resin can be repaired on site in little time by simply heating the material to 150°C. The heating process activates the repair agent, and the damaged part quickly heals, without any change to the original properties. This new-to-the-market technology can be applied to all sorts of structures, extending their lifespan at least threefold. The material's properties and initial crack resistance are the same as those of traditional composites. What's more, the technology is compatible with current manufacturing processes, so [production facilities](#) do not need to be retooled.

This technology could be particularly useful for wind turbines and storage tanks. "The cost of maintaining the world's [wind turbines](#) alone is estimated at 13 billion Swiss francs in 2020," says Cohades. He says the technology could also be applied to "many parts that we don't bother to [repair](#) at present, like bikes and car bumpers." One limitation is that the material doesn't heal if the impact breaks the fibers. But since the resin is always damaged first, this heat-based self-healing system would still work in the majority of cases.

More information: For more information, see comppair.ch/fr/29205-2/

Provided by Ecole Polytechnique Federale de Lausanne

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