

CIDETEC surface engineering
Gipuzkoa Science & Technology Park
Paseo de Miramon, 191
20014 Donostia - San Sebastián
Gipuzkoa / SPAIN

[+34] 943 31 82 12
surfaceengineering@cidetec.es
<https://surfaceengineering.cidetec.es>

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surface engineering

SMARTER SURFACES THAT MAKE A DIFFERENCE

3R technology



2020 AWARD

AK
INDUSTRIEVEREINIGUNG
VERSTÄRKTE KUNSTSTOFFE
FEDERATION OF REINFORCED PLASTICS

cidetec >
surface engineering

CIDETEC

CIDETEC Surface Engineering is a key international player in research and innovation related to surface engineering and polymeric and composite materials. We specialize in processing surfaces and materials through disruptive technologies, ultimately aiming at technological transfer that will ensure the right solution for each customer.

Materials with an endless lifespan

One of our main focuses is the development of new innovative, sustainable polymeric materials based on biomass waste, self-healing elastomers, thermoplastic formulations with custom properties, and our own 3R patented technology (Reprocessable, Repairable and Recyclable thermoset composites).



HIGH PERFORMANCE



COMPETITIVENESS



REPROCESSABILITY



REPARABILITY

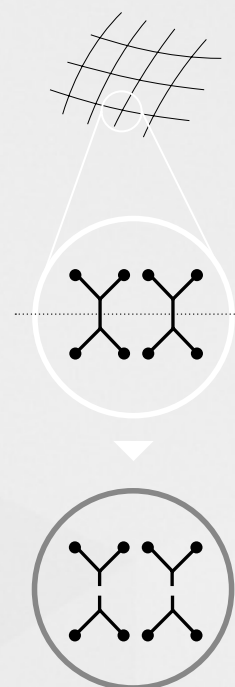


RECYCLABILITY

What is 3R technology?

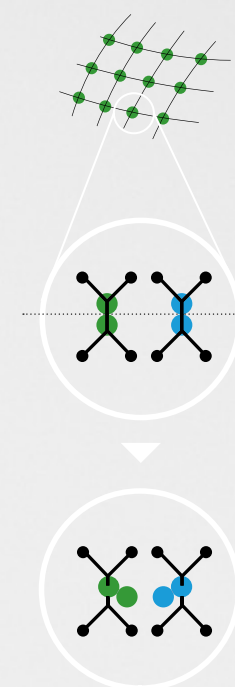
The thermoset composite industry needs processes that allow greater production rates and a recycling solution. Aware of these demands, in 2013 CIDETEC started to study dynamic covalent chemistries, resulting in the development and patent of the 3R technology.

Conventional polymer network

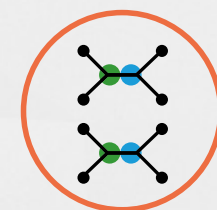


Permanent crosslinks

Dynamic polymer network



Reprocessable
Repairable
Recyclable



Dynamic crosslinks
based on aromatic
disulfide polymer
network



3R technology

The introduction of dynamic covalent chemistry enables a series of “smart” properties, creating a new generation of thermoset polymers and composites that preserve their high performance, while showing unprecedented new features, such as Re-processability, Reparability and Recyclability that contribute to:

Reprocessible

Reprocessing of cured composite laminates



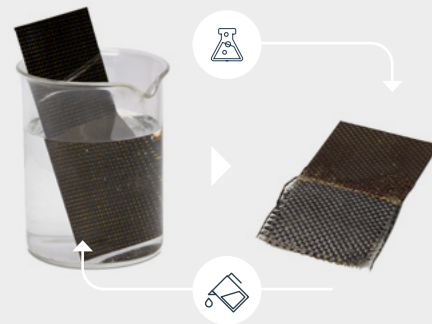
Repairable

Easy matrix disruption for undamaged fiber recovery

Promoted delamination damage



Repaired area



Recyclable

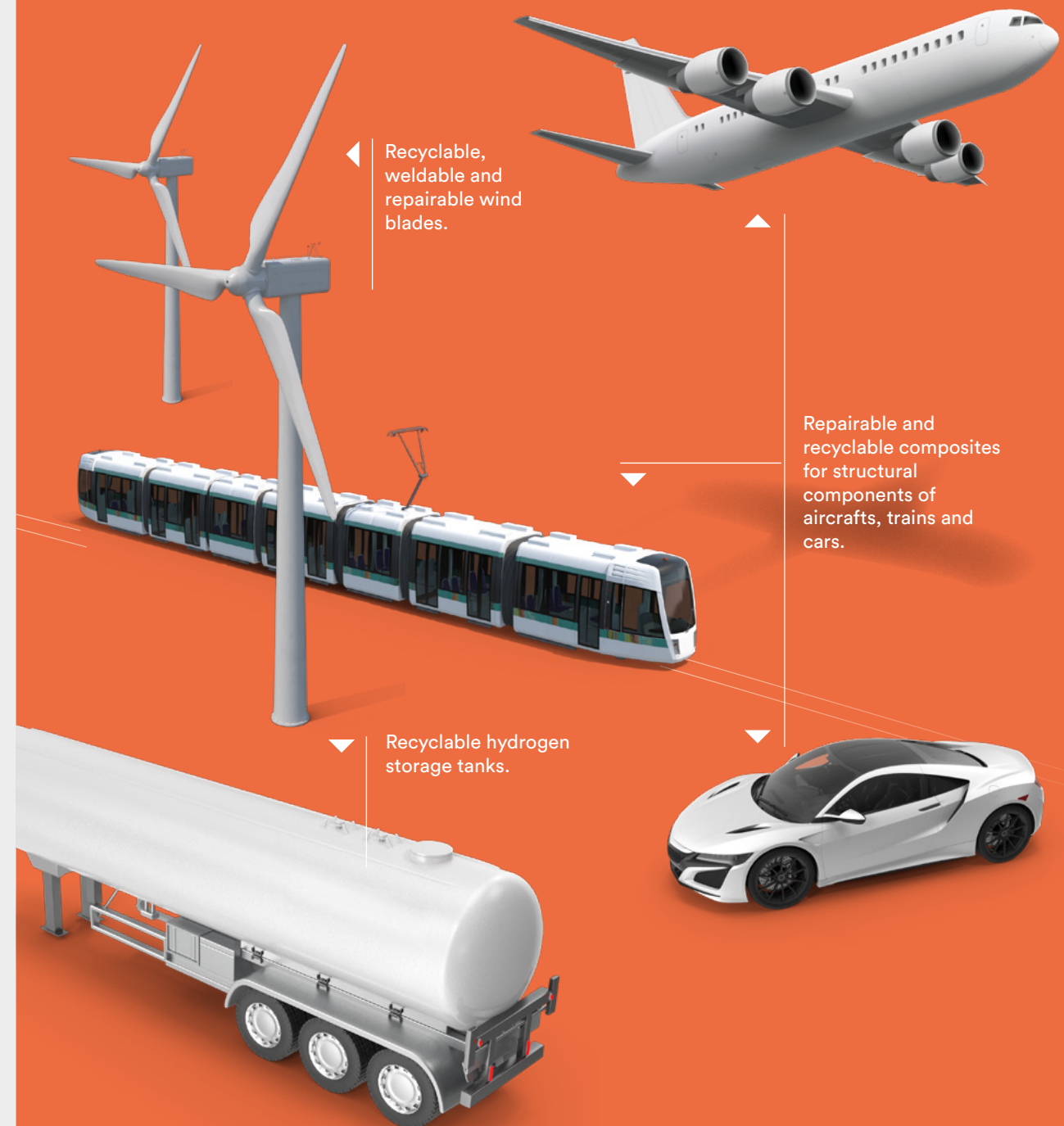
Mechanical recycling applying heat and pressure to obtain second generation parts



Who is it for?

Since 2015, CIDETEC has been collaborating with many important end-users of composites such as the aeronautic, wind energy, automotive or railway sectors. It is already demonstrated that 3R composites present the same high performance as conventional thermoset composites and therefore can be used in these sectors for different purposes.

POTENTIAL APPLICATIONS



Our background

We are Spain's only technological centre specializing in Surface Engineering. Aligned with sustainability and environmental policies, we count on state-of-the-art equipment and facilities paired with a multidisciplinary team of experts that will help accelerate your company's innovation process.



Bio-based recyclable, reshapable and repairable (3R) fibre-reinforced EPOXY composites for automotive and construction sectors

BBI2016.R7:
Biopolymers with advanced functionalities for high performance applications

GA n°744311

Total budget: 4,85 M€

Duration: 01/06/2017 – 30/11/2020

www.ecoxy.eu



ThermoformAble, repairable and bondable smaRt ePOXY based composites for aero structures

MG-1.3-2017:
Maintaining industrial leadership in aeronautics

GA n°769274

Total Budget: 6,5 M€

Duration: 01/09/2018 – 28/02/2022

www.airpoxy.eu

A BIG PLAYER IN H2020 & HEU PROJECTS FOCUSED ON 3R TECHNOLOGY



New generation of offshore turbine blades with intelligent architectures of hybrid, nano-enabled multi-materials via advanced manufacturing

H2020-EU.2.1.3. – INDUSTRIAL LEADERSHIP:
Leadership in enabling and industrial technologies – Advanced materials Programme

GA n° 953192

Total Budget: 7,8 M€

Duration: 01/11/ 2020 – 31/10/2024

www.carbo4power.net



Production of fully recyclable and reusable green composites based on bioresins and natural fibres

LIFE Programme:
The LIFE programme is the EU's funding instrument for the environment and climate action

LIFE15 ENV/BE/000204

Total Budget: 2,08 M€

Duration: 01/07/ 2016 – 31/12/2018

www.recysite.eu



Hierarchical multifunctional composites with thermoelectrically powered autonomous structural health monitoring for the aviation industry

MG-1.4-2017:
Breakthrough innovation

GA n°769140

Total Budget: 4 M€

Duration: 01/09/2018 – 31/08/2021

www.harvest-project.eu



Multi-level Circular Process Chain for Carbon and Glass Fibre Composites

HORIZON-CL4-2021-RESILIENCE-01-01 :
Ensuring circularity of composite materials

GA n° 101057394

Total Budget: 7,0 M€

Duration: 01/04/2022 – 31/03/2025

www.mc4-project.eu



Safe-, sUstainable- and Recyclable-by design Polymeric systems A guidance towardS next generation of plasticS

HORIZON-CL4-2021-RESILIENCE-01-11:
Safe- and sustainable-by-design polymeric materials

GA n° 101057901

Total Budget: 5,0 M€

Duration: 01/06/2022 – 31/11/2025

www.surpass-Project.eu



New end-to-end digital framework for optimized manufacturing and maintenance of next generation aircraft composite structures

HORIZON-CL5-2021-D5-01-06:
Next generation digital aircraft transformation in design, manufacturing, integration and maintenance

GA n°769140

Total Budget: 5,7 M€

Duration: 01/09/2022 – 28/02/2026

www.genex-project.eu



BIOcomposites in smart plastic transformation processes to pave the way for the large-scale UPTAKE of sustainable bio-based products

HORIZON-CL4-2021-TWIN-TRANSITION-01-05:
Manufacturing technologies for bio-based materials

GA n° 101057049

Total Budget: 6,0 M€

Duration: 01/12/2022 – 31/05/2026