

THE RECYCLING OF CARBON FIBRE COMPOSITES

Innovation and excellence serving
the environment

.....



CARBON FIBRE GIVEN A NEW LEASE OF LIFE IN THE MOTOR VALLEY

One of the **first plants in Europe to recycle carbon composite materials** has been established in the heart of the Motor Valley, near the Imola Circuit (officially called the Autodromo Internazionale Enzo e Dino Ferrari).

Regenerated fibres, free from the resin and additives added during moulding and forming, retain their well-known properties of **lightness** and **high durability**, and are ready to be reused in a potentially infinite repeatable cycle.

A SOLUTION DEDICATED TO THE EXCELLENCE OF DIFFERENT INDUSTRIES



AUTOMOTIVE



AEROSPACE



NAUTICAL



BUILDING



FURNISHING



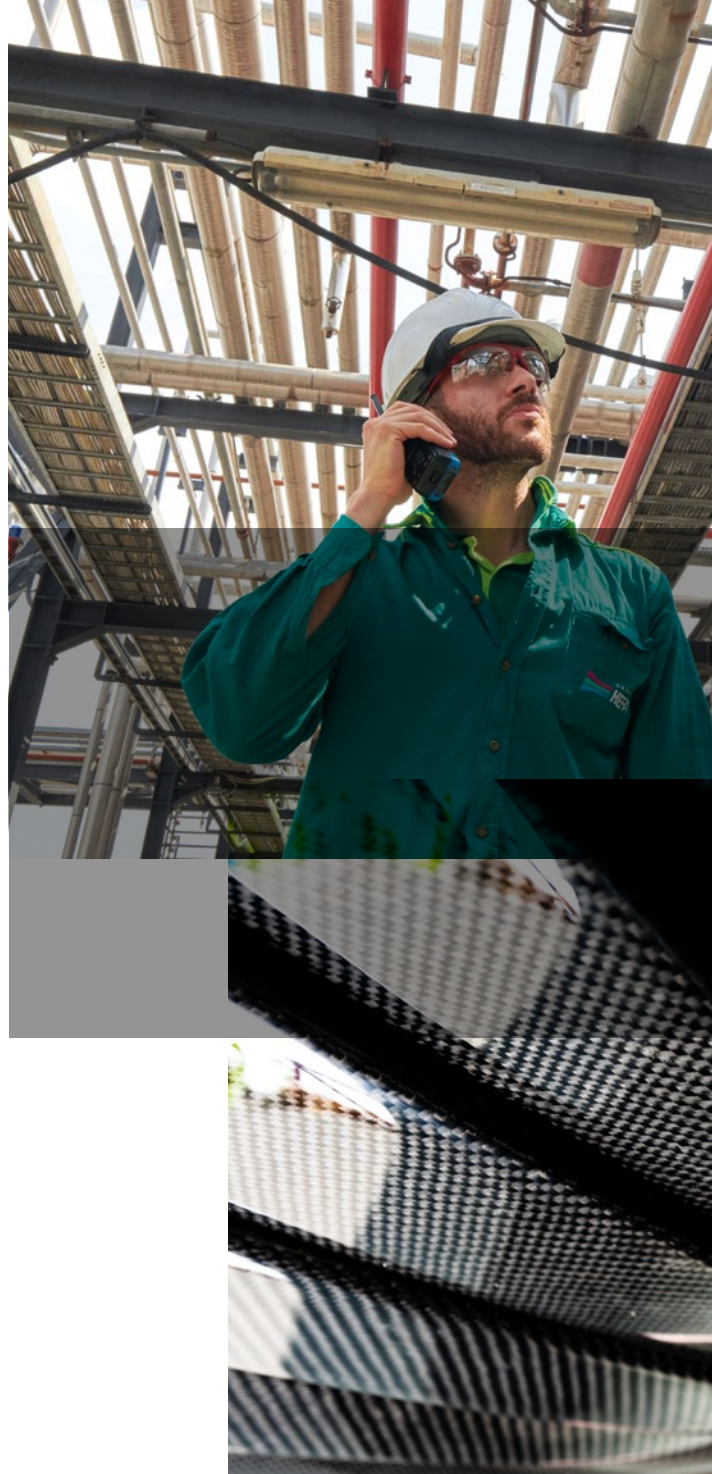
TEXTILE



WIND-POWERED
SYSTEMS



COMPOSITE
MATERIALS
PROCESSING



THE LEADING ITALIAN OPERATOR IN THE MANAGEMENT OF INDUSTRIAL WASTE

The carbon fibre recycling plant was set up by the Herambiente Group, the national leader in waste treatment and recovery. After a three-year experiment carried out in collaboration with the Toso Montanari Department of Industrial Chemistry of the **University of Bologna** and its technology partner **Curti**, a leading manufacturer of automatic machines for industrial applications, Herambiente

started construction on an industrial scale (it will be fully operational from early 2024), also obtaining funding from the European Union as part of the National Resilience and Recovery Plan (M2C1.1.I.1.2) which recognised the innovative character of the technology used and the strategic relevance of the materials involved.

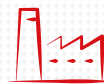
HERAMBIENTE GROUP FIGURES

Our plants treat all types of waste. We offer integrated and sustainable solutions to help develop circular economy processes (together with client companies) that are also opportunities and tools to reduce costs or develop new revenues.

Investment in innovation and cutting-edge technologies is crucial for Herambiente and the Hera Group, with more than € 1.5 billion invested over the past 20 years in upgrading its plant network (the only one of its kind nationwide), which deals with the treatment and full exploitation of waste materials.



ALMOST 5,000 ACTIVE CUSTOMERS
in a wide variety of industries



95 CERTIFIED PLANTS

19 of which deal with industrial waste recovery



ABOUT 1,600 SPECIALISED OPERATORS



OVER 6 MILLION TONNES

of waste treated, of which 1.2 million is industrial waste



OVER 4 MILLION TONNES
of waste marketed

SUSTAINABLE MANAGEMENT OF CARBON FIBRE COMPOSITE WASTE

**BECOME A PARTNER OF HERAMBIENTE.
GIVE US YOUR WASTE**

EDUCATION



We guarantee our customers maximum security and the opportunity to have the best partner at their side for waste collection, from which we will recycle new carbon fibre. We take charge of the waste and scrap collection phase directly at the companies, with specialised means and methods for sorting the materials and training the personnel in charge of this process.

We enter your company and train your staff in high-quality separate waste collection

BY ENTRUSTING US WITH YOUR IMPREGNATED OR CURED SCRAPS, MOULDS, OFF-SPEC PRODUCTS AND END-OF-LIFE PRODUCTS, IN COMPOSITE MATERIALS, YOU ENABLE QUALITY RECYCLING, THEREBY REDUCING LANDFILL AND ENVIRONMENTAL IMPACT.



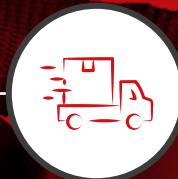
STORAGE



On-site management of sorted waste micro-collection

Scraps and end-of-life moulds of carbon fibre composites

TRANSPORT



We organise the procedure for sending carbon fibre waste to the recovery plant in Imola

START OF RECOVERY PROCESS



We regenerate by thermal treatment carbon fibre composites such as **pre-pregs, curing and finishing scraps, and end-of-life moulds** in the plant

RECYCLED CARBON FIBRE IS THE SOLUTION FOR YOU

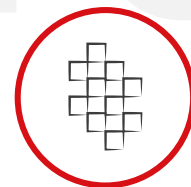
BUY OUR CARBON FIBRE

Carbon fibre composites are used in numerous high-tech sectors: from automotive to aerospace, from nautical to furniture, from textiles to wind power.

And **regenerated carbon fibre** is ready to be **rewoven and impregnated for all the typical uses of virgin fibre**, for autoclave, press and moulding processes: non-woven, patchwork, carbon mills, short fibres, smc and bmc, and much more.

WE PRODUCE REGENERATED CARBON FIBRE OF THE HIGHEST QUALITY, WHICH IS ENTIRELY SUSTAINABLE AND ENVIRONMENTALLY FRIENDLY.

RECYCLED CARBON FIBRE



We retrieve, after treatment, the best high-purity carbon fibre, preserving intact all its mechanical properties

INNOVATIVE ADVANCED PYRO-GASIFICATION PROCESS

PYROLYSIS AND GASIFICATION



We remove the resin from carbon fibre which is more resistant to heat

ENERGY RECOVERY



The decomposed resin in gaseous form is re-used to generate part of the energy needed for the process, thus maximizing energy saving

FINISHING OF RECOVERED FIBRES



Any dust remaining in the fibres is vacuumed and sent to the abatement system

FROM MANUFACTURER TO MANUFACTURER, TAILOR-MADE

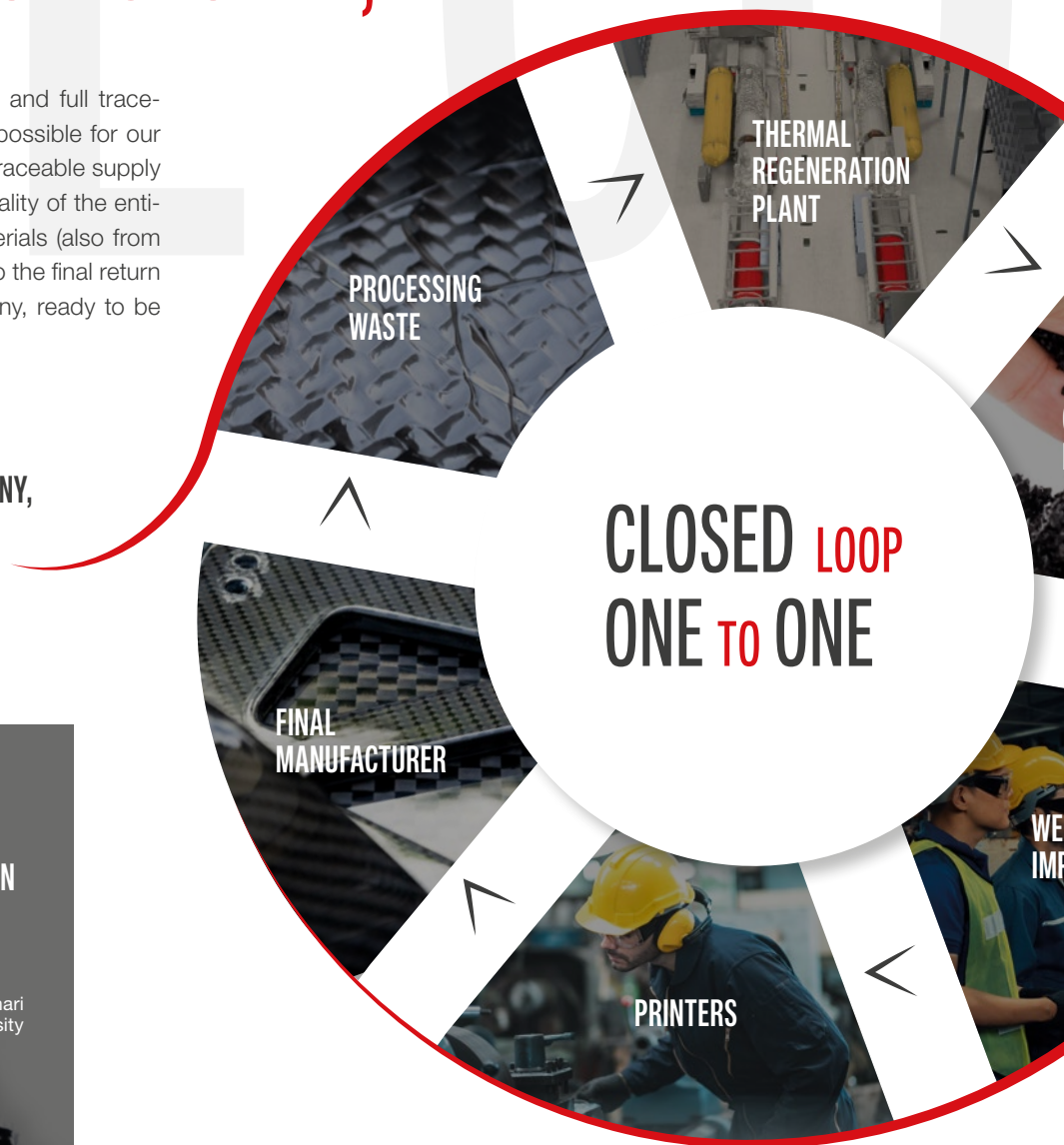
By ensuring **maximum sustainability** and full traceability of the production process, it is possible for our customers to **come full circle**. A fully traceable supply chain guarantees transparency and quality of the entire process: from the collection of materials (also from subcontractors) to their treatment, up to the final return of recycled carbon fibre to the company, ready to be processed again.

**A PROCESS TAILORED TO YOUR COMPANY,
IN LINE WITH THE PRINCIPLES
OF THE CIRCULAR ECONOMY
AND REGENERATION OF RESOURCES.**

**RECYCLED FIBRE FROM HERAMBIENTE
GUARANTEES EXCELLENT MECHANICAL
PROPERTIES, COMPARABLE WITH VIRGIN
FIBRE: ELASTICITY, STRENGTH AND
ELONGATION AT BREAK OF UP TO 95%**

(empirical tests carried out by the Toso Montanari
Department of Industrial Chemistry of the University
of Bologna)

Recycled carbon fibre after the process of recovery, spinning, and weaving for industrial reuse



MAKE YOUR MARK

AND IMPROVE THE ENVIRONMENT

Why choose recycled carbon fibre? The virgin carbon fibre production process from pitch or PAN (polyacrylonitrile) is highly energy-intensive due to the high temperatures used; it uses fossil raw materials, and the waste from fibre processing is almost exclusively destined for disposal.

Life Cycle Assessment (LCA) shows that the **energy needed for producing recycled fibres is 75% lower** and **prevents 74% of greenhouse gas emissions**, while significantly reducing disposal in landfills.

CARBON FIBRE
RECOVERY

SAVERS/
PREGNATORS

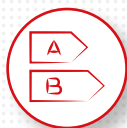


**INFINITE RECYCLING
POTENTIAL**



**TECHNICAL FEATURES
AND SIMILAR PERFORMANCE**

to that of virgin carbon fibre



**75% SAVING ON ENERGY
CONSUMPTION**

compared to that used
in production of virgin fibres



**REDUCTION OF WASTE DISPOSAL
IN LANDFILLS**



**ENVIRONMENTAL IMPACT OF THE
ENTIRE LIFE CYCLE REDUCED BY 74%**

in terms of greenhouse
gas emissions

to the right: detail of TNT roll of regenerated
fibre from pre-preg waste type T300





CHEMICAL, PHARMACEUTICAL
AND ENERGY

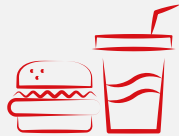
Baker
Hughes



bormioli pharma



MENARINI
group



FOOD AND BEVERAGE

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GRANAROLO

UNIGRA



Barilla
The Italian Food Company. Since 1872



MANUFACTURING

PANARIAgroup

MARAZZI GROUP



STEELWORK
AND METALLURGICAL

IMA
Sustain Ability



Fornitore
Ufficiale
2023

THEY HAVE ALREADY CHOSEN THE SERVICES OF HERAMBIENTE GROUP

CONTACT OUR CUSTOMER ASSISTANCE
800 185 075
AND VISIT OUR WEBSITE



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Hera Group's company

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