CIRCULAR ECONOMY FROM THEORY TO PRACTICE

Cases from the Lombardy Ecosystem

AFIL supports the Lombardy Protocol for Sustainable Development

Sostenibilità in Lombardia

AFIL Lombardia

Regione Lombardia

Cluster Tecnologici Lombardi

FROM THEORY TO PRACTICE

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H2020 PROJECTS

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I3 PROJECTS

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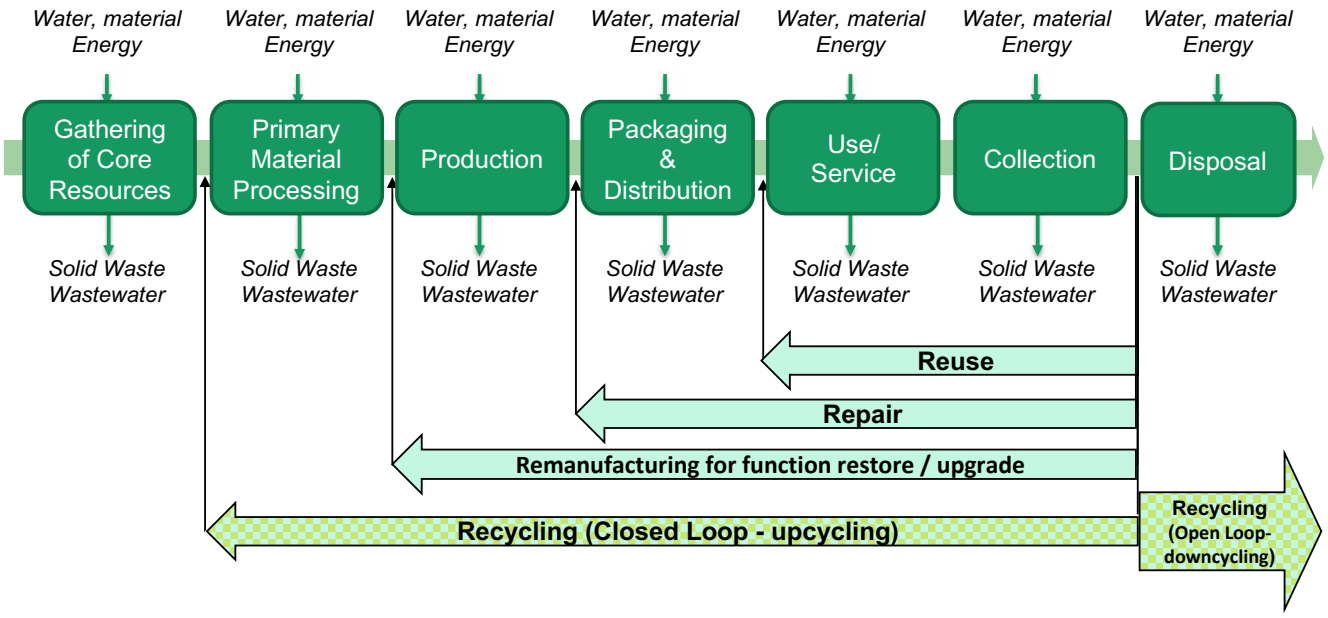
Contents

Preface

Authored by *Professor Marcello Colledani*
Politecnico di Milano
Coordinator of the Strategic Community De- and Remanufacturing for Circular Economy

The European society is challenged by the unprecedented need of contrasting global warming and the ongoing climate change. In this context, as part of the Green Deal Industrial Plan, the Circular Economy Action Plan[1] and, later, the Net-Zero Industry Act[2] and the Critical Raw Material Act[3] have been launched by the European Commission, aiming at strengthening sustainability and circularity of the European industrial eco-system, with particular focus on the emerging energy transition sectors, and increasing its resilience by securing stable supply of strategic critical raw materials in the EU. In parallel, the Ecodesign for Sustainable Products Regulation (ESPR)[4], has introduced the Digital Product Passport – DPP – as a tool for transferring product data, in a secure and regulated way, among stakeholders of the circular value-chain.
To comply with and grasp the opportunities of this evolving framework, the manufacturing industry is demanded, probably for the first time in the history, to rethink the entire value-chains, business models and operations from the current linear manufacturing scenario to a more sustainable circular manufacturing scenario, since the early-stage design of new products. Lombardy Region is a highly populated area with almost 10 million inhabitants and a strongly industrialized eco-system characterized by more than 85.000 manufacturing companies, 900.000 employees, generating about 66 billion euros of manufacturing gross value added, thus positioning Lombardy among the top five regions in Europe. Moreover, with its 13 universities, 19 research centers and the 3700 innovative start-ups operating on the territory, Lombardy forms a reference science, technology, innovation, and knowledge hub in Europe. Manufacturing companies are currently developing their own path towards sustainable business models, in the transition from traditional and linear production lines, to innovative and circular value-chains in multiple sectors, ranging from automotive, furniture, home appliances, electronics, medical technologies, construction, and capital goods, all pillars of the Lombardy Region economy, thus providing economic, environmental



and social benefits to the eco-system as a whole. In support of this transition, the Lombardy Region launched in 2020 the "EcoCirc - Accordo di collaborazione per la realizzazione di un'innovativa infrastruttura pilota regionale di supporto alla transizione verso l'economia circolare" (EcoCirc - Collaboration agreement for the creation of an innovative regional pilot infrastructure to support the transition towards a circular economy). The agreement involves 5 MEuro of infrastructure investment co-funding for increasing the capacity of research institutes in Lombardy in view of the realization of a Regional infrastructure for increasing the research and innovation capacity of local universities and research centers thus enabling them to support industry in the circular economy pathway. Lead by Politecnico di Milano, this action will give its final outcome in June 2024, opening the way to the realization of a future, high-TRL, Regional infrastructure for supporting the circular economy transition of the Lombardy Region industrial stakeholders, in line with the Vanguard Initiative objectives.

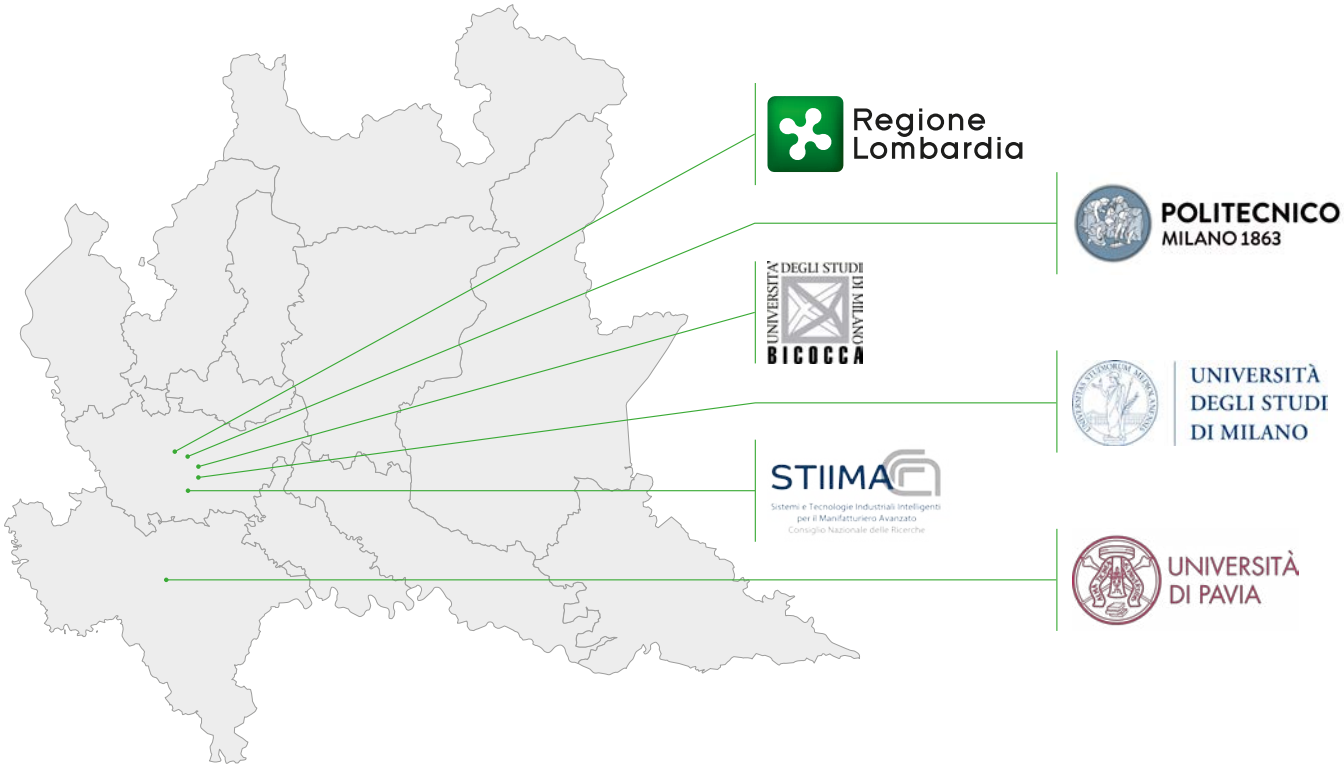
In addition to innovation investments, due to the pervasive implications of this transition, best practice sharing and cross-sectorial fertilization become key levers to inspire the development of novel industry-driven circular business cases at local and European scales. This is the main objective of this publication. It collects 25 real cases and industrial best practices in a comprehensive framework, encompassing several stakeholders of the circular value-chain, namely product designers, manufacturers, post-use product collectors, and technology providers, embracing different circular economy business option including re-use, repair, remanufacturing, and recycling in open and close loop mode. This publication follows a previous edition, delivered for the first time in 2018. It included 18 best practices. The considerable increase in practical industrial cases emerging from the region testifies the growing industrial interest towards sustainable and circular manufacturing, also thanks to the role and activities of AFIL and the Strategic Community "De-and Remanufacturing for Circular Economy" in particular.

1 https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en

2 https://single-market-economy.ec.europa.eu/industry/sustainability/net-zero-industry-act_en

3 https://single-market-economy.ec.europa.eu/publications/european-critical-raw-materials-act_en

4 https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products-regulation_en



The Lombardy Technology Cluster for Advanced Manufacturing

AFIL - Lombardy Intelligent Factory Association - is an Italian private association, recognised by Lombardy Region as the Regional Technology Cluster for Advanced Manufacturing. It is the outcome of a Lombardy Region-led process aiming to set up a network of clusters interested in carrying out, at national and at international level, an integrated and sustainable system of infrastructures, competences and methodologies supporting research and innovation.

In particular, AFIL and its 145 Associates represent a network of companies, universities, public or private research institutions and entities active in the field of Advanced Manufacturing, that means production processes, materials and technologies able to make Lombardy more competitive, sustainable, resilient and advanced. The Cluster aims at promoting and facilitating research and innovation as regards to best practices and enabling technologies for the manufacturing sector in order to support and develop the Lombardy production system's leadership and competitiveness.

The mission of AFIL can be summarized as follows:

setting up a **stable community** by connecting all the different stakeholders and favouring cooperation by promoting R&I projects and initiatives. According to the priorities identified by the regional ecosystem, AFIL promotes the networking and the sharing of best practices and competencies in several working groups, called Strategic Communities. The most active ones cover the topics of Circular Economy, Digitalization, Advanced Materials, and Additive Manufacturing. Periodical meetings and events also allow to share available opportunities promoting the growth and development of the regional industrial ecosystem.

being a **reference actor for Lombardy Region** for the definition of Research and Innovation policies in the manufacturing sector, with reference to Smart Specialisation Strategy (S3). AFIL supports the institutions to define the working programme and represents the Region in several partnerships. Within its Strategic Communities, the Cluster identifies the priorities and creates Roadmaps and strategic documents to be adopted by Lombardy Regions, so that policy makers are aware and can match the real needs of the industrial ecosystem.

supporting the development of **R&I interregional networks** through the participation to National Intelligent Factory Cluster (CFI) and the connection with different European regions within Vanguard Initiative (being the co-coordinator of the Pilot ESM - Efficient and Sustainable Manufacturing), European Cluster Collaboration Platform, Four Motors of Europe and the Smart Specialisation Platform. At international level, AFIL is involved in the Advanced Manufacturing Hub of the World Economic Forum.

With its presence in several EU-funded projects, AFIL strongly collaborates with clusters and regional organizations all over Europe, also promoting the internationalization in extra-EU countries, organizing business missions and favouring the sharing of best practices.

AFIL Lombardia

Regione Lombardia
Cluster Tecnologici Lombardi

1
- The Italian Ministry of Education, Universities and Research establishes the National Technology Clusters.
- Lombardy Region supports the creation of Regional Technology Clusters.
  21/09/2012 Foundation of CFI – National Intelligent Factory Cluster.

2
- 13/03/2013 Foundation of AFIL - Lombardy Intelligent Factory Association.

3
- AFIL is officially recognized by Lombardy Region as one of the 9 Lombardy Technological Clusters.
- AFIL holds its first General Assembly and elects its first board of directors. AFIL participates in the drafting of the first version of the Specialization Strategy and the 2015-2016 Work Programs for the Lombardy Region.
- The Lombardy Region appoints AFIL as the European co-coordinator for the Pilot "ESM-Efficient and Sustainable Manufacturing" within the Vanguard Initiative.

4
- AFIL Working Groups on circular economy, digital factory, 3D printing, and surface treatments are consolidated.
- AFIL officially becomes legal entity.

5
- AFIL becomes the European co-coordinator of the "Efficient and Sustainable Manufacturing" partnership within the European Commission's "Smart Specialization Platform."
- AFIL participates in drafting the 2017-2018 Work Programs for the Lombardy Region.

7
- AFIL joins the Europe Cluster Collaboration Platform.
- AFIL supports Lombardy Region in the "Four Motors for Europe" Initiative for the advanced manufacturing topics.

8
- AFIL launches the CENTO4.0 Initiative to identify and reward the most innovative enterprises of the regional ecosystem.

9
- AFIL renovates the Working Groups establishing the Strategic Communities.
- AFIL becomes the coordinator of the World Economic Forum's "Advanced Manufacturing HUB Lombardia."

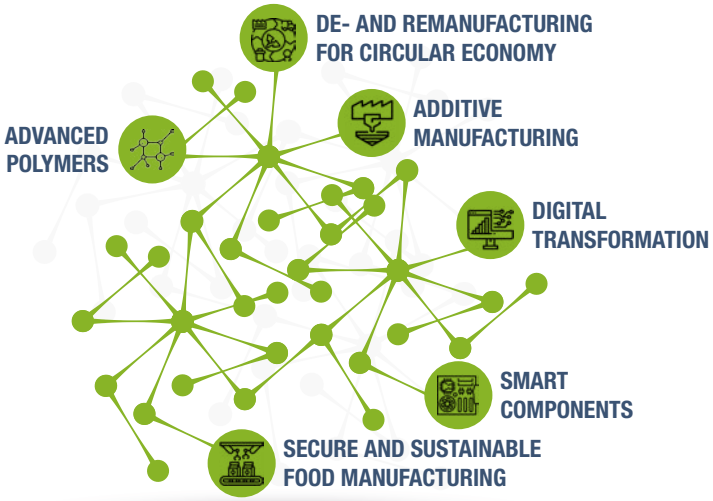
10
- Lombardy Region approves the Roadmap for Research and Innovation on Circular Economy.
- AFIL establishes its first Technical Scientific Committee.

11
- AFIL participates in drafting the second version of the Specialization Strategy and the Work Programs for the Lombardy Region for 2021-2023.

12
- AFIL releases its first Booklet.
- AFIL signed the "Lombardy Protocol for Sustainable Development".

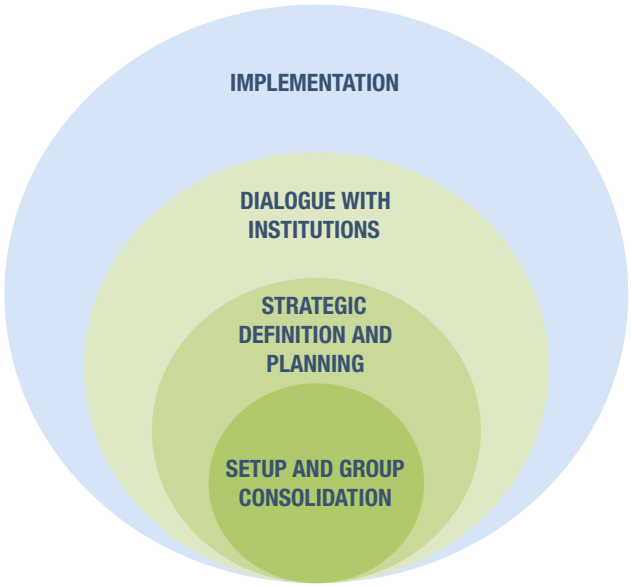
13
- AFIL launches SCORE - Strategic Communities Open Resources for Enterprises, as Open Innovation initiative for AFIL associates.
- AFIL participates in drafting the Work Programs for the Lombardy Region for 2024-2025.

AFIL Strategic Communities



The Strategic Communities of AFIL are working groups driven by **priority topics** identified by the regional stakeholders and representative of the manufacturing sector in Lombardy. The participants establish synergies and collaborations and propose projects and solutions to support the growth of the industrial ecosystem and to increase its competitiveness.

The communities are formed through a **dual approach**: top-down, aligning with specific and prioritized themes for Lombardy Region's S3 strategy and influenced by emerging European themes; and bottom-up, gathering the needs of the members who actively contribute to their content.



By aggregating **regional supply chains around strategic themes**, the Strategic Communities promote cultural growth and disseminate industrial best practices that demonstrate the benefits of developing and implementing innovative products, technologies and processes in the manufacturing sector.
Collaborations take the form of developing project proposals and defining specific contents and priorities for the specialization area. These proposals are then submitted to relevant institutions, mainly Lombardy Region, to receive support for short, medium and long-term actions.

Within the Strategic Communities, AFIL enables:

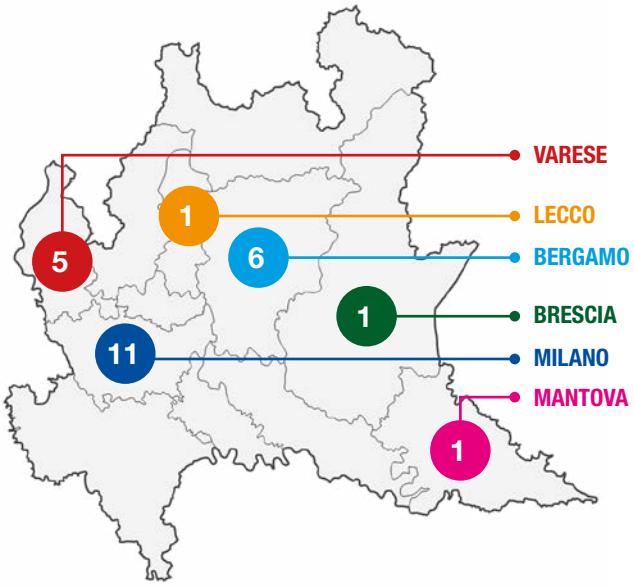
- The **transfer of priorities and activities to the Institutions**, towards the awareness of industrial needs and challenges and their integration into work programs and public funding.
- **Inclusion in national and European contexts**, providing visibility to the activities and best practices of Community members and exploiting international opportunities.
- Facilitation in **defining supply chain projects** by bringing together key regional actors and encouraging constructive dialogue.
- **Preparation of market studies** to highlight regional strengths and challenges, providing useful aggregated data.
- **Extensive communication of Community activities** through website news, magazine publications and other dissemination activities, including dedicated tools.
- **Supply chain networking and involvement of a critical mass**, identifying and engaging new participants.

THE STRATEGIC COMMUNITY

De- and Remanufacturing for Circular Economy

Circular Economy (CE) means an economic system based on the reuse and regeneration of materials or products, in a sustainable and environmentally friendly way. It can help reduce negative effects on the territory by reducing dependence on foreign resources and encouraging new business models to promote sustainability.

Aligned with numerous European regulations and initiatives, the Strategic Community "De- and Re-manufacturing for Circular Economy" brings together key regional actors active in the field of sustainability for the **development and implementation of materials, products, technologies and innovative processes aimed at reuse, remanufacturing and recycling**.



CIRCULAR ECONOMY ROADMAP

The Lombardy Roadmap for Research and Innovation on Circular Economy is a document that aims at developing a sustainable, low carbon, resource-efficient and competitive strategy for the **transition to a circular economy in the Lombardy Region**.

The development of the Roadmap began in 2019 as a core action of the Strategic Community and has been **adopted by Lombardy Region in May 2020**. It is aligned with Lombardy's Smart Specialization Strategy (S3) to address market changes and meet emerging social and cultural needs.

Overall, the Roadmap outlines a versatile framework for driving sustainable economic development, supporting **regional cooperation** and addressing global challenges through circular economy initiatives.

Download the Lombardy Roadmap for Research and Innovation on Circular Economy

The Community has identified numerous topics that involve various types of materials, components and products, different applications in multiple sectors and various options for closing the loop in circular value-chains, including remanufacturing, recycling and reuse.

Specific issues concern sustainable **redesign**, **disassembly**, **recycling** and **regeneration processes and technologies**, the development of **IT solutions** for the Circular Economy and the definition of **new business and logistical models**. Additionally, the definition of new policies to support the Circular Economy is of local and European relevance.

MAIN AREAS OF INTEREST

THE STRATEGIC COMMUNITY

Activities and Achievements

+70 stakeholders involved

1 Lombardy Region Roadmap for Circular Economy

48 meetings organized since 2015

2 Working Group Brochure

7 projects launched and EU funded by Interreg, H2020 and I3 programmes

2 regional projects proposed and approved

Over the course of the years, the Strategic Community has been actively engaged in various activities to advance its mission. These include developing a shared vision on Circular Economy and related challenges, sharing industrial best practices through the organization of industrial visits, providing project updates, facilitating B2B match-making, conducting concept validation, scouting funding opportunities, offering education and training and holding focused discussions on specific value-chains. Through these, **the working group fosters collaboration, innovation and knowledge-sharing, driving sustainable practices and progress within their community.**

At **European level**, the Community participates with a leadership role in the demo case **"De- and Remanufacturing for Circular Economy" of the Efficient and Sustainable Manufacturing (ESM)** Pilot within Vanguard Initiative. Through this initiative, significant EU funded projects have been conceived and developed, with Lombardy leading and coordinating them.

At the **regional level**, the insights gained from these projects have been well-received by the Institutions, thanks to a series of events organized in collaboration with Lombardy Region, focusing on topics related to batteries and the circularity of the steel supply chain. A tangible output of these efforts is the Collaboration Agreement co-financed by Lombardy Region for the establishment of a **Regional Circular Economy Hub** to develop expertise and technology transfer in the electric mobility sector. Another one is the participation of various members of the Community in the Expression of Interest for the Supply Chains initiative by Lombardy Region.

REGIONAL VALUE-CHAINS

The Expression of Interest for the Development of Productive Industrial Value-Chains and Ecosystems in the region is an initiative promoted by the Lombardy Region. Its objective is to support the strengthening, resilience and competitiveness of the production chains and of the industrial, productive and economic ecosystems of its territory, by developing strong links among companies and involving research, training and financial institutions.
This initiative, launched by the General Directorate for Economic Development, consists of two phases:

- **Phase 1: Expression of Interest**
  Partnerships submit a concept note on their future activities. If evaluated positively, a quality label is granted to these consortia, awarding some extra-points when submitting a project proposal under Phase 2.
- **Phase 2: Activation of specific measures to support interventions**
  According to the emerged challenges and needs, Lombardy Region intends to activate several support measures for the development and consolidation of local economy.

Within the Community, a proposal has been submitted and successfully approved, "Innovative and Sustainable Supply Chain in the Steel Industry". Furthermore, the Community is working on a new proposal focused on "Fashion and Textile Supply Chain".

THE STRATEGIC COMMUNITY

Projects

BATMASS

Oct 2023
Feb 2026

€ 9.765.023

The I3-funded **BATMASS** project[3] aims at implementing the first EU Circular Battery Valley. It offers a portfolio of cross-regional investments in TRL6+ innovations in circular technologies and processes for battery materials.
BATMASS mobilizes an integrated interregional ecosystem around 4 Demonstrators meant to scale up, commercialize and deploy breakthrough GreenTech: collection & dismantling, second life, black mass and CAM to production.

DeremCo

Dec 2022
Nov 2025

€ 12.603.930

DeremCo[2] is an EU-I3 project involving 30 European partners from Italy, Finland, Austria, Spain, Slovenia, Belgium and Portugal.
The project aims at developing of innovative systemic solutions for unlocking the great potential of End-of-Life composite materials as new manufacturing sources, with a set of actions inspired by two major general guidelines: Sustainable Manufacturing and Digitalization.

DigiPrime

Jan 2020
Dec 2023

€ 19.663.567

The H2020 **DigiPrime** project[1] will develop the concept of a circular economy digital platform to create circular business models based on the data-enhanced recovery and reuse of functions and materials. The platform will unlock innovative cross-sectorial solutions validated through 20 use cases covering different European industrial sectors (automotive, renewable energy, electronics, textile, construction), and by additional pilots in new sectors, funded through an open call mechanism.

The ongoing projects capitalize the outcomes of the activities of the Strategic Community performed during the last 5-10 years. In fact, the pathway towards the implementation of Circular Economy starts from the demonstration of the technical and economic feasibility of the developed solutions for an effective market uptake. Past projects were fundamental in this direction and represent a first step towards the adoption of Circular Economy.

CarE-Service

Jun 2018 – Nov 2021
Budget: 7.722.365€

The **CarE-Service** project[5] aimed at demonstrating innovative reuse, remanufacturing and recycling technologies for electric vehicles.

FiberEUse

Jun 2017 – Sep.2021
Budget: 11.943.963€

The **FiberEUse** project[4] aimed at integrating innovation actions for profitable composite recycling and reuse in value-added products.

Interreg Mediterranean GREENOMED

Feb 2017 – Mar 2020
Budget: 2.050.000€

GREENOMED aimed at contributing to green manufacturing in MED regions by establishing a European network of pilot plants focused on green manufacturing.

SCREEN

Synergic CirculaR Economy across European regioNs

Nov 2016 – Oct 2017
Budget: 1.742.747€

SCREEN[6] aimed at promoting Circular Economy in EU regions by synergizing R&I investments from H2020 and European Structural and Investment Funds.

VANGUARD INITIATIVE

VANGUARD INITIATIVE
New growth through smart specialisation

Through direct involvement of regional authorities and continuous dialogue with European institutions, its objective is to promote and support the **creation of interregional networks** to address the main challenges faced by industrial stakeholders.

The establishment of a **network of Pilot Plants for innovation** would bridge the gap between research and businesses, especially SMEs, for **industrial transfer, scale-up and commercialization of innovative solutions**. This approach follows the ***"test before invest"*** concept, meaning demonstrating technical and business feasibility without the associated economic risk.

The Research and Innovation topics explored in AFIL's Strategic Communities, which are animated through the activities of the Cluster and form the basis for project development, are aligned with numerous European initiatives in which Lombardy Region is involved, particularly the Vanguard Initiative and S3 Partnerships.

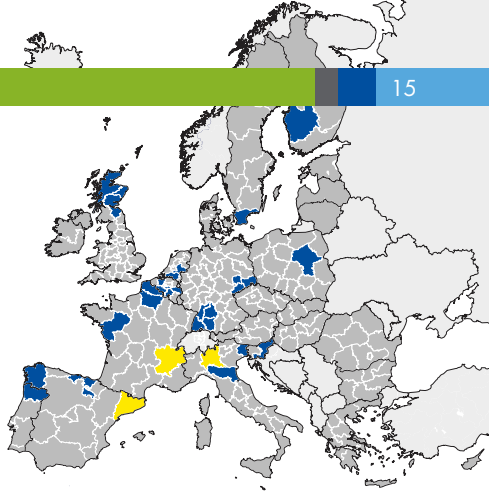
The Vanguard Initiative was established in 2013 by ten European regions with the objective to stimulate collaboration based on their Smart Specializations and regional priorities to foster industrial innovation. Nowadays there are **38 regions** taking part to the initiative.

VANGUARD PILOTS
THEMATIC MACRO-AREAS OF INTEREST

SMART SPECIALIZATION STRATEGY (S3) PARTNERSHIPS

Inspired by the Vanguard Initiative but broader in scope, the S3 Partnerships are initiated by the European Commission, particularly the **DG REGIO**, to identify thematic macro-areas of collaboration among regions to enhance their competitiveness and resilience.
AFIL is active in the area of Industrial Modernization, particularly in the partnerships Advanced Materials for Battery and Wireless ICT, in addition to the mentioned Vanguard Pilots.
In the Smart Specialization Platform (S3P), participation of European regions is not restricted to formal associations, promoting international collaboration through further expansion of the network and opportunities offered by the Vanguard Initiative.

S3 SMART SPECIALISATION PLATFORM



VANGUARD INITIATIVE

Efficient and Sustainable Manufacturing (ESM) Pilot

The Efficient and Sustainable Manufacturing (ESM) Pilot, co-coordinated by AFIL (for Lombardy region), Eurecat (for Catalonia region) and Polymeris (for Auvergne-Rhône-Alpes region), groups **26 participating European regions**.
It focuses on developing products, technologies and processes aimed at **increasing production efficiency and quality, as well as enhancing environmental and social sustainability**.

Through periodically organized meetings and events, stakeholder involvement in discussions, the establishment of interregional collaborations (through project proposals) and the attention of institutions towards industrial needs and requirements, ESM has been able to **develop and demonstrate innovative solutions** in various areas, stimulating each other and integrating different regional skills and infrastructures.

ESM DEMO-CASES

DE- & RE-MANUFACTURING

DIGITAL TRANSFORMATION

EFREFO
Energy-Flexible and Resource-efficient Factory Operation

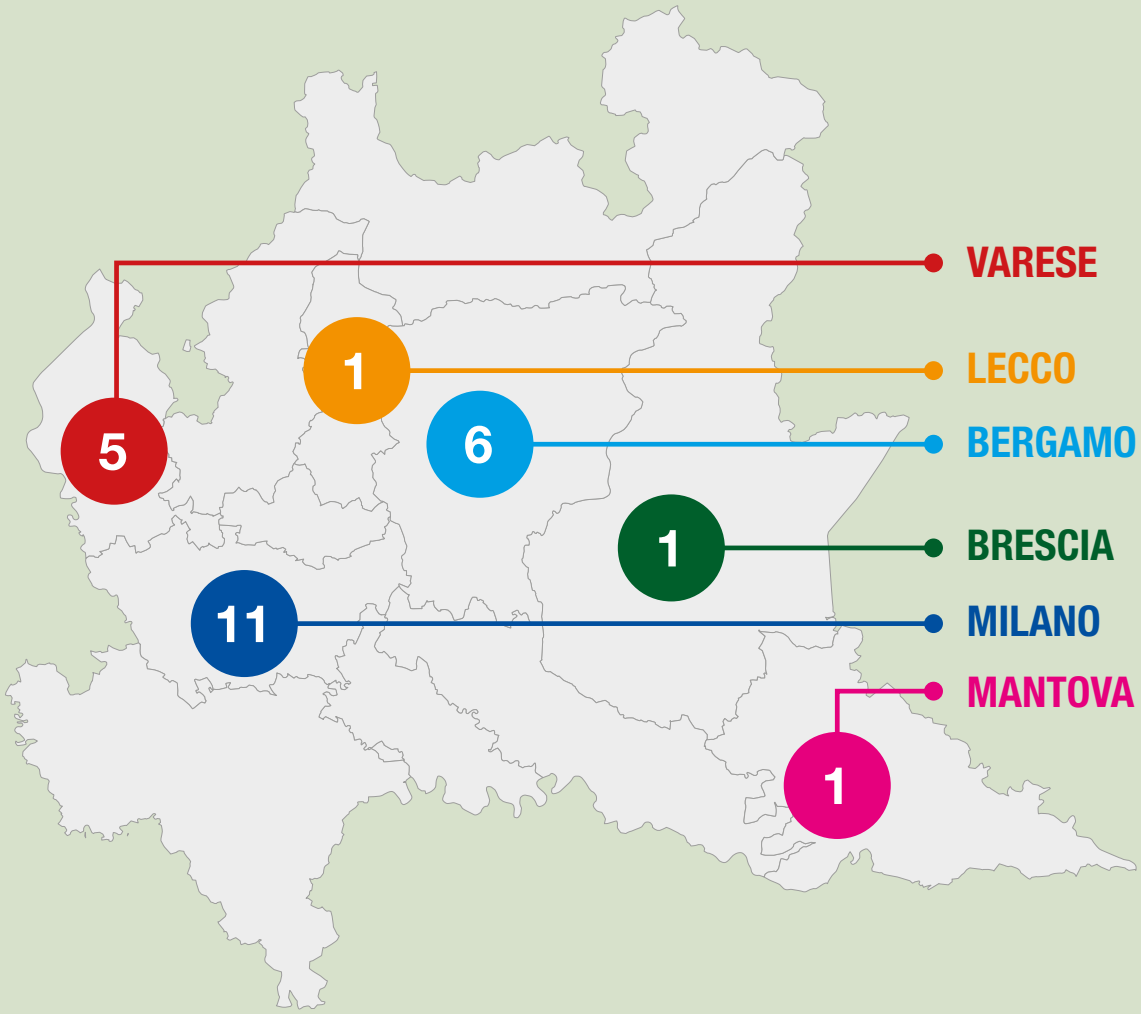
POLYMER-BASED FUNCTIONAL PRODUCTS

These themes are then further developed into several specific use-cases, focusing on particular technologies and/or industrial applications for the concrete implementation of the developed innovative solutions.
Examples include use-cases dedicated to the recovery of composite materials from wind turbine blades, plastronics, predictive maintenance (using digital technologies such as AI) and eco-efficient industrial thermal processes.

EU POLICIES ON SUSTAINABILITY

In November 2019, Parliament approved a resolution declaring the climate emergency, calling on the Commission to ensure that all future legislative and budgetary proposals would be in line with the objectives of the **Paris Agreement.**
As a result, Ursula Von Der Leyen, president of the Commission, has drawn up the **European Green Deal**, the roadmap for a climate-neutral Europe.
As a result of the COVID-19 crisis, the Green Deal has been included in the Common European Recovery Plan: **the Next Generation EU**. The plan should ensure a sustainable, fair and inclusive recovery for all member States.

Cases from the Lombardy Ecosystem



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THEMATIC AREAS

1 POWER

2 INDUSTRY

3 TRANSPORT

4 BUILDINGS

ROLE IN THE VALUE CHAIN

TECHNOLOGY PROVIDER

KEYWORDS

NET ZERO
energy
efficiency
ENERGY
RENEWABLES
TRANSITION
Technology
Optimization
DECARBONIZATION
ELECTRIFICATION

COMPETENCIES AND CAPABILITIES

ABB is a technology leader in electrification and automation, enabling a more sustainable future. Building on 130 years of excellence, ABB's ~105,000 employees drive transformation through innovative engineering and software in Electrification, Motion, Process Automation, and Robotics & Discrete Automation. ABB's purpose is to provide the foundation to execute as a value-creating company, pushing boundaries of technology, embedding sustainability in all activities, and driving people's performance.
As a technology leader in electrification and automation, ABB is at the core of accelerating the energy transition. Every day, ABB empowers customers across the globe to optimize, electrify and decarbonize. By doing this, ABB is helping its customers to remain competitive and lower their carbon footprint while making how we move, produce, work, and live more sustainable overall.
ABB Sustainability Agenda is fully in line with this mission and follows recognized best-practice standards and guidance. Embedded across the business, it aims to enable a low-carbon society, preserve resources, and promote social progress for a net-zero future.

LARGE ENTERPRISE

CHALLENGES

ABB's Sustainability Agenda is fully embedded throughout the business for accountability, transparency, and speed. The main focus is on enabling a low-carbon society, preserving resources, and promoting social progress in collaboration with our customers, suppliers and partners.
To enable a low-carbon society, ABB is committed to reaching net zero by 2050 and to partnering with customers to avoid emissions. ABB is setting science-based, net-zero targets, cutting its own GHG emissions, empowering customers to avoid emissions and ramp up renewables, and working with its suppliers and partners to go further.
To preserve resources, ABB is embedding circularity in its products to reduce waste, conserving water and biodiversity, and use land responsibly. ABB takes a life cycle approach to circularity to factor out waste, from design and sourcing to operations and use, to take-back and recycling. ABB is aligning its circularity approach with international standards and frameworks, such as the European Union Taxonomy for sustainable activities.

LONG-TERM GOALS

ABB is taking a rigorous net-zero targets approach in line with the Science Based Targets initiative (SBTi). ABB has aligned 2030 and 2050 targets with the SBTi's Net-Zero Standard and expect validation in 2024. The Net-Zero Standard requires companies to set science-based targets consistent with limiting the global temperature rise to 1.5°C without using carbon offsets. ABB technologies are supporting the ramp up of renewables: from enabling windfarms, green hydrogen and floating solar plants to batteries and EV (electric vehicle) production.
ABB is incorporating international standards into its Circularity Approach to ensure it is robust, objective, quantifiable and auditable. ABB aims to cover at least 80% of its portfolio of products and solutions with the Circularity Approach and eliminate any waste going to landfill by 2030 wherever possible. ABB is working to improve water management across the company and, with its technologies, to support the sustainable management of water.

ACTIVITIES TOWARDS GREEN TRANSITION

In line with enabling a low-carbon society, in 2023, ABB achieved a 76% reduction in scopes 1 and 2 versus our 2019 baseline. At the end of the year, 64% of its energy and 94% of electricity came from renewable energy sources.
Following the latest WBCSD guidelines for calculating avoided emissions, ABB helped customers avoid 74 Mt of CO_2 in 2023, across industry, transport, buildings, data centers and more. Furthermore, ABB is collaborating with startups and partners to further enable a low-carbon society.
To preserve resources, in 2023, 86% of ABB waste was recycled and only 6.3% was sent to landfill. 50% of ABB sites are not sending any waste to landfill.
ABB has 12 projects underway to improve water management across the company, with expected annual savings of 19 kilotons.
ABB also offers innovative technologies, such as sensors, instrumentation, and software, driving efficiency in water-treatment processes. They help to efficiently turn seawater into drinking water, safely treat wastewater, and protect waterways and coastal areas from flooding, for instance.

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THEMATIC AREAS

1 **AUTOMOTIVE**
battery components

2 **COMPOSITES**

3 **BUILDING AND WHITE APPLIANCES ENERGY SAVING**

4 **THERMOSETTING POLYMERS RECYCLING**

ROLE IN THE VALUE CHAIN

TECHNOLOGY PROVIDER

KEYWORDS

Thermosetting recycling
FREONS and reuse
FREE DEVELOPMENT
PREVENTIVE MAINTENANCE
COMPOSITE Energy
RECYCLING saving
EV battery VACUUM INSULATION
light components

COMPETENCIES AND CAPABILITIES

Cannon Afros, a company of the **Cannon Group**, founded in the early 1960s, is the world's leading supplier of dosing systems, mixing equipment and processing technologies for polyurethanes and multi-component resins. Today it offers an extensive range of processing technologies for molding, pouring, injection, spraying, and manufacturing abilities dedicated to a comprehensive range of resins such as polyurethanes, silicones, elastomers, epoxy resins, phenolic foams, and bi-component adhesives. Furthermore Cannon Afros designs, manufactures and sells a vast range of equipment from single mixing heads and stand-alone units to complex turnkey and customizable production plants to serve different industrial applications, such as automotive interiors and exteriors appliances; refrigerator insulation, rigid insulation for the cold chain industry and refrigerated transportation; building and construction insulation; sanitary ware; piping insulation for oil heating and district heating; technical components and medical equipment; flexible padding and seats for furniture and automotive industries, sealing and gluing for lighting and electrical enclosures, and encapsulation and potting for electrical and electronic components.

LARGE ENTERPRISE

CHALLENGES

Cannon Afros faces many different challenges throughout its journey in implementing circular economy practices, such as:

- the complete replacement of all the freons as blowing agents;
- the recycling and reuse of carbon fiber-based composites;
- the mechanical recycling of rigid insulation and flex polyurethane foam and the use of carbon dioxide as blowing agent.

LONG-TERM GOALS

The company envisions several long-term goals for the incorporation of circularity in its own day-to-day operations. These include:

- recycling of thermosetting plastics;
- improvement of thermal insulation for cold chain and buildings;
- digitalization of numerous processes and application of A.I, for example for the diagnosis operator interface and the production quality control.

ACTIVITIES TOWARDS GREEN TRANSITION

Cannon Afros, committed to realizing its long-term goals in implementing circular economy, tackled already diverse challenges, such as:

- the reduction of the energy consumption of all machineries,
- the development of technologies for the batteries packing for Electric Vehicles, Machinery to produce Lightweight structures in composite
- recycling of composites in glass and carbon fiber
- the creation of products based on vacuum thermal insulation.

Furthermore, Afros took part in various European projects, always with the aim of moving toward green transition.

ENERG-ICE

Jan. 2010 – March 2013

The **Energ-Ice** Project focuses on reducing the environmental impact of energy-using products, such as cold appliances, by taking action at the design stage, where the pollution caused during the product's life cycle can be best prevented.

CRESIM

August 2012 – Jan. 2016

The **CRESIM** project aims to develop and implement an industrial process for reusing recycled Carbon Fiber materials, offering cost savings and reduced environmental impact by minimizing hazardous waste and lowering carbon emissions.

K12

June 2014 – Nov. 2018

The **K12** project's aim is to demonstrate a new technology for insulating domestic refrigerators, utilizing polyurethane, which has the potential to improve energy efficiency by up to 20%. This offers an advanced and sustainable solution to the refrigeration industry.

VICORPAN

July 2021- Dec. 2024

The **LIFE VICORPAN** project aims to demonstrate how to enhance the energy efficiency and recyclability of Vacuum improved Insulation by CORe shaped PANels of commercial and domestic refrigerators.

CENTROCOT
Innovation experience

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THEMATIC AREAS

1 POLYMERS & COMPOSITES

2 TEXTILE

3 RESEARCH & TESTING

4 SUSTAINABILITY

ROLE IN THE VALUE CHAIN

SERVICE PROVIDER

KEYWORDS

Textile SERVICE
RECYCLING PROVIDER
Digital circular services
TESTING Certification
RESEARCH TECHNOLOGY
SCOUTING

COMPETENCIES AND CAPABILITIES

Established in Busto Arsizio – Varese – on 7th October 1987 by entrepreneurial associations, trade associations, trade unions, public bodies and the credit institutions spread all around the territory, Centro Tessile Cotoniero e Abbigliamento S.p.A. – in short **Centrocot** – was founded out of the need to support the companies that make up the whole chain in the Textile and Clothing segment, by providing highly specialized services, from traditional to technical textiles.
With over 100 employees in staff, in fact, Centrocot offers highly qualified resources who can perform technical activities as regards testing, research, technical support, experimentation, and training.
Moreover, Centrocot supports textile companies, offering expertise in products and process quality control and certification. Its skilled technicians possess solid experience in promoting and engaging in European, national and regional research projects focused on utilizing innovative textile products in different industrial sectors.
Notably, within this framework, 2021 marked the establishment of Multi-Lab, an R&D and training hub that investigates recycling technologies and the life cycle of textile products.

CHALLENGES

As a service provider for textile companies and research project partners, different aspects related to the implementation of circular economy models are challenging. Particular emphasis is placed on managing and valorizing textile end-of-life products from different points of view: technology and processing (such as design, recycle, recover, re-use), legislation and regulation, social and environmental impacts, digital solutions as supporting tools.

LONG-TERM GOALS

Centrocot is a valuable resource for textile companies, providing support in quality control and certification. The establishment of the Multi-Lab in 2021 as an R&D and training hub demonstrates its focus on recycling technologies and the life cycle of textile products. This commitment aligns with the increasing importance of sustainability and circular economy principles in textile. By exploring recycling technologies and understanding the life cycle of textile products, Centrocot aims to contribute to the development of more sustainable and environmentally friendly practices.

ACTIVITIES TOWARDS GREEN TRANSITION

For what concerns the activities already implemented towards the green transition, Centrocot is actively involved in several regional, national and European research projects focused on designing, developing and implementing sustainable approaches for textile and related sectors, including composite and plastics. It focuses on testing, developing and optimizing solutions for materials sorting, recycling and characterization.
Within the Life M3P (Material Match Making Platform) project, Centrocot develops and provides a digital tool to facilitate materials, technologies and knowledge sharing: the M3P platform. It facilitates the matching of available production or unsold waste and the recycling, recovery and reuse of technologies, also integrating services needed to achieve a complete recycling process and certifications for the waste or recycled material.

REACT

June 2019 – Sep. 2022

The **REACT** project's aim is to develop a method that removes undesirable substances from waste of acrylic fabrics through an environment-friendly process, to enhance their recycling, improve sustainability and reduce environmental risks.

DigiPrime

Jan. 2020 – Dec. 2023

The EU-funded **DigiPrime** project's aim is to develop the concept of a circular economy digital platform in order to create circular business models based on the data-enhanced recovery and reuse of functions and materials.

OLGA
hOListic Green Airport

Oct. 2021 – Sept. 2026

The EU-funded **OLGA** project plays a pivotal role in the aviation decarbonization. Its aim is to work to integrate sustainable aviation fuels into traditional jet fuel infrastructure and demonstrate low-emission solutions.

DEREMCO

Dec. 2022 – Nov. 2025

The **DeremCo** project aims to establish a systematic, cross-sectoral, demand-driven circular economy solution to free up composite materials and components for cost-effective reuse after use in new high value-added products.

erion

Ecodom. Remedia.
Producer Responsibility

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erion.it/en

THEMATIC AREAS

1 WASTE MANAGEMENT

2 CIRCULAR ECONOMY

3 RESEARCH AND INNOVATION PROJECTS

4 EVOLUTION OF REGULATIONS

ROLE IN THE VALUE CHAIN

PRODUCER RESPONSIBILITY ORGANIZATION

KEYWORDS

Take-back services
DEVELOPMENT Service
Recycling provider
WASTE
ENGINEERING MANAGEMENT
Circular economy models REVERSE
LOGISTICS

COMPETENCIES AND CAPABILITIES

Erion is the largest Italian Extended Producer Responsibility System, representing over 2,500 companies in the hi-tech sector.
It consists of six sector-specific Collective Schemes (Erion WEEE, Erion Professional, Erion Energy, Erion Packaging, Erion Care and Erion Textiles) for the management of Household and Professional Waste from Electrical and Electronic Equipment (WEEE), Waste from Batteries and Accumulators (WBA), Packaging Waste from EEE and BA, Tobacco Products Waste and the last dedicated to Textile Waste. Six Producer Responsibility Organizations supported by one single System: Erion Compliance Organization S.c.a r.l.
Its primary goal is to represent the best choice for companies to meet their legal obligations concerning the management of waste electronic products, waste batteries and accumulators, packaging waste, the waste of tobacco products and textile waste. Additionally, Erion provides support in the implementation of projects and initiatives aimed at enhancing the value of raw materials. Erion's expertise is demonstrated by the numerous European research projects in which it participates.

CHALLENGES

The great challenges faced in the environmental, economic and social fields imply the radical rethinking of production and development models. Erion intends to encourage a new model that can foster the well-being of the community, in full respect of environmental sustainability and on which to build a greener future. To achieve this, resources and effort are directed towards conducting studies and research to improve the System. This commitment is fulfilled through collaborations with the excellences of the sector, both at national and international level.

LONG-TERM GOALS

In the future, the Erion System will open up to the creation of new supply chains for waste management, becoming a key player for producers not only in Italy but also throughout Europe. The recovery of secondary raw materials is fundamental for the future and Erion is committed to take a leading role in the recovery of CRM and contributing to the future revision of relevant directive. Additionally, Erion aims to have a strong impact on shaping waste management regulations and norms.

ACTIVITIES TOWARDS GREEN TRANSITION

Erion supports companies through dedicated research projects designed to develop eco-innovative and circular solutions for business models, production processes and sustainable product design. Erion raises awareness among citizens/consumers on circular economy issues through events, communication campaigns and targeted information projects. Moreover, Erion actively engages in dialogues with Institutions and stakeholders to contribute to the definition of legislative processes essential for the growth of the sector.

RM@Schools

Jan. 2021 – Dec. 2023
Transmitting the knowledge related to science and technology of the Raw Materials sector.

Circ Thread

June 2021 – May 2025
Data and information management to support circular economy.

renew

Jan. 2022 – Dec. 2024
Improvement in the recycling system of the metal components at smelters.

INCREACE

June 2022 – May 2026
Implementation of interdisciplinary solutions throughout the plastic recycling value chain.

FutuRaM

June 2022 – May 2026
Introduction of a strategy, reporting structure and guidelines for raw materials' use.

GRINNER

Sep. 2022 – Aug. 2025
Develop a technology to locate the batteries in the WEEE flux in input to the treatment plants.

FREE4LiB

Sep. 2022 – Aug. 2026
Development of process for the recovery of raw materials from Lithium-Ion batteries.

New-Re

Oct. 2022 – Nov. 2024
Improve the circularity of REE value, reducing costs and decreasing environmental impact.

PARSIVAL

Jan. 2023 – Dec. 2024
Promoting the creation of a circular PV value chain in Apulia (Italy) and in Extremadura (Spain).

CIRC-UITS

Jan. 2023 – Dec. 2025
Improvement of the circularity in automotive and mass electronics through semiconductor reuse.

CE-RISE

Jan. 2023 – Dec. 2026
Design and test an integrated framework to reuse, recover and recycle raw materials.

ECOSWEEE

April 2023 – Jan. 2025
Test different incentive methods to increase the collection rate of small WEEE and portable batteries.

European Recycling Platform

A Landbell Group Partner

Via Roma, 74,
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Italy

erp-recycling.org

THEMATIC AREAS

1. **AUTOMOTIVE** battery components
2. **TEXTILE**
3. **ELECTRICAL AND ELECTRONIC EQUIPMENT**
4. **POLYMERS PACKAGING**

ROLE IN THE VALUE CHAIN

PRODUCER RESPONSIBILITY ORGANIZATION

KEYWORDS

Take-back services
DEVELOPMENT Service
Recycling provider
WASTE
ENGINEERING MANAGEMENT
Circular economy models
REVERSE LOGISTICS

COMPETENCIES AND CAPABILITIES

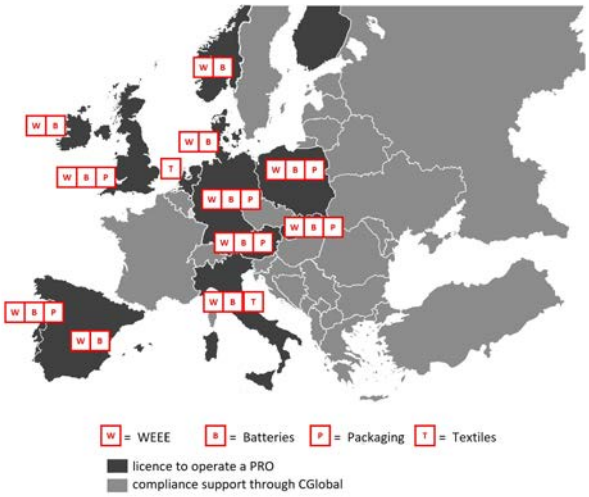
Consorzio ERP Italia is a non-profit Collective System that fulfills legal obligations for the management of WEEE (electrical and electronic equipment waste) and WBA (batteries and accumulators waste).
It is registered with the National Environmental Managers Registry under Category 8C and operates nationwide, utilizing a network of certified transporters and facilities. Consorzio ERP Italia serves as a reliable partner for large organizations, offering the implementation of efficient and sustainable waste management systems while fully complying with current regulations.
Their extensive experience and know-how enable them to provide a range of services for the proper management, treatment, and economic valorization of waste for recycling, in line with the principles of the Circular Economy.
As, also, part of Landbell Group, ERP is a leader in the management of regulatory requirements for the collection and recycling of WEEE, Batteries and Packaging and for chemical and environmental compliance. In fact, with 41 compliance schemes in 18 countries, the Group is the ideal organization for companies operating in multiple countries.

CHALLENGES

Circular economy is a resilient system that is good for the environment, people and business when every stage of a product's lifecycle, from design to post-consumption, is integrated into new sustainable and advanced compliance models.
This is why, since 2002, ERP has been promoting and disseminating the principle of circularity and sustainability through correct recycling practices, supporting the aggregation of certified and advanced actors, collecting millions tons of WEEE and Spent battery across Europe. ERP's continuous efforts aim to address the challenges imposed by the sustainability requirements in order to face off the environmental pollution and resource scarcity.

LONG-TERM GOALS

Through its research and innovation activities, ERP is redefining the concept of environmental compliance: thanks to long-term innovation programmes at global level and massive investments in development, today's compliance system model will become an effective operational partner in producer sustainability and circularity, able to support companies in the green transition, offering integrated technological, technical and regulatory digital solutions. In short, it will become the natural and progressive link between the "environmental industry" and the product value chain.



ACTIVITIES TOWARDS GREEN TRANSITION

In the context of its activities, Consorzio ERP Italia is constantly committed to promoting good practices to achieve the circular economy model, both at the local level and collectively as part of a European Group. Furthermore, ERP Group is focusing on the design and delivery of innovation, investing resources in promoting circular culture and scouting for 'circular' talent (e.g., supporting Landbell Group's Green Alley Award initiative), through the participation in projects and the development of new solutions, especially in the areas of WEEE, batteries and textiles.

RENOVATE

Jan. 2024 – Dec. 2026

RENOVATE aims at developing and demonstrating new circular economy solutions for the European battery value-chain, targeting the re-use of 100% of lithium and post-lithium cell fractions (e.g. metallic foil, graphite, electrolyte, fluorinated compounds and cathode active materials) in a closed-loop circular approach reducing wasted battery going to landfill and increasing the availability of battery precursors in Europe.

BATMASS

Sep. 2023 – Feb. 2026

The **BATMASS** project aims to establish the first integrated Circular Battery Valley. ERP will implement a digital operational platform for global plant management, that will facilitate the collection and exchange of cleaned data on waste streams, End of Life batteries, and other intermediate streams. Additionally, it will install a packaging unit and contribute to the implementation of new logistic solutions.

Fibereuse Tech

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Italy

www.fibereusetech.it

THEMATIC AREAS

1 WIND ENERGY

2 CONSTRUCTION

3 ELECTRICAL & ELECTRONICS

4 TRANSPORT

ROLE IN THE VALUE CHAIN

RECYCLING COMPANY

KEYWORDS

MANUFACTORING
CIRCULAR ECONOMY
System integrator
Service provider
Recycling
engineering
Technology
SUSTAINABILITY

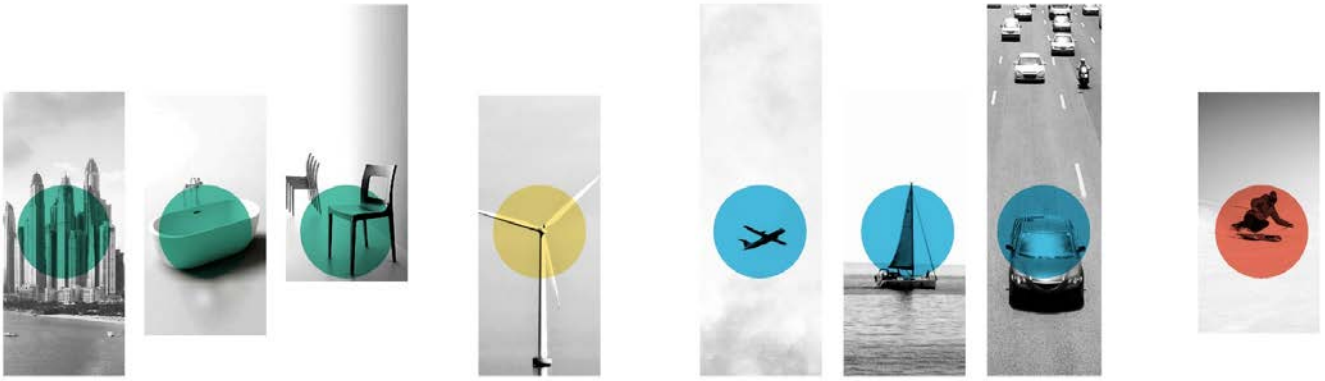
COMPETENCIES AND CAPABILITIES

When Glass Fiber Reinforced Plastics (GFRP) reach the end of their life, they are disposed of in landfill or incinerated. The quantity of GFRP waste will grow exponentially in the next decades, actual recycling strategies are too expensive and the recycled material, if not properly reprocessed, have low economical value.

Fibereuse Tech is a spin-off of Politecnico di Milano bringing to the market the technology developed during the European project “FiberEUse”.

Fibereuse Tech patented a cyber-physical system for the control and optimization of continuous mechanical size-reduction processes, thanks to which it is possible to predict the dimensional distribution of the grinded material for different types and compositions of input materials. In this way the variance on the dimensional distribution at the outlet is reduced to a minimum. This is essential to have reproducibility of the mechanical properties and a secondary raw material that can be used in current production processes.

Fibereuse Tech has also all the competencies required to enabling the re-processing of recycled GFRP in high value product.



START-UP

CHALLENGES

Recycling Glass Fiber Reinforced Plastic presents several challenges due to its composition and manufacturing process:

- Value Chain: Unlike materials like aluminum or paper, there are fewer established application for recycled fiberglass products, which can make it challenging to incentivize recycling efforts. Volumes are not constant leading to difficulties in the supply chain.
- Regulatory: the current regulations represent a barrier for the reuse of recycled material.
- Economic: significant investments are necessary to build innovative plants able to maximize process yield.

LONG-TERM GOALS

Fibereuse Tech is intrinsically committed in terms of environmental sustainability.

- Technological Advancements: Develop innovative recycling technologies that can efficiently separate and process GFRP components, reducing energy consumption and minimizing material degradation.
- Circular Economy Integration: Integrate GFRP recycling into a broader circular economy framework, where waste materials are viewed as valuable resources to be reused, remanufactured, or recycled into new products.

ACTIVITIES TOWARDS GREEN TRANSITION

The activities implemented towards green transition are:

- Increase mechanical size reduction efficiency – thanks to the cyber–physical system the energy consumption to threat the material is significantly reduced.
- Utilization of recycled raw materials – Introducing recycled material in our semi-finished products reduce the carbon footprint of the final product.

FiberEUse

Jun. 2017 – Jun. 2021

Large scale demonstration of new circular economy value-chains based on the reuse of end-of-life fiber reinforced composites. **FiberEUse** aims at integrating different innovation actions through a holistic approach to enhance profitability of composite recycling and reuse in value-added products. Through new cloud-based ICT solutions for value-chain integration. FiberEUse will support industry in the transition to a circular economy model.

DEREMCO

Dec. 2022 – Dec. 2025

The **DeremCo** project aims to establish a Circular Economy solution that will unlock the cost-effective reuse of post-use composite materials and components in new high-added value products. The developed solutions will be based on the inter-relation between the technical and social eco-systems at local and interregional level to bring benefit to the environment, industry, consumers and the European society.

YouRban

Dec. 2023 – May. 2026

YouRban aims at Cocreating an active and conscious urban demand for creative solutions for the recycling and upcycling of dismantled objects and materials, primarily in relation to reinforced polymers, materials coming from the local environment. Activating an urban ecosystem of citizens, artists, designers, architects, and small-scale producers as FabLabs and artisans' laboratories, engaged in building together a sustainable and inclusive system.

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THEMATIC AREAS

1 ELECTROMECHANICAL EQUIPMENT

2 ROBOTICS

3 AUTOMATION

4 TELECOMMUNICATIONS

ROLE IN THE VALUE CHAIN

PRODUCT MANUFACTURER

KEYWORDS

Traceability REPAIR AND REFURBISHEMENT RECYCLING Lifecycle RENEWABLE ENERGIES Assesment Waste management REDUCTION OF ENERGY CONSUMPTION

COMPETENCIES AND CAPABILITIES

Building on more than 50-year history, **Flex** is a diversified manufacturing partner that helps industry-leading brands design, build, deliver, and support cutting-edge products. Through the collective strength of a global workforce across approximately 30 countries and responsible, sustainable operations, Flex delivers technology innovation, supply chain, and manufacturing solutions and services to diverse industries and end markets. It supports the entire product lifecycle and serves a wide variety of industries, including automotive, cloud, communications, consumer devices, health solutions, industrial and lifestyle.

Based in Trieste, Italy, the Flex site has a rich industrial history of over 50 years. Since 2001, its focus has been on developing advanced telecommunication products. In 2015, after having been acquired by Flex, the site began to diversify its activities. Today it offers high-value services in the field of complex electromechanical (mechatronic) products. When needed, the site has direct access to all the technologies available in other Flex locations and in an extensive network of local suppliers.

LARGE ENTERPRISE

CHALLENGES

As people and businesses increasingly call for action on sustainability, the manufacturing industry is dealing with significant challenges. Achieving net-zero emissions and addressing the growing problem of e-waste require creative solution. This implies considering the features, function, and price of the product, but also how the product will live its useful first life and secondary lives.
Another major challenge faced by the company in its journey towards green transition is the absence of clearly defined regulations and industry standards. This is particularly evident in inconsistent tender requirements, especially when dealing with larger groups. The lack of cohesive regulatory framework complicates decision-making and obstacles progress toward sustainability itself.

LONG-TERM GOALS

Flex corporate's long-term goal is to establish a prominent leading position as the global provider of Circular Economy solutions. It will be achieved through sustainable practices, that in Trieste will take the following forms:

- internally, by applying any tool and process that will allow to reduce consuption from non-renewable sources, and to improve waste management.
- regarding customers, we are not product designers, but we can support their environmental features with industrial processes that maximize the use of recycled materials, with the implementation of repairing and refurbishing, and with products and parts traceability through the whole lifecycle

ACTIVITIES TOWARDS GREEN TRANSITION

Flex is actively pursuing green initiatives, such as the installation of a photovoltaic system, to replace conventional electrical sources and reducing electrical consumption. Since heavy reliance on non-renewable energy sources results in both environmental concerns and greater financial and operational risk, it is of crucial importance to identify opportunities to implement new technologies, diversifying the energy portfolio, and investing in renewable energy sources.
Concerning waste management, Flex emphasize waste reduction at the source and employs circular economy practices to support a regenerative, closed-loop future, taking into consideration the materials and their reusability and recyclability. This includes prioritizing reusable and recycled materials.

ECO_2 Flex Environmental Impact Calculator

A noteworthy initiative is the introduction of **Flex ECO_2™**, a tool that assesses the potential environmental benefits achievable through circular solutions. This allows for a careful evaluation of activities from repair and refurbishment to end-of-life processes, and, more importantly, informs on meaningful go-forward circular efforts.

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THEMATIC AREAS

1 AUTOMOTIVE

2 PACKAGING MACHINES

3 ELECTRONIC COMPONENTS

4 RENEWABLE ENERGY

ROLE IN THE VALUE CHAIN

PRODUCT MANUFACTURER

KEYWORDS

Circular economy model
Innovative solutions
DEVELOPMENT
HIGH-PERFORMING TREATMENTS
SERVICE PROVIDER
Recycling
Waste management
ECO-SUSTAINABILITY

COMPETENCIES AND CAPABILITIES

For over 65 years, **Gaser Ossido Duro** is synonymous of excellence in surface treatments of metal components. To reduce logistic costs and better serve its customers, Gaser has progressively established 9 premises, each offering the highest standard services.
Gaser's core business focuses on anodizing, electroless nickel plating, zinc plating and, recently introduced, thermal treatments and fluorinated coating.
Over the years, Gaser has consistently demonstrated a deep commitment to environmental sustainability. As a matter of fact, it has adopted various solutions for energy efficiency and optimization of its electroplating baths. And more recently, it has begun to explore the topic of Circular Economy, thereby reaffirming its commitment to environmental respect and the sustainability of its processes.
Gaser strategically directs its focus towards the future, emphasizing technological development, digitalization, innovation and sustainability. This forward-thinking strategy highlights Gaser's dedication to ongoing expansion, driven by a visionary outlook and a positive mindset.

SMALL AND MEDIUM ENTREPRISE

CHALLENGES

Integrating circular economy solutions within the surface treatments industry is a challenging task, due to the extensive use of chemicals and the strict legislation. Even the implementation of projects focused on the re-use of exhausted galvanic bath encounters substantial technical complexities.
However, despite these and other challenges, such as energy efficiency and optimization of processes, Gaser has been actively looking for solutions over the years.

LONG-TERM GOALS

Gaser Ossido Duro is taking significant steps to reduce its carbon footprint. Among the upcoming projects, a central objective is to implement solutions for the complete reutilization of chemicals and energy, particularly emphasizing the recovery of thermal energy that might otherwise be lost during processes.
Simultaneously, Gaser is actively engaged in innovative activities, to develop effective alternatives to conventional treatments to make its processes increasingly sustainable.

ACTIVITIES TOWARDS GREEN TRANSITION

Over the years, Gaser Ossido Duro has increasingly embraced the principles of Circular Economy and has actively engaged in initiatives to drive a sustainable transition. The company's commitment is evidenced by its active involvement in several European projects.

FOUNTAIN

June 2022 – May 2026

PFASs (Per and PolyFluorinated Alkyl Substances) are a large family of highly persistent, synthetic chemicals that accumulate in the environment and in the human body. They can be transported in surface water or groundwater contaminating it and can provoke negative effects on the environment and the human health. Since PFASs are "forever chemicals", the remediation of polluted sites is technically difficult and costly. The aim of the **FOUNTAIN** Project is to propose an effective solution to this problem with special focus on the Surface Finishing Industry.

FreeMe

June 2022 – May 2026

Recently the car industry has been using plating on plastics (PoP) technology for various benefits. Unfortunately, the process used for PoP is dangerous for workers and the environment and offers low-quality coatings. The EU-funded **FreeMe** project proposes a solution through the development of a novel technology for the metallization of polymeric surfaces. This technology will use resins with suitable nickel-based precursor additions that offer improved coating as well as a safer process for workers and the environment.

Italtel

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THEMATIC AREAS

1 ICT

2 MANUFACTURING

3 ENERGY & UTILITIES

4 HEALTHCARE

ROLE IN THE VALUE CHAIN

TECHNOLOGY PROVIDER

KEYWORDS

Product traceability Innovation
CROSS-SECTOR Agile
EXPERTISE Integration
Cutting-Edge Technology Sustainability
WASTE REUSE Circular
economy models

COMPETENCIES AND CAPABILITIES

Italtel is a multinational Information & Communication Technology group dedicated to the design, development and implementation of innovative technology solutions aimed at large companies and Public Administration entities.
We help enterprises achieve their business goals, be more competitive and provide their customers with modern and secure services through digital transformation.

We offer our solutions and services to 6 vertical markets: Media & Entertainment, Public Administration, Banking & Insurance, Energy & Utilities, Healthcare, Manufacturing.
Our expertise covers key topics, and the creation and continuous upgrading of skills is ensured through training and certification paths on the most important ICT technologies.
Our distinctive expertise covers key topics such as: Network Evolution and 5G, Hybrid Cloud, Cyber & OT Security, Digital Workspace, Analytics & Intelligent Automation, IoT.

CHALLENGES

While there is a general consensus regarding environmental protection and the circular economy concept, companies encounter many challenges. For Italtel, a major obstacle is the reluctances of manufactures to disclose their data. This industry-wide hesitation restrains the effective implementation of circular economy initiatives. To address these issues, efforts should be focused on educating and supporting customers in their digitization journey, so that they can be able to exploit the circular economy concept for the benefit of their business and of the environment.

LONG-TERM GOALS

In embracing the business case of Life Cycle Assessment (LCA), Italtel is advancing by integrating blockchain technology. This not only ensures transaction immutability, but also enables the delivery of ESG (Environmental Social Governance) certifications. The company's long-term vision is focused on investigating the exploitation of digital technology to implement the Digital Product Passport, from batteries to any product.

ACTIVITIES TOWARDS GREEN TRANSITION

Towards its journey to green transition, Italtel is developing a multi-user distributed database solution using blockchain technology for providing trusted tracing of any product or process information along its whole lifecycle. This will provide both web interface and SDK for API integration with customized data model, enabling any possible integration needs.
Furthermore, Italtel is part of MICS (Made in Italy Circolare e Sostenibile), an Extended Partnership funded by the MUR (Ministry of University and Research) that aims to enable Made in Italy design and production that is circular, self-sufficient, self-regenerative, reliable, safe and sustainable. Italtel actively contributes to digital platforms and demonstrators in multiple innovative projects together with prestigious academic and industrial partners, ranging from product traceability to advanced methodologies for waste reuse, from the use of AI for predictive purposes to real-time orchestration of production processes.

ReCircleMan

Jan. 2023 – Dec. 2023

Italtel is also taking part in the project **ReCircleMan**, that aims at enhancing green transition of manufacturing process fostering the adoption, tracing and demonstration of sustainable approaches. The project develops an innovative and circular product information management, dedicated to EoL WEEE and exhausted oil in white good production. It is based on Blockchain, providing manufacturing operators and stakeholder with the data to implement end of waste practices enabling innovative, shared, circular business model.

NTS beyondmoulding

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wwww.ntsmoulding.com

THEMATIC AREAS

1 AUTOMOTIVE & E-MOBILITY

2 ENERGY MANAGEMENT

3 INDUSTRIAL & MACHINERY

4 HIGH VALUE SECTORS

ROLE IN THE VALUE CHAIN

PRODUCT MANUFACTURER

KEYWORDS

NTS Academy BEYOND
Innovation MOULDING
Circular NTS Tech
Economy Mold &
SUSTAINABILITY Moulding
Energy management

COMPETENCIES AND CAPABILITIES

NTS S.p.A. is a medium-sized company, with 250 employees and global sales of approximately 25M€. The company specializes in mold design, manufacturing and both thermoset and thermoplastic molding.
It was founded in the '60s as a small craft business focused on constructing moulds. During the mid-'70s, NTS expanded its operation to include a molding division for compression and injection of thermoset compounds materials (primarily polyester or vynilester BMC and SMC). By the mid-'80s, NTS began to specialize also in the use of technical thermoplastic compounds by adding a new division.
Incorporated within NTS is the NTS Academy, established to foster the sharing of culture and knowledge with partners, clients, suppliers, employees, entrepreneurs, schools, and NTS Tech. NTS Tech, the consultancy division of NTS, collaborates with clients from the initial design phases, covering technical-economic feasibility and sustainability, all the way to prototyping, industrialization, and pre-series in fast manufacturing.

CHALLENGES

NTS is actively engaged in implementing circular economy, but faces different obstacles. The most significant challenge concerns thermoset scraps, due to its irreversible transformation, making recycling difficult. To overcome these critical issues NTS is working intensively on the following activities:

- The reduction of production scraps through process optimization;
- the utilization of new and advanced technical equipment;
- the implementation of sustainable practices of both thermoplastic and thermoset scraps.

LONG-TERM GOALS

While NTS produces on behalf of its customers, and, thus, lacks control over materials, geometries and end-of-life management, its long-term goal is to be able to guide the customer towards sustainable choices in materials, processes and designs. This will be achieved through NTS Academy and NTS Tech, where product sustainability is emphasized through Life Cycle Assessment (LCA).
NTS always embraces new challenges and new horizons: the decision to take a new path that will lead towards a greener and cutting-edge reality is made, through process optimization, collaboration with customers and suppliers and end-of-life reuse and recycle.

ACTIVITIES TOWARDS GREEN TRANSITION

NTS is already implementing several activities to reduce its environmental footprint, such as:

- processes optimization to reduce scraps;
- projects to increase the energy power quality;
- monitoring and optimization of the energy consumption, also utilizing artificial intelligence;
- projects to evaluate the recycling of thermosetting materials.

NTS is also actively involved in the DeremCo project (De & Remanufacturing for Circular Economy Investments in the Composite Industry), financed through the Interregional Innovation Investment (I3) Instrument under the European Regional Development Fund.

Dec. 2022 – Nov. 2025

The **DeremCo** project aims to create a systemic, cross-sectoral, demand-driven circular economy solution that will enable the cost-effective reuse of post-use composite materials and components in new high-added value products. This solution will be based on the interaction between the technical and social eco-systems at the local and interregional level and will benefit the environment, industry, consumers, and the European society.

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THEMATIC AREAS

1 CIRCULAR CONOMY

2 AUTOMOTIVE

3 STEEL

4 ENVIRONMENT

ROLE IN THE VALUE CHAIN

PRODUCT MANUFACTURER

KEYWORDS

environmental protection
SYNERGY
SAFETY
SPECIAL
STEELS
energy efficiency
circular
economy
RESEARCH
SUSTAINABLE INNOVATION

COMPETENCIES AND CAPABILITIES

ORI Martin is a modern steel plant with an electric furnace. It produces special steels to be mainly used for mechanical, energy and construction industries. Most of the produced steel supplies the automotive and railway sector.
The ORI Martin Group's constant commitment to environmental protection, health and safety at work, is an integral part of the technological development of the whole Group. Through constant investments dedicated to the reduction of polluting emissions, energy efficiency and the development of knowledge and technical skills of its staff, ORI Martin Group pursues the objective of reducing the environmental impact of its plants and the development of a wider virtuous circle of circular economy.
ORI Martin has established key relationships with business partners for research, to achieve its results and continue promoting sustainable innovation. These include research centers and universities, such as Politecnico of Milan, and private parties that the Company collaborates with, creating synergy for common projects, such as third-party companies and technological clusters.

CHALLENGES

ORI Martin is located in an urban context, close to the northern residential area of Brescia.
This implies some obstacles in the transition to green and sustainable practice. As a matter of fact, the company recognizes the importance of integrating itself with the local community, emphasizing projects dedicated to neighbourhood wellbeing and investing in sustainable innovation.
The challenge lies, therefore, in producing steel, while mitigating the environmental impact and respecting the quality of life of the surrounding area.

LONG-TERM GOALS

ORI Martin Group is dedicated to the reduction of polluting emissions, energy efficiency and the development of knowledge and technical skills of its staff. The Group's long-term goals, therefore, involve the reduction of the environmental impact of its plants and the development of a wider virtuous circle of circular economy, through new and innovative technologies such as electric furnaces, waste recovery and energy efficient processes.

ACTIVITIES TOWARDS GREEN TRANSITION

In 2022, ORI Martin began its journey to decarbonization with a strategic plan that involves a series of energy efficiency projects aimed at reducing the use of fossil fuels and electricity. Among these, there is the implementation of innovative technologies and plants and a new electric furnace (EAF) with continuous charge and electromagnetic stirrers. In addition to this, there are a number of research projects financed by the European Community and, also, industrialized projects, such as the iRecovery project for recovering heat from the fumes of the smelting furnace.
Since 2020, the Company has also actively participated in the activities of European Steel Technology Platform (ESTEP), a non-profit organization that promotes research in the technological field at European level to improve the sustainability of steel processes.

CORALIS
Industrial Symbiosis in Energy Intensive Industries

Oct. 2020 – Sep. 2024
Promotion of decarbonization of energy-intensive value chains and sectors through industrial symbiotic approaches.

ModHEATech

Oct. 2020 – Sep. 2024
Decarbonization of steel production by introducing a hybrid heating technology, using renewable energy sources.

BioRe Steel

Oct. 2023 – March 2027
BioReSteel will develop a novel concept for biocarbon production suitable and optimized for the EAF steelmaking process

InSGeP

July 2023 – July 2027
Identifying the types of slags expected in future steelmaking processes and investigation of paths for their valorization.

HEATLEAP

June 2020 – June 2023
Demonstration of the environmental and economic benefits of waste heat recovery systems.

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THEMATIC AREAS

1 HIGH PERFORMANCE POLYMERS

2 ADVANCED TEXTILE SOLUTIONS

3 SUSTAINABLE POLYMERS

4 CIRCULAR ECONOMY SOLUTIONS

ROLE IN THE VALUE CHAIN

DRIVER OF INNOVATION

KEYWORDS

RENEWABLE SOURCES Innovation Sustainability Decarbonization RECYCLING Traceability Ecodesign Engagement

COMPETENCIES AND CAPABILITIES

Radici InNova, **RadiciGroup's Corporate Innovation & Research consortium**, has the aim to develop new research and innovation projects for the Specialty Chemicals, High Performance Polymers and Advanced Textile Solutions business areas, in accordance with the RadiciGroup sustainability strategy. By leveraging internal competencies and targeted relationships with third parties, Radici InNova manages and coordinates all the Group's strategically essential research activities, with the objective of strengthening the role of innovation as a driver of RadiciGroup development.
RadiciGroup is a leading producer of a wide range of chemical intermediates, polyamide polymers, high performance polymers and advanced textile solutions, including nylon yarn, polyester yarn, yarn made from recovered and bio-sourced materials, nonwovens and personal protective equipment for the industrial and healthcare fields.
Radici InNova ensures the RadiciGroup's business continuity and competitiveness as producer of sustainable materials for several applications, creating value for the community.

LARGE ENTERPRISE

CHALLENGES

The climate change, the scarcity of resources, the more restrictive legislative contexts regarding chemical substances, the need to lighten the carbon footprint of processes and products can constitute a challenge or an opportunity, depending on the way in which they are addressed. RadiciGroup, with the competences of Radici InNova, invests in research and innovation to meet these challenges, transforming them into opportunities for responsible growth and thus offers concrete answers to customers and the value chain.

LONG-TERM GOALS

The long-term goals that RadiciGroup has set towards green transition are:

- To develop innovative and sustainable products and processes for the entire production chain to meet the challenges set by the European Union with regard to circular economy.
- To demonstrate the value of RadiciGroup products and processes through the objective measurement of performance and environmental impact.
- To anticipate the demands of the continuously fast-evolving market and stakeholders by proposing high performance and low environmental impact solutions.

ACTIVITIES TOWARDS GREEN TRANSITION

RadiciGroup has long invested in reducing emissions, limiting consumption and using energy from renewable sources in a business continuity logic that is mindful about the availability of resources for future generations. Radici InNova works on innovation, to explore and seize the various opportunities offered by the circular economy, mainly in terms of eco-design, recycling and biopolymers and making its portfolio increasingly sustainable.

Mar. 2018 – Sep. 2021

Co-funded by Piedmont Region (POR FESR 2014-2020), **Ulisse** aims to demonstrate the feasibility of industrial-scale production of polyamides (nylon) starting from bio adipic acid obtained from renewable raw materials, including waste oil and by-products of oil industry.

CarE-Service

June 2018 – Nov. 2021

CarE-Service promotes circular economy-based business models, that showcase advanced mobility services using hybrid and electric vehicles. These models emphasize reusing, regenerating, recycling vehicle components and materials for applications in the automotive industry.

PERFORM Power platFORM

Jan. 2019 – Dec. 2023

The **PERFORM** project provides solutions for electrification processes in the chemical industry and envisages the creation of a versatile pilot installation: the PowerPlatform. This will also be used after the project's completion to enable even more innovations.

ReuSIX

July 2019 – June 2021

The **ReuSIX** project aims to make hosiery, underwear, sportswear apparels, produced by circular knitting technology with recycled raw materials. These products will be manufactured adopting an eco-design approach with the aim of being able to be recyclable at the end of their life.

RESILCO

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THEMATIC AREAS

1 **STEEL INDUSTRY**

2 **CONSTRUCTION**

3 **WASTE TREATMENT**

4 **STORAGE CO_2**

ROLE IN THE VALUE CHAIN

DRIVER OF INNOVATION

KEYWORDS

CIRCULAR sustainability ECONOMY waste treatment recycled material STEEL INDUSTRY WASTE TO Cement plants ENERGY PLANTS Supply chain

COMPETENCIES AND CAPABILITIES

Resilco - a technology start-up founded in 2019 in Bergamo - has developed a unique but versatile solution for the treatment and recovery of industrial residues, such as fly ash from waste-to-energy plants, white slag from steel mills and cement plant dust.

Each year in Europe thousand of tons of industrial residues are landfilled. This approach is both economically and environmentally non sustainable. To overcome this, Resilco offers an industrial system and a complete supply and value chain to turn an industrial residue into a new material for industrial application.

Resilco's circular process is distinguished by its capability to recover and valorize diverse residual matrices, offering notable advantages, such as:

- obtaining raw materials that can find application in the construction, road sector, etc.;
- permanently storing CO_2 inside the produced raw materials;
- strongly reducing landfill disposal as well as relative costs.

CHALLENGES

The main challenges for Resilco are:

- Convincing stakeholders not only that the proposed solution works, but that it can improve outdated practices, demonstrating its long-term environmental impact and its cost-effectiveness;
- Promoting industrial symbiosis, where residues from one industrial production process can be a sustainable new raw material for another;
- Understanding and managing legislative complexities.

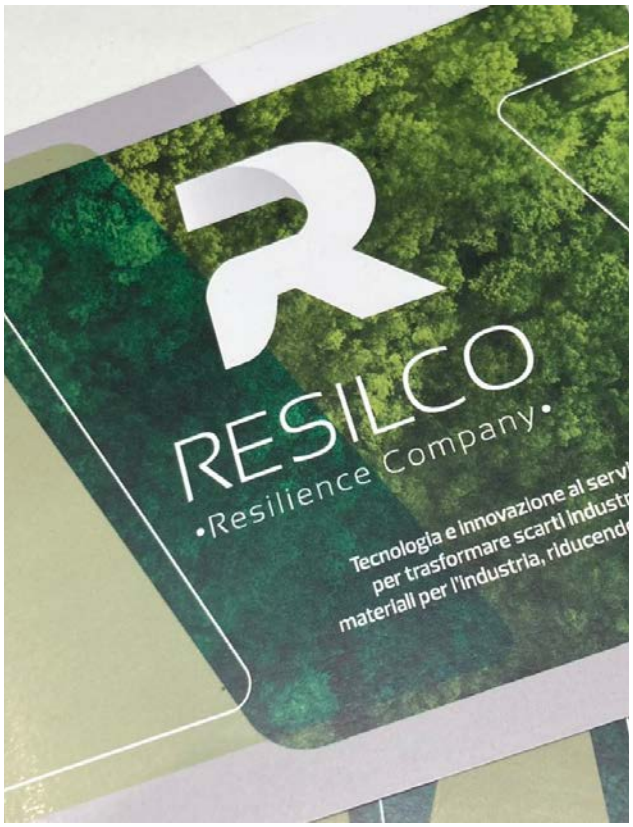
Resilco acts as a bridge between industrial players producing residues and end users with whom it collaborates to validate and define new applications using the treated residues.
In a circular economy perspective, the aim is to build a flexible, efficient and economically competitive supply chain.

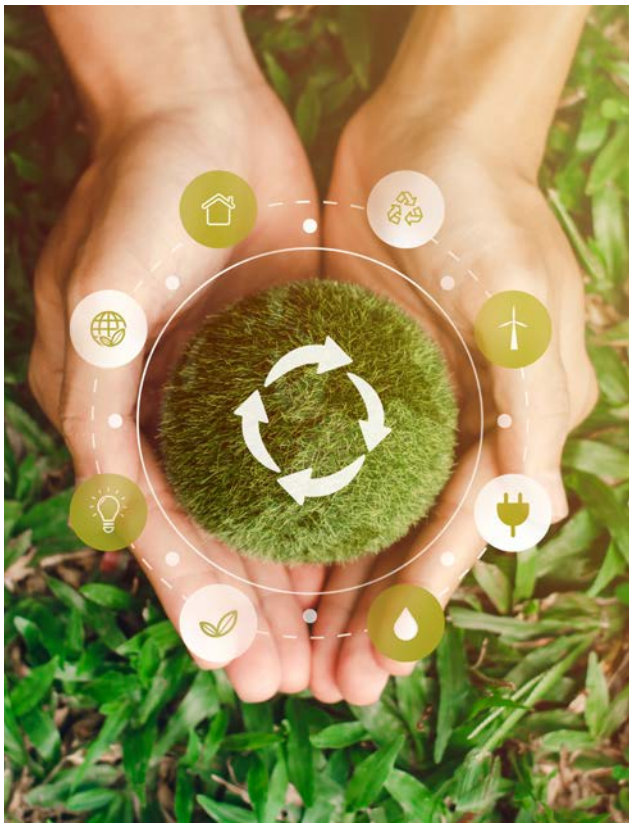
LONG-TERM GOALS

Resilco's long term goals is to position itself on the market as a supplier of integrated solutions for the treatment and the recovery of industrial residues, both hazardous and non.
This will allow to:

- reduce landfill disposal;
- preserve resources;
- consequently reduce GHG emissions.

Thanks to strong knowledge and skills in material science, Resilco believes that can contribute to solving existing and emerging challenges across many industrial sectors, contributing towards the green transition.
The company also aims to expand and bring its technology to other EU countries.





ACTIVITIES TOWARDS GREEN TRANSITION

Resilco has developed an innovative solution for recovery and valorization of various industrial residues turning what is today disposed of at an environmental and social cost into a new recycled material.
To achieve this, Resilco has worked both on the technological development but also in building a strong industrial network from the producer of residues to the user of the recycled material, following an industrial symbiosis approach.
Both the technology and the network will support the green transition by providing:

- a good quality recycled material destined to the construction industry;
- a sustainable alternative to the use of natural resources for the construction sector.

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THEMATIC AREAS

1 METALS PRODUCTION & PROCESSING

2 STEEL & ALUMINUM

3 PIPES MANUFACTURING

4 OIL & GAS

ROLE IN THE VALUE CHAIN

RECYCLING COMPANY

KEYWORDS

Innovation
HEAT TREATMENT
SUSTAINABILITY
SLAG
industry 4.0
ADVANCED METALLURGY
ENERGY EFFICIENCY
Renewables

COMPETENCIES AND CAPABILITIES

Tenaris is a leading global manufacturer and supplier of steel pipe products and related services for the world's energy industry and other industrial applications. It also supplies pipes and tubular components for low carbon content applications, such as pipes for geothermal wells, cylinders for hydrogen storage and refueling stations, line pipes for carbon dioxide transport and, structural pipes for wind farms. Tenaris operates an integrated network of steel pipe manufacturing, research, finishing and service facilities with industrial operations worldwide and a direct presence in most major oil and gas markets.
TenarisDalmine - the steel pipe operations of Tenaris in Italy - has 5 production sites, the main one located in Dalmine (Bergamo), and covers the entire production cycle, from steel production to pipe finishing. With approximately 25,000 employees in more than 30 countries, at the heart of its commitment to professional growth lies TenarisUniversity, Tenaris's corporate university, that offers high-quality, job-specific curricula and development plans that help them succeed in the many challenging assignments faced during their careers.

CHALLENGES

Tenaris' operations are already driven by a true Circular Economy approach with the 95% of recycled content in steel. The main challenges to further increase circular economy focus are:

- Technological - there is still the need for new technologies for allowing the re-use of some of the residues;
- Regulatory - the current regulations represent a barrier for the use of some steelmaking residues as feedstock in others value chains (e.g. white slag);
- Economic - significant investments are necessary to build innovative plants able to maximize process yield and to transform the residues in by-products.

LONG-TERM GOALS

Tenaris commitment in terms of environmental sustainability are to:

- Reduce the CO_2 - eq intensity of operations by 30% from 2018 levels by 2030;
- Implement CO_2 - eq reduction opportunities along the value chain;
- Minimize particulate emissions at sites;
- Foster circular economy by maximizing scrap recycling and minimizing waste to landfill;
- Ensure responsible water management.

ACTIVITIES TOWARDS GREEN TRANSITION

The activities already being implemented towards green transition are:

- Increase material efficiency - increasing steel recycling content and recover metal and mineral fractions from steelmaking residues (e.g. ReMFra project);
- Utilization of renewable electricity - there is an ongoing 11 MW solar power projects onsite;
- Energy efficiency - replacement of heat-treatment furnace to achieve improvements in rolling mill process;
- Utilization of alternative raw materials - secondary carbon carrier and bio-based feed materials are under evaluation;
- Hydrogen use - new furnaces are equipped with innovative burners H2 ready, and implementation of internal funded R&D projects on use of hydrogen in furnaces and process.

ReMFra
Recovering metals and mineral fraction from steelmaking residues

Jan. 2020 – Dec. 2023

The EU-funded **ReMFra** project aims to overcome this issue. To that end, it will develop a process that will allow the valorisation of steelmaking residues, which will be tested and validated in an industrial-scale demonstration plant.

ECO SLAG

June. 2018 – May. 2022

The **ECOSLAG** project has the objective to identify and examine operational technical solutions for waste heat recovery from steelworks slag, while obtaining slag that can be used as valuable product allowing to minimize the ecological footprint.

HyTecHeat

Dec. 2022 – May. 2026

The **HyTecHeat** project aims to validate hybrid heating technologies based on natural gas with the progressive increase of hydrogen in downstream processing. It will create a prototype multifuel combustion system that will be tested in three pilot studies.

tenova

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THEMATIC AREAS

1 METALS PRODUCTION & PROCESSING

2 STEEL & ALUMINUM

3 PYRO METALLURGY

4 HYDRO METALLURGY

ROLE IN THE VALUE CHAIN

TECHNOLOGY PROVIDER

KEYWORDS

environmental protection
SYNERGY
SAFETY
SPECIAL
STEELS
energy efficiency
circular
economy
RESEARCH
SUSTAINABLE INNOVATION

COMPETENCIES AND CAPABILITIES

Tenova, a Techint Group company, provides sustainable, innovative, and reliable solutions in the metals and mining industries. Headquartered in Italy, with over 2,300 employees across 19 countries, Tenova partners with global clients to design and develop innovative technologies and services that improve their business today and in the future, generating cost savings, energy reductions, limiting environmental impact, and improving employee working conditions.
Specifically, Tenova is dedicated to creating cutting-edge technologies that, when applied, have a reduced emission of fine particles, NOx, dioxins, and other hazardous materials. Tenova believes strongly in the potential of alternative and renewable energy sources, incorporating them into its solutions wherever possible. Hydrogen-ready technologies have been already put on the market, and many of the solutions are designed around the concept of recovery, reuse, and a circular economy, from dispersed energy to reutilized residues and more, fostering an effective circular economy.
Recognizing the importance of continuous improvement, the company allocates substantial resources to research and development.

LARGE ENTERPRISE

CHALLENGES

The metals and mining industries create numerous byproducts. Tenova's challenge is, therefore, to contribute to the Circular Economy by using its technologies and knowledge for the recovery and reuse of materials, such as lithium and white slag. For example, lithium is increasingly used in clean energy technologies, such as solar arrays and electric vehicle batteries, and this makes it a crucial metal for achieving a net-zero future. Moreover, slag, a waste that is usually disposed of in landfills, can be valorized as a byproduct.

LONG-TERM GOALS

Tenova strives to innovate continuously for its clients in the metals and mining industries, focusing on quality, energy savings, and reducing pollution and CO_2 emissions. Its goal is to support sustainable development by leveraging a comprehensive suite of lower-emission products, technologies, and services for the clients with the flexibility to meet their needs today and in the future as well. Tenova invests heavily in research and development to continue innovating technologies and business models that will continue to help clients optimizing their production process, reduce costs, improving quality, and increasing production volumes.

ACTIVITIES TOWARDS GREEN TRANSITION

Tenova's solutions contribute to the circular economy by enhancing residue recovery and reuse. One of the examples is Tenova Advanced Technologies (TAT), which adapted its SX technology developed for producing lithium from primary sources to battery waste streams (black mass), to produce high-quality lithium hydroxide. The key characteristics of this process are the high efficiency of extraction, superior to the traditional process, and a lower usage of water.
The second example is slag granulation solutions, that use forced air steam for rapid cooling and solidification. This enables the valorization of slag in the EAF process itself or as a byproduct in other sectors, such as mortar and cement production.

ReMFra
Recovering metals and mineral fraction

Jan. 2020 – Dec. 2023
Develop a process that will allow the valorization of steelmaking residues.

HyTecHeat

Dec. 2022 – May. 2026
Validate hybrid heating technologies based on natural gas and hydrogen in downstream processing.

ECO SLAG

June. 2018 – May 2022
Identify and examine operational technical solutions for waste heat recovery from steelworks slag.

InSGeP

July 2023 – July 2027
Identify the types of future slags and investigate paths for their valorization.

iSlag

July 2020 – June 2024
Develop and test solutions for fast analysis of solid slag coming from the electric steelmaking process route.

OnlyPlastic

Sept. 2021 – Aug. 2023
Work on EAF with polymers derived from plastic residue in substitution of fossil fuel.

UBIQUICOM

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THEMATIC AREAS

1 LOGISTICS

2 MANUFACTURING

3 TRANSPORT

4 HEALTHCARE

ROLE IN THE VALUE CHAIN

TECHNOLOGY PROVIDER

KEYWORDS

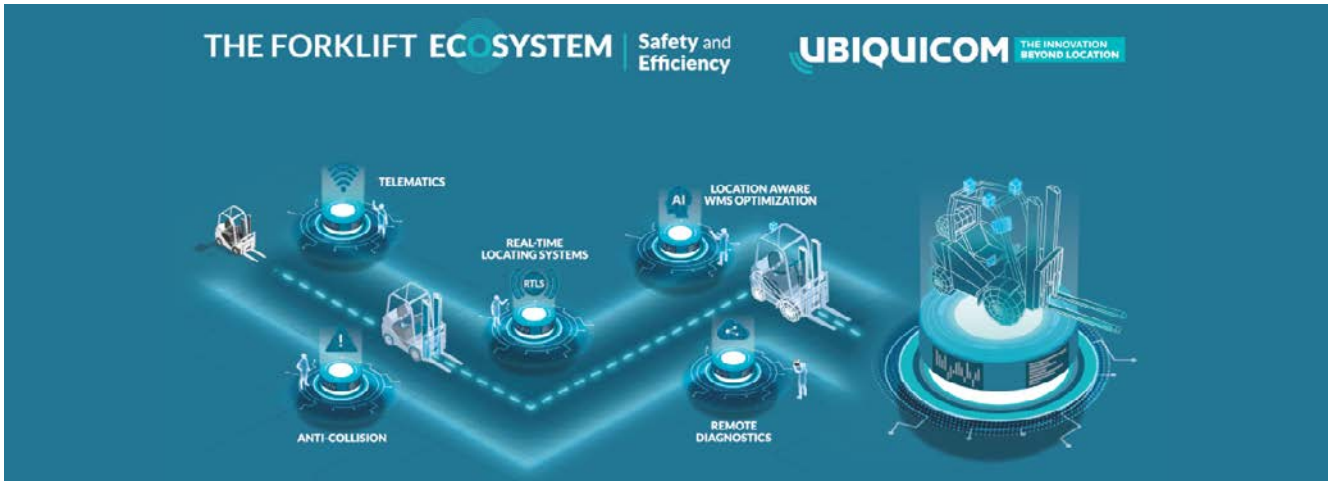
Efficiency WORKPLACE SAFETY IoT (Internet of Things) HUMAN CENTRIC SUPPLY CHAIN VISIBILITY AI (Artificial Intelligence) INNOVATION RTLS

COMPETENCIES AND CAPABILITIES

Established in Milan in 2004, **UBIQUICOM** develops advanced products and solutions for real-time locating and tracking, indoors and outdoors, using state-of-the-art RTLS (Real-Time Locating Systems) and widespread sensors in an IoT context.

RTLS can help companies achieve greater visibility in internal processes – such as inventory management, material handling equipment tracking and warehouse task planning – and throughout the supply chain. The logic by which UBIQUICOM's solutions are created is geared as much toward improving work operations as it is toward reducing environmental impact. Resource optimization, as well as accident prevention, contribute to a more sustainable working environment and responsible management of business activities. This represent a significant breakthrough in making load handling-related business processes safer, more efficient and sustainable.

In 2021, UBIQUICOM is recognized as a Niche Player in Gartner's Global Magic Quadrant for Indoor Location Services, and in 2022 and 2023, as a global leader in emerging supply chain technologies in the Hype Cycle for Supply Chain Execution Technologies, RTLS-Based WMS (Warehouse Management System).



CHALLENGES

UBIQUICOM, as a technology provider, offers highly innovative solutions that can respond and adapt to dynamic scenarios of modern markets within the logistics and industrial supply chain. The challenge is to offer solutions that bring both efficiency and safety reducing the impact into all processes that are managed using traditional approaches. UBIQUICOM solutions enable the creation of more sustainable business models for the environment, economy, and people. UBIQUICOM, as a technology provider, offers highly innovative solutions that can respond and adapt to the dynamic scenarios of modern markets within the logistics and industrial supply chain.

LONG-TERM GOALS

Technology evolution is already driving UBIQUICOM's choices towards a progressive systems integration and interaction with Artificial Intelligence and Machine Learning solutions. In the coming years, Safety & Efficiency paradigm will be more and more present in all phases of Circular Economy, such as processes optimization, savings in power consumption, reduced need for raw materials and minimum impact in the waste generation: a virtuous cycle, fueled and boosted by cutting-edge technological solutions.

ACTIVITIES TOWARDS GREEN TRANSITION

The main activities implemented towards the green transition consist of the advanced efficiency-oriented SYNCHRO software platform, based on RTLS and Artificial Intelligence, achieving substantial reductions in the daily route for material handling vehicles (in the range of -15/-20% daily).

SHINDAN is a remote diagnostic solution that makes the maintenance of forklifts more sustainable. SHINDAN acts a wireless bridge between the forklift and the maintenance technician, allowing for diagnosis and, if possible, resolution without the technician's physical presence on site. The reduction in technician travel results in the ability to manage more cases by a single operator, a significant decrease in pollution emissions due to technicians moving from one site to another, and a much more rational spare parts management, leading to reduced waste and costs. Constant maintenance based on diagnostic data also contributes to extending the lifespan of forklifts; the vehicles are continuously monitored, and any faults or anomalies can be detected before they cause irreversible damage, delaying the obsolescence of parts or the whole forklift. Finally, thanks to reduced diagnosis and intervention times, workflow disruptions are minimized, resulting in enhanced productivity. UBIQUICOM won the Vodafone Call - Action for 5G 2022 with SHINDAN.

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THEMATIC AREAS

1 OUTDOOR

2 SPORT COMPONENTS

3 FOOTWEAR

4 RUBBER COMPONENTS

ROLE IN THE VALUE CHAIN

PRODUCT MANUFACTURER

KEYWORDS

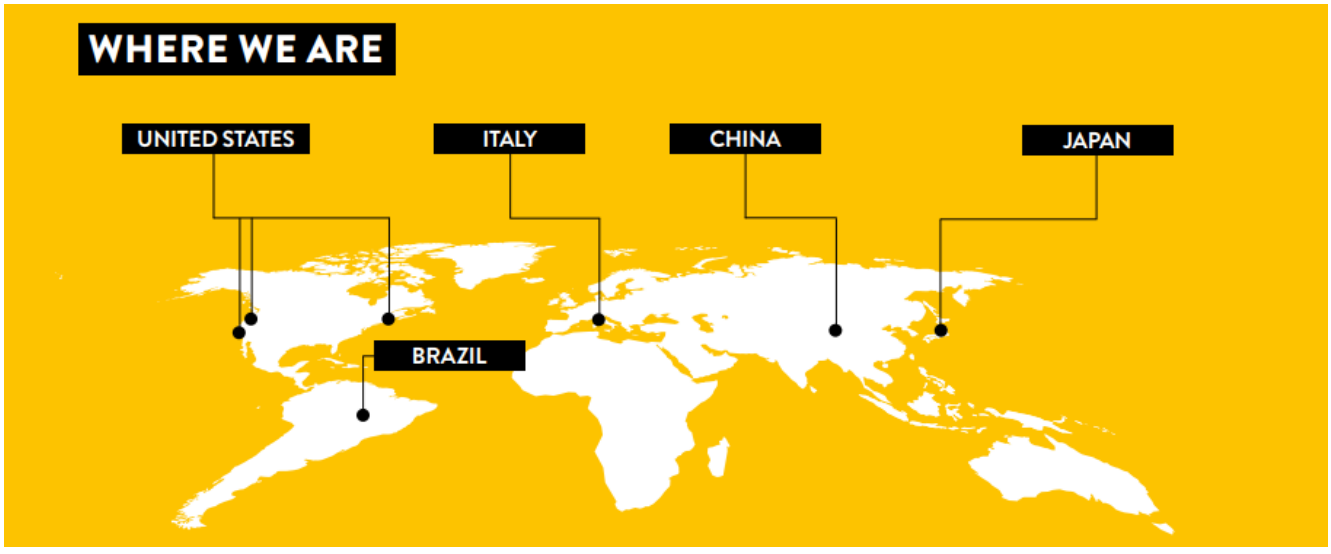
RUBBER Recycling LCA COMPOUNDING Design for MADE IN ITALY RUBBER disassembling COMPRESSION MOLDING

COMPETENCIES AND CAPABILITIES

Vibram is a world leader in designing and manufacturing high-performance rubber soles for various applications, such as outdoor and leisure activities, workwear, fashion and orthopedics. For over 80 years, Vibram's distinctive yellow octagon logo has represented quality, performance, safety and innovation in the footwear industry worldwide. Headquartered in Albizzate (Varese, IT), Vibram produces over 40 million soles annually and operates in 120 countries. The company has manufacturing, research and representation bases in Italy, USA, China, Japan, Brazil.

The core of Vibram's business and the manufacturing processes are managed through an integrated system to ensure the efficient use of resources and raw materials and to minimize the production of waste. Lean manufacturing approach, new technologies through extensive industry 4.0 investments, as well as circular solutions, like the recovery and reuse of scraps, contribute to optimize processes and reduce environmental impacts.

Additionally, Vibram promotes the durability of its products and the development of circular solutions through partnerships for recycling and initiatives that engage consumers in repairing their shoes.



LARGE ENTERPRISE

CHALLENGES

Vibram faces various challenges in implementing circular economy practices. These challenges go from the inadequate and complex legislation and standards for EoW treatment to the lack of well-established processes for collecting and sorting end-of-life footwear and multi-materials components. This poses several obstacles to the integration of circular practices into day-to-day operations.

LONG-TERM GOALS

The principles of respect and collaboration found in the world of sport and the connection to nature are pushing to act responsibly towards people and the environment. Over time, this attitude evolved into a concrete commitment to integrate sustainability into all areas and activities of Vibram's business, with the goal of reducing negative impacts to a minimum and generating benefits for society and the planet. More specifically, the long-term goals has been to reduce the consumption of virgin raw materials and carbon footprint.

ACTIVITIES TOWARDS GREEN TRANSITION

Vibram commits to develop products and process solutions that over time will allow production to become ever more circular. To this end, adopting a Life Cycle Assessment (LCA) approach is strategic. Vibram has invested in LCA, starting with the analysis of specific products. In 2018 Vibram started working on the development of a proprietary LCA software: a tool to measure the carbon footprint of all the soles and predict the potential impact of new compounds. This information will allow the designers to develop new products with higher sustainable performance.
Furthermore, Vibram is implementing different activities towards a green transition, such as treatment and devulcanization of rubber waste, with a focus on soles. Additionally, an innovative process for rubber component compression molding will be introduced, significantly reducing the energy consumption and low scrapes.

ADD·FACTOR

Sep. 2013 – Dec. 2016

ADDFactor project proposes the "Mini-factories" concept, which is conceived to be an innovative solution for the actors involved in the whole supply chain: the relationship between retailers and the manufacturing technologies will be founded on central knowledge-based design and local distributed manufacturing.

SCILED

Jan. 2019 – Dec. 2021

The project aims to equip the sector with updated high-level skills required to meet the increasing consumer demands for personalized, differentiated and sustainable products, and at the same time, to make the related job opening more attractive to young people with modern curricula and innovative learning methods.

SMALL AND MEDIUM ENTREPRISE

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THEMATIC AREAS

1 TEXTILE

2 POLYMERS

3 RESEARCH

4 SUSTAINABILITY

ROLE IN THE VALUE CHAIN

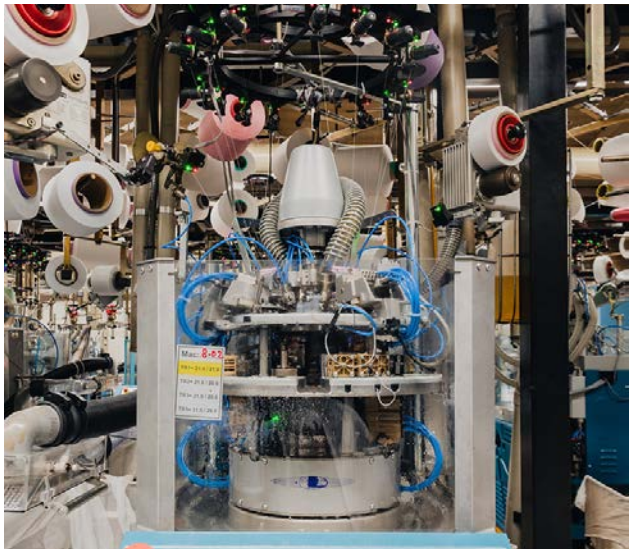
PRODUCT MANUFACTURER

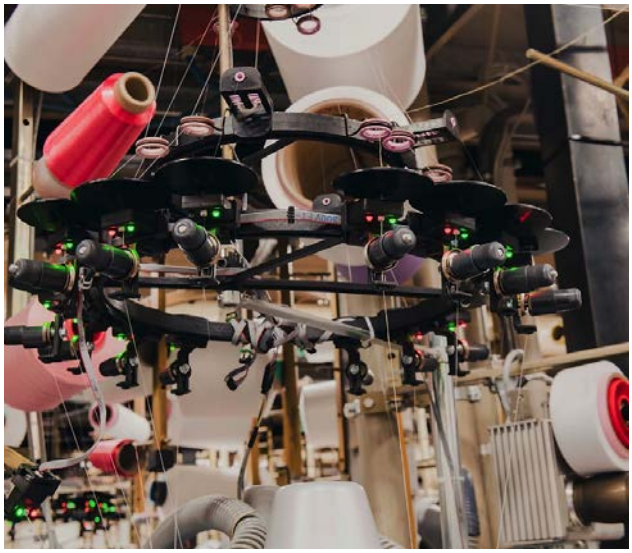
KEYWORDS

RECYCLING
CIRCULAR ECONOMY
MODELS Reverse logistics
ENGINEERING TEXTILE
tights SOCKS

COMPETENCIES AND CAPABILITIES

VMC, founded in 1957 by the **Vignoni family**, operates three manufacturing sites, two in Italy and one abroad, employing over 400 workers. VMC aims to offer their customers the widest range of hosiery products that meet the needs of today's consumers, including those made in an eco-factory and featuring innovative and functional designs following the latest fashion trends. Different yarns, such as polyamide, cotton, organic and better cotton, acrylic, wool, microfiber, nanofiber, regenerated fibers, and other innovative options, are used to offer high-quality products with exceptional thermal properties.
Their fully verticalized manufacturing cycle ensures efficient monitoring throughout production, from research and development to weaving, stitching, dyeing, and packaging. In fact, VMC has always internally managed the entire production cycle, from the initial phase to the final one, to ensure the creation of professional products. Throughout the entire process, a constant control of each production phase is carried out. The company has always been equipped with a quality manual and applies product traceability to identify the individual stages of product transformation.



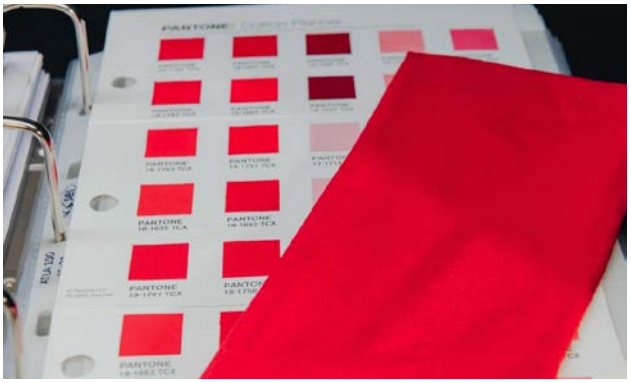


CHALLENGES

VMC - Vignoni takes pride in its commitment to an effective environmental policy for the past 40 years. Particularly, nowadays, the company faces challenges in implementing circular economy practices to further enhance its sustainability efforts. These include optimizing energy usage, recycling materials, using eco-friendly packaging, controlling emissions, and reducing chemical use.

LONG-TERM GOALS

The company's long-term goals for circular economy are to contribute to environmental preservation, reduce production costs, and promote a "green philosophy" among the customers. Their objective include optimization of energy usage, promotion recycling, controlling emissions and reducing water and chemical consumption. The company envisions incorporating innovative technologies and eco-friendly materials to further their green transition.



ACTIVITIES TOWARDS GREEN TRANSITION

VMC is actively implementing various activities for a green transition, such as:

- Installation of most up to date and better-performing knitting machines, reducing energy consumption by 35%;
- Installation of a new led lighting system with 50% energy saving;
- Replacement of high-power motors with new IE3 motors, with a reduction of energy consumption by 5%;
- Usage of a new hydrocarbon free non-mineral lubricant oil with a reduced environmental impact and 15% Energy saving.

Installation a trigeneration plant, for the joint production of electricity, heating and cooling.
Furthermore, Vignoni has established a dedicated ECO-FRIENDLY AREA where materials can be stored correctly for the subsequent recovery of all types of packaging and manufacturing waste. In particular, all the packaging used for transporting brand products are recyclable, they do not have metal hooks and are made of recycled materials. Additionally, Vignoni monitors the level of emissions, always fulfilling the requirements of authorities and, finally, it has developed a technologically innovative system for the collection, filtering, softening, and thermal recovery of the water used in the dyeing process.

POLITECNICO MILANO 1863

mecc

CIRC-eV

CIRCULAR FACTORY FOR THE ELECTRIFIED VEHICLES OF THE FUTURE

Politecnico di Milano,
Campus di Milano Bovisa,
Dipartimento di Meccanica,
Edificio B23, Via La Masa, 1,
Milano (MI)
Italy

https://www.mecc.polimi.it/ricerca/laboratori-interdipartimentali

THEMATIC AREAS

1 WIND ENERGY

2 CONSTRUCTION

3 ELECTRICAL & ELECTRONICS

4 AUTOMOTIVE

ROLE IN THE VALUE CHAIN

RESEARCH AND TEACHING ORGANIZATION

KEYWORDS

COMPOSITES Batteries SERVICE Re-manufacturing PROVIDER SUSTAINABILITY e-Mobility Circular Recycling Economy

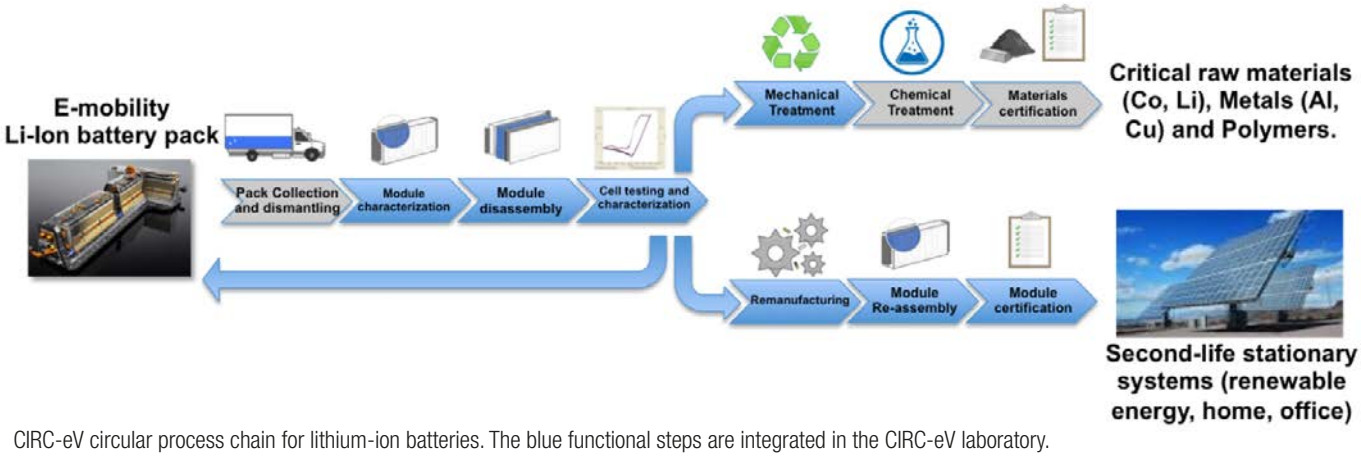
COMPETENCIES AND CAPABILITIES

CIRC-eV is an interdepartmental laboratory housed at the department of mechanical engineering at Politecnico di Milano. The laboratory was born with the vision of enabling a sustainable e-mobility sector driven by circular economy solutions.

The Lithium-ion (Li-ion) battery is one of the most critical components of a e-vehicle and at CIRC-eV research is carried out right from pack dismantling to battery testing which helps assessing the state of the batteries, after which the batteries are remanufactured and employed as second-life batteries. If not, the process shifts towards material recovery of critical elements with an in house innovative mechanical pre-treatment and/or High Voltage Fragmentation (HVF), a successive chemical treatment and characterization.

CIRC-eV also works extensively on composites especially on recycling of composites, following a cross-sectorial demand driven approach. End-of-life composites, especially thermoset composites are recycling following a high-speed shredding process, sieving followed by a dimensional characterization.

Currently, research on the technical feasibility of recycling composites and batteries with HVF is underway.



CIRC-eV circular process chain for lithium-ion batteries. The blue functional steps are integrated in the CIRC-eV laboratory.

UNIVERSITY LAB

CHALLENGES

Circular solutions for Li-ion batteries as well as composites pose unique challenges due to their complexity in design and processing:

- Design – The design of battery modules in the automotive sector is varied in terms of geometry and assembly due to which designing a standard process for dismantling, testing, remanufacturing and recycling of these batteries is a challenge.
- Use as secondary raw materials – Both critical raw materials and composites when recycled foresee a reduction in their performance parameters and present a challenge in their re-use.
- Economic – Economic feasibility of recycling and remanufacturing processes.

LONG-TERM GOALS

CIRC-eV being a part of Politecnico di Milano a leading technological university aspires to empower circular economy practices in the e-mobility and composite sector with quality research as a driver, and expanding on the technological know-how of Key Enabling Technologies (KET) that enable sustainable growth in the e-mobility and composite sectors as well. The long-term goal of CIRC-eV is also to fill the gap between scientific and industrial practices through a collaborative and engaging approach.

ACTIVITIES TOWARDS GREEN TRANSITION

The activities implemented towards green transition are:

- Optimization of recycling technologies – Innovative mechanical shredding technologies as well as high voltage fragmentation (HVF) will be optimized to recycle composites and Li-ion batteries.
- Recovery of critical raw material – Batteries that are unfit to a second life are recycled to recover critical raw materials like Li, Co to both reduce CO_2 footprint and resource dependence.

DigiPrime

Jan. 2020 – Dec. 2023

Digital technology plays a big role in our transition to a circular economy, which aims to make optimum use of resources within industries. Investing in innovation contributes to Europe's competitiveness. The EU-funded **DigiPrime** project will develop the concept of a circular economy digital platform in order to create circular business models based on the data-enhanced recovery and reuse of functions and materials.

Dec. 2022 – Dec. 2025

The **DeremCo** project aims to establish a Circular Economy solution that will unlock the cost-effective reuse of post-use composite materials and components in new high-added value products. The developed solutions will be based on the inter-relation between the technical and social eco-systems at local and interregional level to bring benefit to the environment, industry, consumers and the European society.

BATMASS

Oct. 2023 – Oct. 2026

BATMASS mobilizes an integrated interregional ecosystem around 4 Demonstrators meant to scale up, commercialize and deploy breakthrough GreenTech. It taps into the innovation power of RTOs and SMEs to accelerate market entry and international replication across EU regions and beyond. Tech transfers between less developed, transition and developed regions is expected to structure this emerging value chain and anchor it into regional innovation ecosystems.

INNOVHUB
STAZIONI SPERIMENTALI
PER L'INDUSTRIA

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Italy

www.innovhub-ssi.it

THEMATIC AREAS

1 FOOD

2 ENERGY

3 SUSTAINABILITY

4 INDUSTRIAL PROCESSES

ROLE IN THE VALUE CHAIN

RESEARCH CENTRE

KEYWORDS

SUSTAINABILITY
RECYCLING
WASTE
VALORIZATION
Industrial safety
BIOFUELS
TEXTILES
LCA
Sustainable
chemicals

COMPETENCIES AND CAPABILITIES

Innovhub is a National Research, Innovation and Technology Transfer Centre: its area of expertise covers various industrial fields ranging from energy to the food sector, with a growing interest in advanced manufacturing processes, biotechnologies and bioeconomy. It specializes in applied research, technical-scientific advices, testing and analyses with particular competence in the following sectors: paper and packaging, food, fuels, chemicals, textile fibers. The Research area provides guidance services on EU programmes, Technology Transfer, and innovation policies for SMEs.
Established in 2011 from the merger of the Innovhub Special Agency with the Experimental Stations for the Paper, Textile, Fuels and Oils and Fats Industries, Innovhub SSI is today a limited liability company wholly owned by the Chamber of Commerce of Milan, Monza-Brianza and Lodi. Thanks to its numerous highly specialized laboratories, equipped with a vast and modern scientific instrumentation, and its highly qualified staff, Innovhub SSI is able to provide customized solutions, providing integrated analysis and consultancy services to solve specific technological and/or product problems.

CHALLENGES

The company faces the significant technological challenges deriving from Circular Economy policies in terms of sustainability, environment and energy. As the company supports the development and the adoption of standards that promote sustainability and circularity of production systems, participating with its experts in the working groups of national and international standardization bodies (ISO, CEN, UNI, etc.), it has to deal with the absence of comprehensive legislation and standards that sufficiently address the current sustainability challenges.

LONG-TERM GOALS

Innovhub aims to play a pivotal role in supporting businesses within key sectors such as textiles, fuels, chemicals, renewable energy, coatings, packaging materials. The objective is to help companies in their energy transition projects and facilitate the development of production models oriented towards the sustainability and the circular economy.

ACTIVITIES TOWARDS GREEN TRANSITION

Innovhub SSI helps companies in their journey to sustainability offering LCA services, assisting in the development of CE projects and contributing to projects aimed at reducing pollution and waste.
In particular, the Horizon Europe project R3Pack is dedicated to revolutionizing sustainable packaging in alignment with the Green Deal's objectives.
Additionally, it is supporting companies in the energy sector in the adoption of low-carbon energy production and utilization systems (e.g. hydrogen, bio-methane, e-fuels).
Finally, Innovhub SSI is member of the **4evergreen forum**, a cross-industry alliance representing the entire lifecycle of fiber-based packaging.

Innovhub is part of the **Enterprise Europe Network**, the European network offering free services to support innovation, research, industrial and business collaborations in Europe.
It is the world's largest network supporting innovation, internationalization and sustainability of SMEs. It has more than 3000 local experts, more than 600 partners and is spread over 50 countries in Europe and beyond. Since it was established, the network has supported 2.9 million companies on their path to competitive growth.

June 2022- May 2025

The project aims at tackling the challenge of revolutionizing sustainable packaging in alignment with the Green Deal's objectives. The goal is to secure a fast and extensive uptake of industrially relevant, cross-sectorial, cost-effective innovative technologies allowing for the immediate substitution of complex multilayer plastic packaging with high performing fiber-based packaging. These innovations will be deployed in parallel to economical, industrial and environmental optimization of reuse schemes demonstrated at large scale.

MADE
Competence Center i4.0

Politecnico di Milano
Campus Bovisa, Edificio B8,
Via Durando, 10,
20158, Milano (MI),
Italy

www.made-cc.eu

THEMATIC AREAS

1 MANUFACTURING

2 HEALTH & SAFETY

3 SUSTAINABILITY

4 ARTIFICIAL INTELLIGENCE

ROLE IN THE VALUE CHAIN

COMPETENCE CENTRE

KEYWORDS

SUSTAINABILITY
SMES Digitalization TRANSITION
Development
COMPETENCIES RESILIENCE
Supporting

COMPETENCIES AND CAPABILITIES

MADE4.0 is a Competence Center that support Italian companies (with a focus on SMEs) through Orientation, Training, and Technology Transfer Projects. Initiated by the Italian Ministry of Economic Development (MISE), MADE4.0 serves as a tangible resource aiding manufacturing companies in their transition towards digitalization. Thanks to its network of 47 partners, MADE4.0 offers an extensive array of expertise, methodologies, and technological solutions tailored to support Italian enterprises across different topics, including digital design, product engineering, production management, 4.0 logistics, and sustainable end-of-life practices.

By guiding companies through the journey of digital transformation towards Factory 4.0—a paradigm characterized by data intelligence, connectivity, and sustainability—MADE4.0 plays a pivotal role in enhancing the competitiveness and resilience of the manufacturing sector by equipping them with the requisite knowledge, methodologies, and vision.

Thanks to the training courses developed by the School of Competencies4.0, MADE offers the best balance between the theoretical and practical parts, using the demonstrators and technologies available in the Center.

CHALLENGES

A smart and sustainable factory is a company that has embarked on a path of digital transformation towards factory 4.0 - smart, connected and sustainable - based on the integrated use of Big Data and Analytics solutions and techniques, connected devices and robotic process automation systems, through which improves visibility into resources and business processes. The challenge that MADE4.0 has to face is to make companies understand how smarter management of products, processes and people can be one of the greatest advantages of the smart factory. By increasing production and reducing waste and error margins, optimizing and making processes more efficient, it also becomes a sustainable factory.

LONG-TERM GOALS

Informing and demonstrating 4.0 technologies, explaining them through ad-hoc training activities, leading to the transfer and implementation of technological solutions through concrete projects are the goals of MADE4.0.
In the long run, MADE4.0 also aspires to increase the availability and to transfer skills and solutions to assist the companies seeking support from the Competence center.

ACTIVITIES TOWARDS GREEN TRANSITION

Digitalization is at the heart of the smart and sustainable factory. When properly harnessed, data enables companies not only to accelerate processes and move closer to market needs, but also to identify areas of inefficiency and waste, enabling targeted optimization of resources and the consequent direct or indirect reduction of emissions. With its offers of courses and its access to a demo&testing facility and teaching/learning factory, MADE4.0 responds to the needs of companies, conveying not only the benefits of innovation in terms of operational efficiency and productivity, but also a systemic change. Furthermore, MADE4.0 actively engages in different European projects that focus on promoting sustainability through resource circularity, reuse and recycling. MADE4.0 supports dissemination and awareness activities, organizing events that promote the projects and their achieved results.

ReCircleMan

Jan. 2023 – Dec. 2023
ReCircleMan aims at fostering the adoption and tracing of sustainable approaches by an innovative and circular product information management.

DEMO 4 GREEN

Jan. 2022- Dec. 2022
Demo4Green aims at spreading the demonstration of technologies, that reduce the carbon footprint of industry, in existing infrastructures of RIS countries.

VALHALLA
VALves for Hydrogen Applications by Low-emission Low-impact Additive manufacturing

2021- 2022
VALHALLA's goal is to develop a seal and two types of innovative and sustainable valves for hydrogen distribution, designed to be reused and recycled.

STIIMA

Sistemi e Tecnologie Industriali Intelligenti per il Manifatturiero Avanzato
Consiglio Nazionale delle Ricerche

Via Alfonso Corti, 12,
20133, Milano (MI),
Italy

www.stiima.cnr.it

THEMATIC AREAS

1 MANUFACTURING

2 ROBOTICS

3 ADVANCED MATERIALS

4 AUTOMATION

ROLE IN THE VALUE CHAIN

RESEARCH CENTRE

KEYWORDS

Reserach SUSTAINABILITY CHARACTERIZATION INDUSTRIAL transformation processes INNOVATION LIFE CYCLE ASSESSMENT MULTI-DISCIPLINARY APPROACH business models

COMPETENCIES AND CAPABILITIES

CNR STIIMA is the Institute of Intelligent Industrial Systems and Technologies for Advanced Manufacturing of the National Research Council (CNR). It conducts Scientific Research, Development, Technology Transfer, Training and Strategic Roadmapping to contribute to business innovation, competitiveness and sustainability and to promote the central role of people in business and society.
In particular, the activities are aimed at designing smart systems, enabling industrial technologies, products and processes that co-evolve dynamically over time, to meet different social and market needs and to support new production paradigms.
Alongside the Institute's manufacturing expertise, the areas of primary interest are represented by the study of natural and synthetic fibers and their characterization; functionalization and transformation processes; the development of solutions for ambient intelligence and ambient assisted living; the central role of the individual in the society of the future; advanced applications in the field of agricultural robotics and non-destructive quality control in the agri-food sector; bioinformatics, ecological informatics and the circular economy issue.

RESEARCH CENTRE

CHALLENGES

CNR STIIMA responds to the different needs and requests from industrial partners in various application sectors through the design of solutions and methodologies. The focus is on fostering circular economy practices ensuring economic, environmental and social sustainability. Research and technology transfer activities are applied to both process and discrete manufacturing industries with multidisciplinary support dealing with different aspects of the ecological transition.

LONG-TERM GOALS

CNR STIIMA aims to develop industrially driven circular economy solutions with high research and innovation content that are close to the needs of manufacturing supply chains. Growing collaboration with industrial partners, government agencies and other research players enables the identification of challenges and opportunities in the circular economy and the development of appropriate solutions. In this vein, the institute aims to expand its research areas, promoting interdisciplinary approaches and fostering structured collaborations.

ACTIVITIES TOWARDS GREEN TRANSITION

CNR STIIMA offers support across various activities, such as process, product and prototype hardware and software development. It provides technology assistance and application of integrated methodologies, conducting process and product analysis to improve performance, quality and sustainability. Additionally, the institute contribute to industry supply chains by engaging in strategic roadmapping, developing voluntary standards and designing targeted training programmes.

E2COI

Nov. 2020 – Apr. 2024
Optimization of energy usage at various stages of the manufacturing process.

FiberEUse

June 2017 – Sep. 2021
Enhancing the profitability of composite recycling and reuse in value-added products.

PICKPLACE

Jan. 2018 – Apr. 2021
Developing a new concept for safe and efficient hybrid pick-and-package solution.

TRICK

May 2021 – Oct. 2024
The aim is to provide a platform that will enable enterprises to collect product data.

VIRLADEE
Virtual labs for digital engineering education

March 2021 – June 2023
Giving access to physical engineering labs through their digital twins available online.

SMART Led

2018 – 2021
Developing and implementing a multi-sensor system for the automatized sorting of EOL lamps.

spatials

2020 – 2022
Creating a Lombard network with diverse skills in agri-food and nutrition.

BUSINESS SUPPORT ORGANIZATION

artser | Confartigianato Imprese

Headquarter: Viale Milano, 5,
21100, Varese (VA)
Faberlab: Via per Saronnino, 86,
21040, Origgio (VA),
Italy

www.artser.it
www.impreseterritorio.org
www.faberlab.org

THEMATIC AREAS

1 PRECISION MECHANICS

2 ROBOTICS

3 MANUFACTURING

4 POLYMERS

ROLE IN THE VALUE CHAIN

BUSINESS SERVICES

KEYWORDS

LEAN PRODUCTION SUPPLY CHAIN LOGISTICS additive manufacturing TRAINING PROTOTYPING automation MARKET STUDIES

COMPETENCIES AND CAPABILITIES

Caf-Artser srl is the operative company of Confartigianato Imprese Lombardia Occidentale (Varese, Pavia and Lomellina), the most representative association of Small Businesses in the area of Varese and Lomellina.
Caf-Artser supports companies with training, translating their strategic vision, selecting and implementing the most appropriate digital tools in line with specific business objectives, covering areas such as lean production, supply chain, logistics, cyber security, big data & analytics, digital marketing, e-commerce, cloud, robotics and automation, augmented reality, additive manufacturing, and rapid prototyping. Its activity also extends to training. Additionally, Artser provides market studies for businesses and focuses on opportunities to provide growth prospects.
Furthermore, it supports the associated companies in Confartigianato with different services such as payroll and HR management, tax and accounting, HSE, certification, management consulting, business development, knowledge management and innovation, and prototyping (3D additive manufacturer).

CHALLENGES

As Caf – Artser srl supports companies through the green transition, the challenges it has to face are multiple. On the one hand, these challenges comprise product re-design and the definition of new production processes to align with sustainability principles. On the other hand, there is the need to focus on the strategic financial planning. This will ensure optimal resource allocation and skillful project management that aids the integration of these changes, facilitating the shift towards more circular economy practices.

LONG-TERM GOALS

Caf- Artser's long-term goal is to become a "zero environmental impact" enterprise, with a focus on sustainability.
More specifically, within its production business unit – Faberlab -, the objective is to offer products crafted from recycled raw materials.
Moreover, the company commits to provide the costumers with comprehensive guidance on effectively reusing and recycling these products.

ACTIVITIES TOWARDS GREEN TRANSITION

Over the last five year, the company has actively engaged in various environmentally friendly initiatives. These include the reduction of plastic waste, the development of a Virtual office tool designed to reduce printed documents between company and costumers and during in-persons meeting, the promotion of remote working and the construction of a new branch in Tradate according to the "Green Building" approach. This approach incorporates features such as geothermal heating and a smart lighting system. Furthermore, Artser, thanks to its professionals, provides essential support for companies that want to embrace Circular Economy. This support encompasses material and product management, traceability and trackability and integrated ESG communication, ensuring a comprehensive and sustainable approach to business practices.
One of the most recent and noteworthy initiatives was the launch of an information, consultancy and active support project for SMEs to support their efforts to maintain the supply chain, to ensure more effective access to credit, to improve performance and to guarantee a high level of competitiveness and efficiency. This is developed on two tracks: the first comprises a cycle of seven public appointments aimed at companies and two round tables at the Origgio headquarters of Faberlab powered by Arburg; secondly, qualified assistance from specialised professionals able to bring in and manage all the ESG (environmental, social, and governance) variables in order to achieve a high level of sustainability.

CONFINDUSTRIA Bergamo

Via Stezzano, 87,
24126, Bergamo (BG)
Italy

www.confindustriabergamo.it

THEMATIC AREAS

1. AUTOMOTIVE
2. TEXTILE
3. ELECTRICAL & ELECTRONIC EQUIPMENT
4. POLYMERS PACKAGING

ROLE IN THE VALUE CHAIN

BUSINESS SERVICES

KEYWORDS

RECYCLING WASTE
Reuse REDUCTION
Recycled materials CIRCULAR
ENVIRONMENTAL DESIGN
SUSTAINABILITY Technological
and financial innovation

COMPETENCIES AND CAPABILITIES

Confindustria Bergamo is the leading representative organization of manufacturing companies in its province, committed to contribute to the social, cultural and economic growth of companies. It is a non-profit association of businesses, representing the industrial companies and the services sector of Bergamo, for a total of approximately 1,200 companies and 80,000 people. The aim is to support companies' economic development, to represent their views and values before the Institutions, to collaborate with other key players of the area and to provide a range of services to Members. The final objective is to enhance the general well-being of the local community through close cooperation with all other actors in the area.
Confindustria Bergamo, in line with the European strategy, promotes the transition to a circular economy model. This model allows businesses to maximize the value of products, materials and resources by emphasizing reuse, recycling and minimizing waste production. Confindustria Bergamo supports its members throughout this transition by promoting actions that strengthen the region through a cross-cutting approach to innovation, competitiveness, and skill development.

BUSINESS SUPPORT ORGANIZATION

CHALLENGES

The various ESG topics, i.e. economic, environmental, social and governance sustainability issues, are becoming central for companies and institutions in the national, European and international landscape. Consequently, Confindustria faces the challenge of ensuring that companies are able to respond to this trend. This involves also navigating the relevant regulatory developments contributing to the development of an increasingly data-driven ESG landscape. Furthermore, there is also the need to manage the collection and analysis of the ESG data along the supply chains.

LONG-TERM GOALS

Confindustria Bergamo is dedicated to support local companies in implementing Circular Economy practices. The overall objective is to provide support to businesses in their journey toward adopting sustainable manufacturing approaches. By promoting the adoption of Circular Economy practices, Confindustria Bergamo seeks to contribute to a broader green manufacturing transition, enhancing the environmental sustainability of the local industrial landscape.

ACTIVITIES TOWARDS GREEN TRANSITION

Confindustria Bergamo, through Servizi Confindustria Bergamo, offers a strategic support toward compliance with circular economy, reporting, environmental rating and green marketing standards. The support consists of a comprehensive pathway that addresses the following areas:

- Verification and validation of environmental and sustainability claims;
- Customer Satisfaction Analysis in Environmental Sustainability;
- Screening of environmental certification schemes;
- Sustainable packaging;
- Check up on circular economy performance;
- Check up on the accountability of environmental impacts.

BG Circular

BG CIRCULAR is Confindustria Bergamo's project that has been supporting SMEs with personalized circular economy programs since 2017. The project aims to develop a series of targeted actions to increase awareness and competencies of businesses regarding competitive opportunities linked to sustainable management and principles of the "circular economy" in their activities, products offered in the market, and their supply chain. Over the three-year period from 2020 to 2022, more than 120 companies were involved, with half of them taking part in various assessment and improvement paths, ranging from replacing virgin raw materials with recycled materials, fostering collaboration among companies to reduce waste, revising design, and analyzing transportation and logistics with an increasingly integrated supply chain perspective.

CONFINDUSTRIA Varese

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21100, Varese
Italy

www.confindustriavarese.it

THEMATIC AREAS

1 MACHINERY

2 TEXTILE

3 AEROSPACE

4 POLYMERS PACKAGING

ROLE IN THE VALUE CHAIN

BUSINESS SERVICES

KEYWORDS

NETWORKING MANUFACTURING TERRITORY INNOVATION INDUSTRIAL Hydrogen SYMBIOSIS CIRCULAR Green transition ECONOMY

COMPETENCIES AND CAPABILITIES

Confindustria Varese is an independent, non-profit organization of entrepreneurs, belonging to Confindustria, the main association representing Italian manufacturers. It counts 1,069 companies from all sectors and 66,132 employees. The activities focus on industrial relations, economic and training issues, services to enterprises and contacts with institutions. The commitment to sustainability is carried out through different areas and the participation in European and regional projects. More specifically, Confindustria Varese supports companies in all issues concerning the environment and territory, both for the correct application of recurring obligations and for compliance with new legal provisions. They assist companies in the definition and development of innovative projects, in the identification of funding opportunities and in fostering collaboration with universities and research laboratories. The dual purpose is to contribute to the development of a more sustainable economy and boost local growth with a green perspective.
Confindustria Varese is also working to position industrial clusters (existing and emerging) at the core of development strategies of the territory.

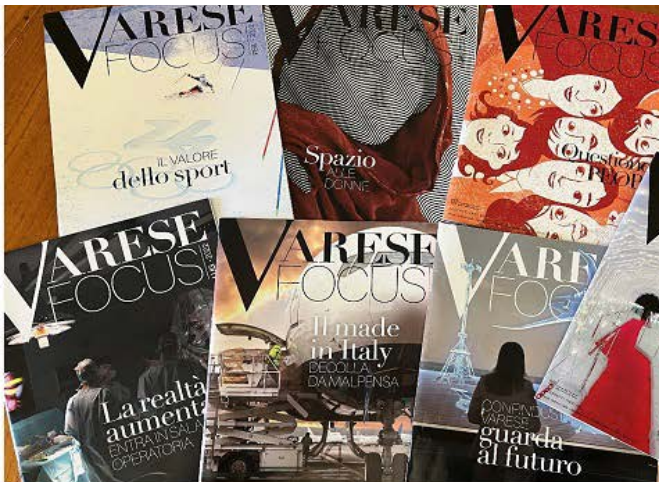
BUSINESS SUPPORT ORGANIZATION

CHALLENGES

Given the significant presence of SMEs on the territory, the main challenge Confindustria Varese faces is to guide them towards a circular economy mindset. This proves to be more challenging than anticipated, as companies perceive circular economy practices as demanding considerable effort and costs. Achieving a shift in their behaviors and processes to foster circular and sustainable practices, require substantial effort through training, information, networking and services.

LONG-TERM GOALS

Confindustria Varese is committed to pursue a long-term goal focused on ESG initiatives. The aim is to develop and foster new innovative services for the associated companies and to enhance the overall performance of the local territory. As part of this commitment, Confindustria Varese is going to keep on raising awareness, promoting and installing a recycling culture, sustainability and circular economy practices among member companies and within the organization itself.



ACTIVITIES TOWARDS GREEN TRANSITION

Confindustria Varese supports companies in becoming more circular, managing their waste and facing green transition. They monitor regulations and trends on waste, recycling, sustainable development, and innovation. Then they spread information, create network and involve companies in projects linked to sustainability and circular economy. For instance, they participated in two European projects on the theme of circular economy: Life M3P "Material Match Making Platform" and Interreg Central-Europe ENTeR "Expert Network on Textile Recycling". They are also partner of TH2ICINO "Towards Hydrogen Integrated eConomies In Northern Italy", a Horizon Europe project about the development of a hydrogen valley. Furthermore, Confindustria develops company training projects, financed by Fondimpresa and Fondirigenti, on innovation and sustainability issues providing support to companies in the path towards green transition. Finally, it implements internal green activities, such as reducing paper and plastic usage and implementing waste sorting.

Life M3P Material Match Making Platform
Cofinanziato dall'Unione Europea nell'ambito del programma LIFE

Oct. 2016 - Sep. 2019
Life M3P resulted in an online platform to exchange industrial waste among the companies of manufacturing districts. Now the platform includes recycling technologies, services about regulations and certifications for circular economy.

Interreg CENTRAL EUROPE ENTeR

July 2017 - Nov. 2020
ENTeR project developed a system capable of enhancing the value of industrial textile waste based on the characterization and classification of their properties and using an online platform (M3P) for the matching of "materials and waste".

TH$_2$ICINO

Sep. 2023 - Aug. 2027
TH2ICINO will demonstrate a hydrogen ecosystem at the heart of Malpensa Airport, creating synergies between hard-to-abate mobility and industries of Varese and introducing a tool to multiply the number of H2 valleys across Europe.

printed in September 2024
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AFIL
Lombardia

Regione
Lombardia
Cluster Tecnologici Lombardi