

CRM Group's Partnerships in the **RECYCLING** field



WALLONIA

o **Resource & Recycling Efficiency:** common initiative of CRM and ULg/GeMMe aiming to strengthen collaborations at regional level as well as in the perspective of European initiatives such as Horizon 2020, EIP and future EIT/KIC on (primary and secondary) raw materials



o **Accord-Wallonie** → ERE platform (Environment-Recycling-Energy)



EUROPE



o **ESTEP:** European Steel Technology Platform, a.o. WG « Efficient use of natural resources »



o **RFCS:** European Research Fund for Coal & Steel → a.o. TGS9 Committee 'Factory-wide control, social and environmental issues' (including recycling issues)

o **RIES:** Research Initiative for European Steel Industry = R&D&I association between CRM, BFI (Germany), CSM (Italy) and Swerea MEFOS (Sweden) → a.o. WG **Recycling**



o **SPiRE**(European R&I PPP proposal): Sustainable Process Industry through Resource & Energy Efficiency → WGs Process and Waste-to-Resource within A.SPIRE association representing 8 industrial sectors (chemical, steel, engineering, minerals, non-ferrous metals, cement, ceramics and water).



“To develop environment friendly processes & products for a sustainable future is our priority”

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CRM GROUP

Recycling - Closing the loop of metals



“Turning by products & end-of-life products into valuable secondary raw materials”

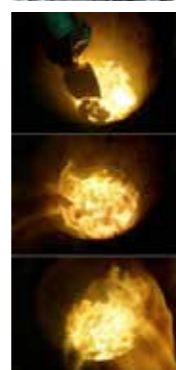
CRM Group provides its industrial members and clients with answers in terms of **R&D and technology**, focusing on process & product developments and their application from an **innovation and value creation** perspective.

The CRM Group activities and expertise deal with the whole value chain of metals and associated materials, including the **recycling or valorisation of byproducts and end-of-life products**.

Outline of RECYLING key competences & services provided by CRM Group

- o **Characterisation** of metallic content of residues, byproducts and end-of-life products in terms of **value of reuse or recycling**; on site (mobile lab) or in our unique labs and pilot test facilities
- o Evaluation and optimisation of **pre-conditioning methods** necessary to convert a “waste” into a “secondary raw material”
- o **Lab scale, pilot scale or industrial testing** of metal recovery from secondary raw materials in **high temperature processes**, either in existing melting units or in dedicated direct reduction or smelting reduction reactors (technico-economical evaluation + environmental impact)
- o Development of **advanced sensing techniques** and concepts to sort out and track secondary raw materials (based a.o. on high speed on-line image analysis, LIBS or XRF)
- o Development of **Key Enabling Technologies and new metallurgical paths** to increase resource efficiency in the process and manufacturing industries (reduced waste generation, robustness towards increased use of secondary raw materials...)

Set up of **pre-competitive R&D&I collaborative projects** in regional and European public-private funding frames.



Focus on some Projects ...

RECYMELT

In order to **recover valuable metals** a.o. from stainless steel byproducts, by **briquetting and recycling** into an electric arc furnace. Born out of a **partnership** between ULg-GeMMe, ISSeP, EMRA (CTP & BCRC) and CRM Group as coordinator, with the financial support of the Walloon Government.



ILIADÉ

The aim of this project is to have an **on-line quality control of multi-component granular materials**, in particular shredder residues from ELV or WEEE with focus on non-ferrous fraction. This is the result of a **partnership** between CSL, HEPHS, CRM Group and ULg-GeMMe as coordinator, with the financial support of the Wallonia-Brussels government.

PHOENIX

CRM Group's contribution in this project is the **valorisation of Fe rich shredder residues in combination with char** produced by other partners.

A project in **partnership** with Certech, ULg-GeMMe, CRM, Slegten-Magotteaux and Comet Traitements as coordinator, with the financial support of the Walloon Government.



... Focus on some Projects ...

ZEWA -Zero Waste

The **objective** of this project is the **elaboration of a new smelting reduction process** to valorise steelmaking slags in synergy with residues from other sectors.

A Consortium between:

Steel: CRM Group as coordinator, VAI, ARCELOR, Vítkovice R&D (CZ)

Cement: LAFARGE ;

Coal : ICPC (PL)

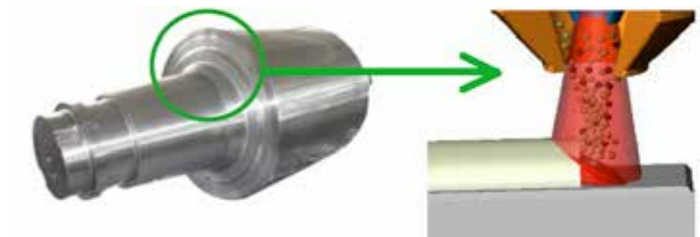
Recycling: Cometsambre (B)
with the financial support of the EU.



RECYLCLAD

The **objective** of RECYLCLAD is **to regenerate the outer hard layer of rolling cylinders by laser cladding technology** allowing to reuse numerous times the cylinder cores.

A **partnership** between ULg-MMS as coordinator, CRM Group and Sirris, with the financial support of the Walloon Government.



- Energy savings
- Lower alloy material consumption
- Development of new high performance microstructures