



Technical Group for Steel 1

Ore Agglomeration & Iron Making

Madrid, 25-09-14



PLATAFORMA TECNOLÓGICA ESPAÑOLA DEL ACERO

Proyecto: INF – 2013 – 0162 – 020000, financiado por:



Index

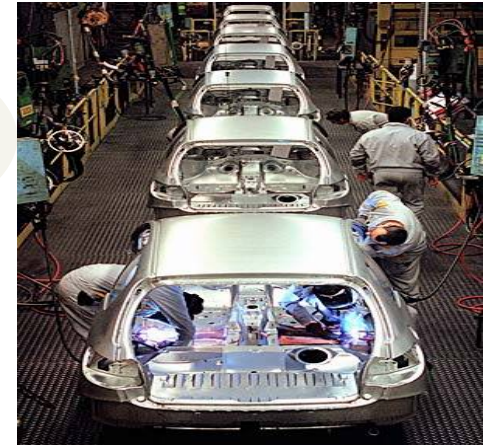
- RFCS Research Priorities - Steel
- 2014 Steel Priorities
- TGS 1 Information
- TGS 1 Figures
- TGS 1 in ArcelorMittal Spain
- Annex 1 : RFCS Information



RFCS Research Priorities - Steel



New and improved steel making & finishing techniques



RTD and the utilization of steel

Conservation of resources and improvement of working conditions



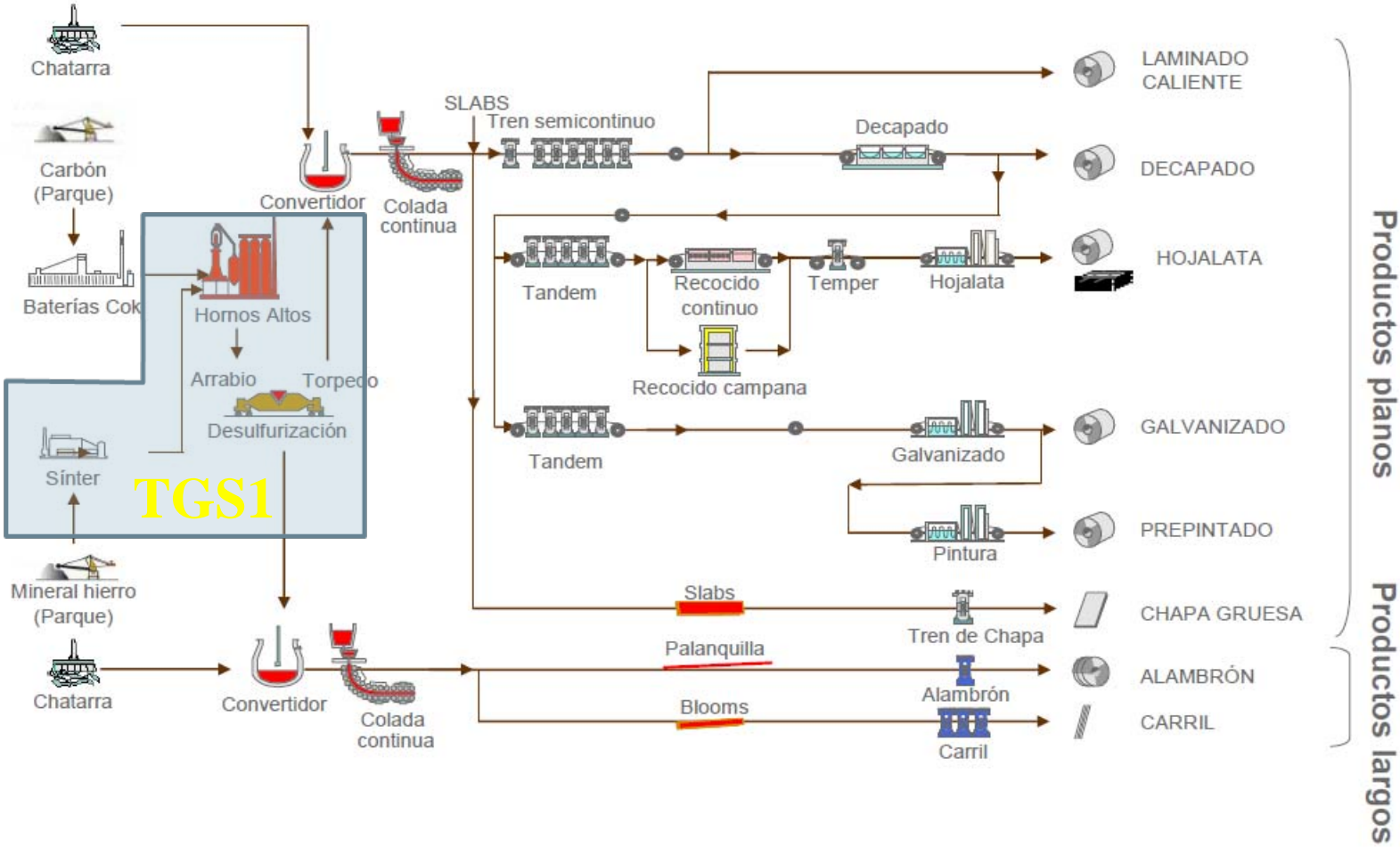
2014 Steel Priorities



- 2.1** Improved energy efficiency in high temperature processes by recovery of waste heat without drawback on environmental impact compared to present best available technologies
- 2.2** Integration of process monitoring (online/offline) AND control AND technical management of steel production using mathematical methods for a multi-criteria optimisation of steel production with respect to at least two of the following aspects: productivity, resource efficiency, product quality
- 2.3** New OR improved resource efficient processes to transform low quality primary raw materials OR secondary raw materials (e.g. slag, dust, scale, sludge, low quality scrap) into valuable products
- 2.4** Solutions directly aiming at minimizing the ecological footprint of the Steel Works with respect to one of the following issues: air, water, soil, biodiversity, CO2 emissions
- 2.5** Measurement AND on-line control of mechanical properties, through either new measurement techniques OR improved physical models
- 2.6** Development of new steel grades with improved technological property combinations (e.g. strength, formability, toughness, etc.) enabling more efficient steel applications (e.g. weight reduction, energy absorption, thermal shock resistance, wear ...)
- 2.7** Development of steel solutions for transport OR sustainable construction (focusing on energy efficiency AND carbon neutralisation) OR energy applications (including renewables) with improved life cycle assessment (LCA) results
- 2.8** Safety of steel infrastructures (e.g. tubes, pipes, pipelines, vessels, fittings, structural elements) for cost-efficient fluid storage AND transportation in the energy sector
- 2.9** Improvement of working conditions in steel production through innovative solutions by use of both modelling AND monitoring activities linked to health OR safety aspects risk management



TGS1 Scope



TGS1 – Research Axes



1. Ore agglomeration, sintering and pelletizing processes
2. New and improved iron-ore reduction processes (including DRI & C-free reduction)
3. Iron making processes and operations including slag treatment
4. Standardization of testing and evaluation methods
5. Maintenance and reliability of production lines
6. Reduction of emissions, energy consumption and improvement of the environmental impact
7. Instrumentation, modeling and control of processes



TGS1: 2014 Steel Priorities with Relevance on TGS1



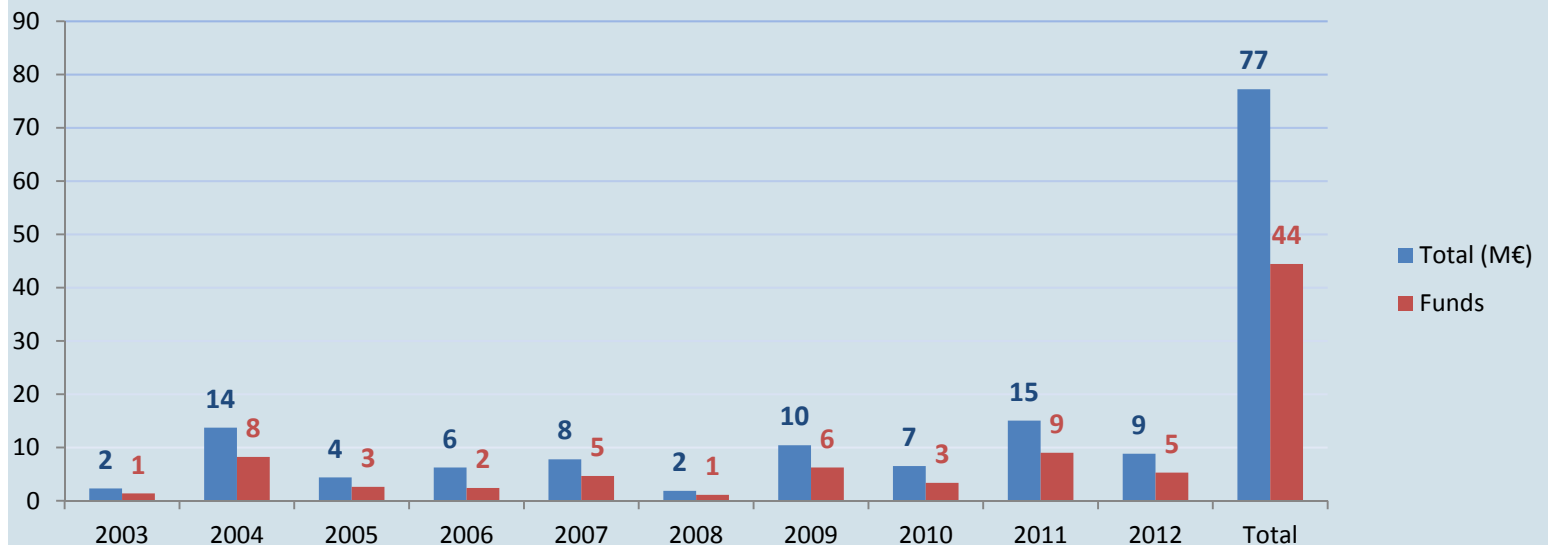
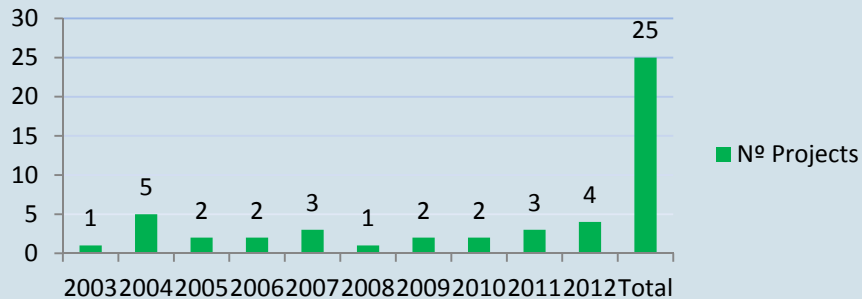
STEEL PRIORITY	PROJECT AIMS
<p>2.2 Integration of process monitoring (online/offline) AND control AND technical management of steel production using mathematical methods for a multi-criteria optimisation of steel production with respect to at least two of the following aspects: productivity, resource efficiency, product quality</p>	<ul style="list-style-type: none"> • Improvement of Process (More Steady , Higher productivity) • Process Control (New sensors, process monitoring) • Usage of new low-grade primary materials
<p>2.3 New OR improved resource efficient processes to transform low quality primary raw materials OR secondary raw materials (e.g. slag, dust, scale, sludge, low quality scrap) into valuable products</p>	<ul style="list-style-type: none"> • Recycling of Products
<p>2.4 Solutions directly aiming at minimizing the ecological footprint of the Steel Works with respect to one of the following issues: air, water, soil, biodiversity, CO2 emissions.</p>	<ul style="list-style-type: none"> • Reduction of CO2
<p>2.9 Improvement of working conditions in steel production through innovative solutions by use of both modelling AND monitoring activities linked to health OR safety aspects risk management</p>	<ul style="list-style-type: none"> • Reduction of Process Failures

TGS1: Figures 2003-2013



- 13 Different Countries in EU
- 25 Projects Funded
 - 1 Pilot Plant
 - 24 Research Projects
- 77 M€ for R&D (44 M€ Funded by EU)

Nº Projects



ArcelorMittal Spain in TGS1



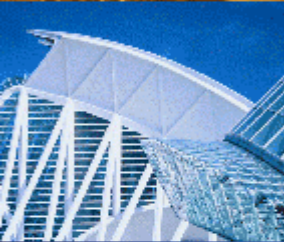
- **2003-2007:** Enhanced BF operation and service life by improved monitoring and control of the hearth and uniformity
- **2007-2010:** Improvement of hearth drainage efficiency and refractory life for high BF productivity and a well adjusted reductant injection rate at varying coke quality.
- **2007-2011:** Consistent blast furnace operation whilst using low cost materials
- **2009-2012:** New measurement and control techniques for total control in iron ore sinter plants
- **2012-2015:** Blast furnace sustained tapping practice
- **2012-2015:** Optimisation of permeability bars to customise sinter plants on changing demands

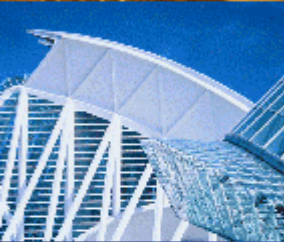


Summary Axes for research



- Improved control of the process
- Steady operation on changing demands and with low quality materials
- Higher quality control of raw materials
- Increase of equipment service life

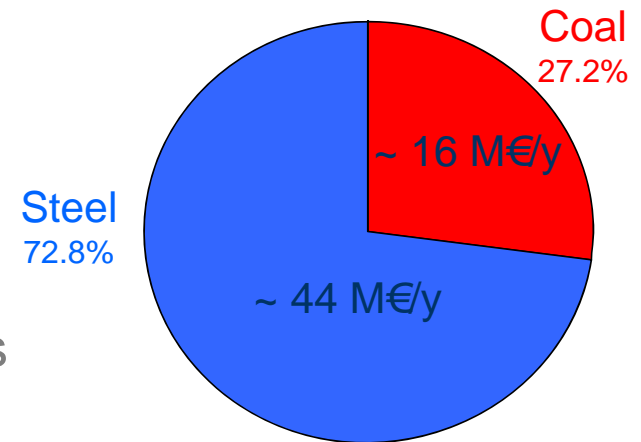




Annex I: RFCS Information

WHAT is the RFCS Programme?

- A research fund with a budget of **~60 M€/year**
- Promoting industrial research in the field of
 - Coal
 - Steel
- Open call for proposals for
 - Research projects
 - Pilot & Demonstration projects
 - Accompanying measures
- Deadline- September 15th of each year
- Outside the FP...yet closely co-ordinated & complementary



ECSC Treaty

- Treaty establishing the European Coal and Steel Community ECSC (Spanish CECA). Paris 1951
- It was created in the aftermath of the Second World War when reconstructing the economy of the Europe
- France, Germany, Italy and the Benelux countries
- The aim was to contribute, through the common market for coal and steel, to economic expansion, growth of employment and a rising standard of living
- The Treaty introduced the free movement of products without customs duties or taxes
- It was funded by levies on coal and steel production and by contracting loans
- This treaty is the origin of the institutions as we know them today.

WHY the RFCS Programme?

- History
 - ECSC Treaty expired in July 2002
 - Assets left: ~ 1.6 bn€
 - 1 Feb 2003- creation of the RFCS
- RFCS
 - Management of ECSC assets
 - A smart financial design
 - yearly returns (60 M€) used for R&D in Coal & Steel
 - R&D activities are cost-free for EU tax-payer
 - ‘Continuity & Change’

Support competitiveness & sustainable development in the EU Coal and Steel industry

WHO can participate?

Any undertaking, research institute, University or natural person established in any of the Member States

Not necessarily directly connected with the coal and iron and steel industries but the RTD proposal has to be within the scope of the programme

No threshold nor limit on budget & consortium size

Third country partners welcome (though not eligible for EC funding)



Funding ceilings



36-42
months

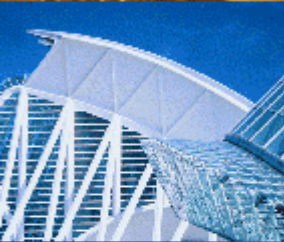


- Research projects → funding up to 60 %
Investigative or experimental work
- Pilot projects → funding up to 50 %
Construction and/or operation of a pilot installation
- Demonstration projects → funding up to 50 %
Construction and/or operation of an industrial-scale installation

18
months


- Accompanying measures → funding up to 60 % [100%*]
Dissemination and promotion of knowledge gained
[*] exceptional cases

RFCS: Technical Groups


Coal



TGC 1 - Coal mining operation, mine infrastructure and management, unconventional use of coal deposits



TGC 2 – Coal preparation, conversion and upgrading



TGC 3 – Coal combustion, clean and efficient coal technologies, CO2 capture

Steel

TGS 1 - Ore agglomeration and iron making

TGS 2 - Steel making processes

TGS 3 - Casting, reheating and direct rolling

TGS 4 - Hot and cold rolling processes

TGS 5 - Finishing and coating

TGS 6 - Physical metallurgy and design of new generic steel grades

TGS 7 - Steel products and applications for automobiles, packaging and home appliances

TGS 8 - Steel products and applications for building, construction and industry

TGS 9 - Factory-wide control, social and environmental issues

RFCS research priorities – Coal



Health and Safety
in Mines

Improving the competitive
position of Community Coal

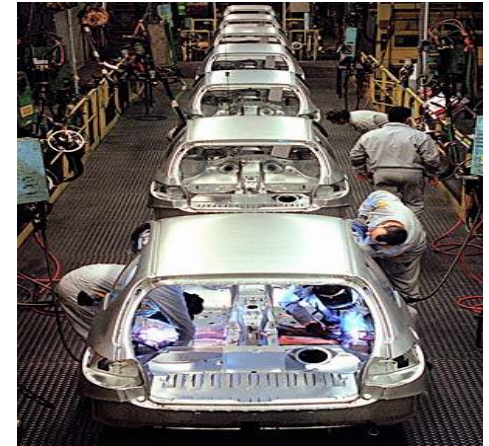
Management of external
dependence on energy supply

Efficient protection of the Environment
& improvement of the use of coal
as a clean energy source



RFCS research priorities - Steel

New and improved steel making & finishing techniques



RTD and the utilization of steel

Conservation of resources and improvement of working conditions



Evaluation scheme

Each proposal is read and evaluated independently by 3 evaluators

1

A meeting is convened by a Commission officer

2

Outcome is summarised in a consensus report

3

Evaluation criteria

1. Scientific and technical approach
Eliminating threshold - if mark < 3 , proposal is rejected
2. Innovative content
Eliminating threshold- if mark < 3 , proposal is rejected
3. Consistency of resources and quality of the partnership
4. Industrial interest and scientific / technical prospects
5. Community added value and contribution to EU Policies

* (1 Extra Point if Annual Priorities are Covered)

CRITERIA SCORED 0 TO 5

[0] fails or missing/incomplete information; [1] poor; [2] fair; [3] good; [4] very good; [5]

How to prepare a proposal

1. Easy technical English
2. Short sentences
3. Answer the questions of the Evaluation Form
4. Clearly identify the innovative content
5. Clearly link the state-of-the-art with the innovative content
6. Bibliography. EC Projects
7. Be careful with the duplication of work!!
8. Be down-to-earth
9. No too much details

Summary



- A research fund with a budget of **~60 M€/year** promoting industrial research in the field of Coal & Steel
- Any undertaking, research institute, University or natural person established in any of the Member States can participate
- **3** Technical Groups for Coal and **9** for Steel
- Evaluation Criteria must be taken into account when preparing a proposal and all questions **must be clearly identified** on if



Muchas gracias por su atención

Rubén Pérez Chust, Representante del Comité
Técnico de TGS1 en ArcelorMittal Spain
Ruben.chust@arcelormittal.com



PLATAFORMA TECNOLÓGICA ESPAÑOLA DEL ACERO

Proyecto: INF – 2013 – 0162 – 020000, financiado por:

