



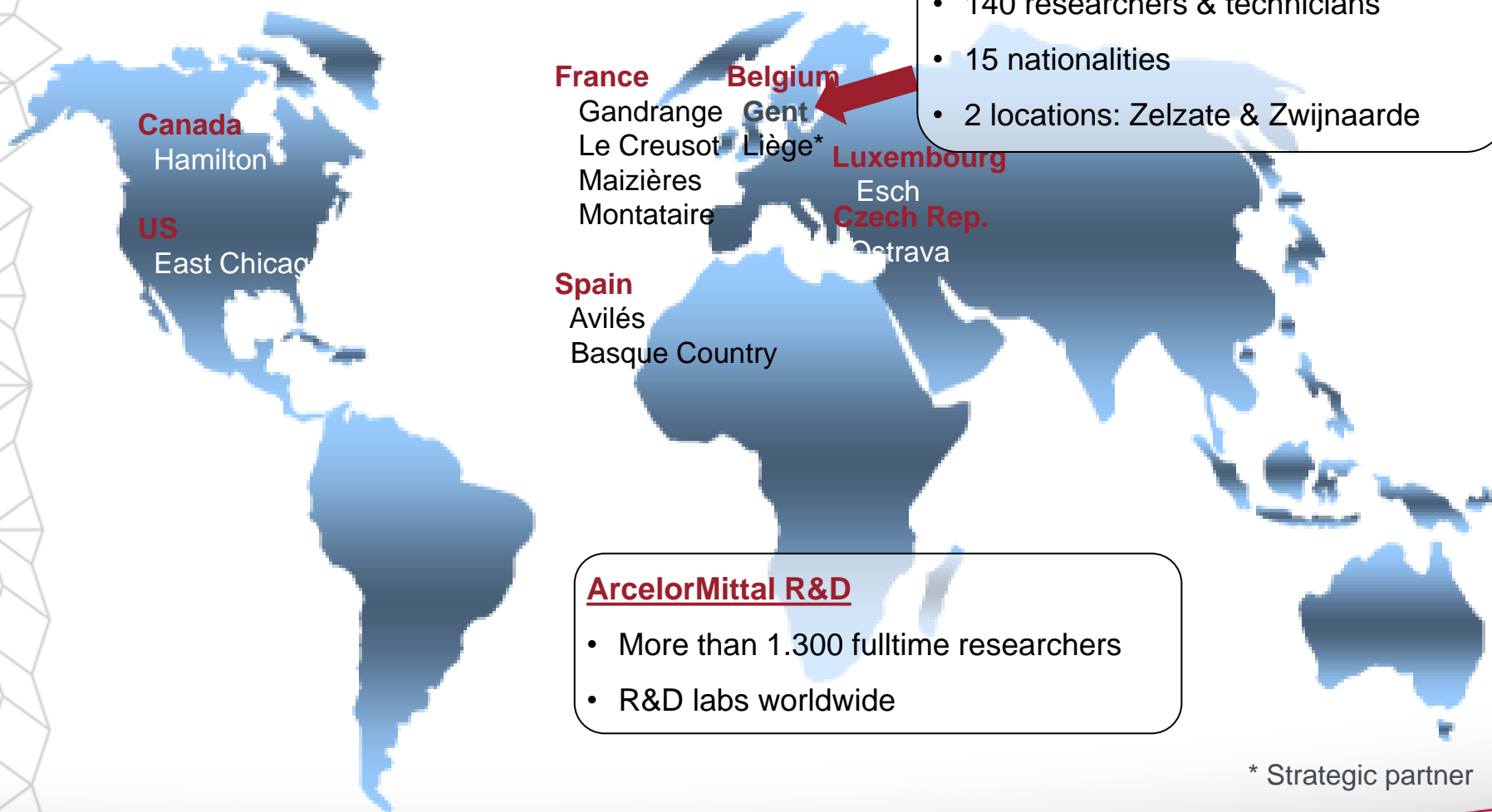
OCAS

General introduction

OCAS : a joint venture between ArcelorMittal and the Flemish Region



ArcelorMittal Global R&D



OCAS

- 140 researchers & technicians
- 15 nationalities
- 2 locations: Zelzate & Zwijnaarde

ArcelorMittal R&D

- More than 1.300 fulltime researchers
- R&D labs worldwide

* Strategic partner

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ArcelorMittal Global R&D: business & market oriented

	Flat Carbon	Long Carbon	Plates	Other
Hamilton				
East Chicago		Bars & Wires		Electrical Steel
Gandrange				
Le Creusot				
Maizières	Automotive, Packaging, Industrial Operations			
Montataire	Automotive			
Avilés	Industrial Operations			Systems optimization
Basque Country		Process		
Gent	Industry			Electrical Steel
Liège*	Industry			
Esch		Structural		
Ostrava	Industrial Operations			

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Global R&D Industry

■ OCAS - Global R&D Gent

- Metallurgy
- Surfaces
- Applications & Solutions
- Material Characterisation & Testing

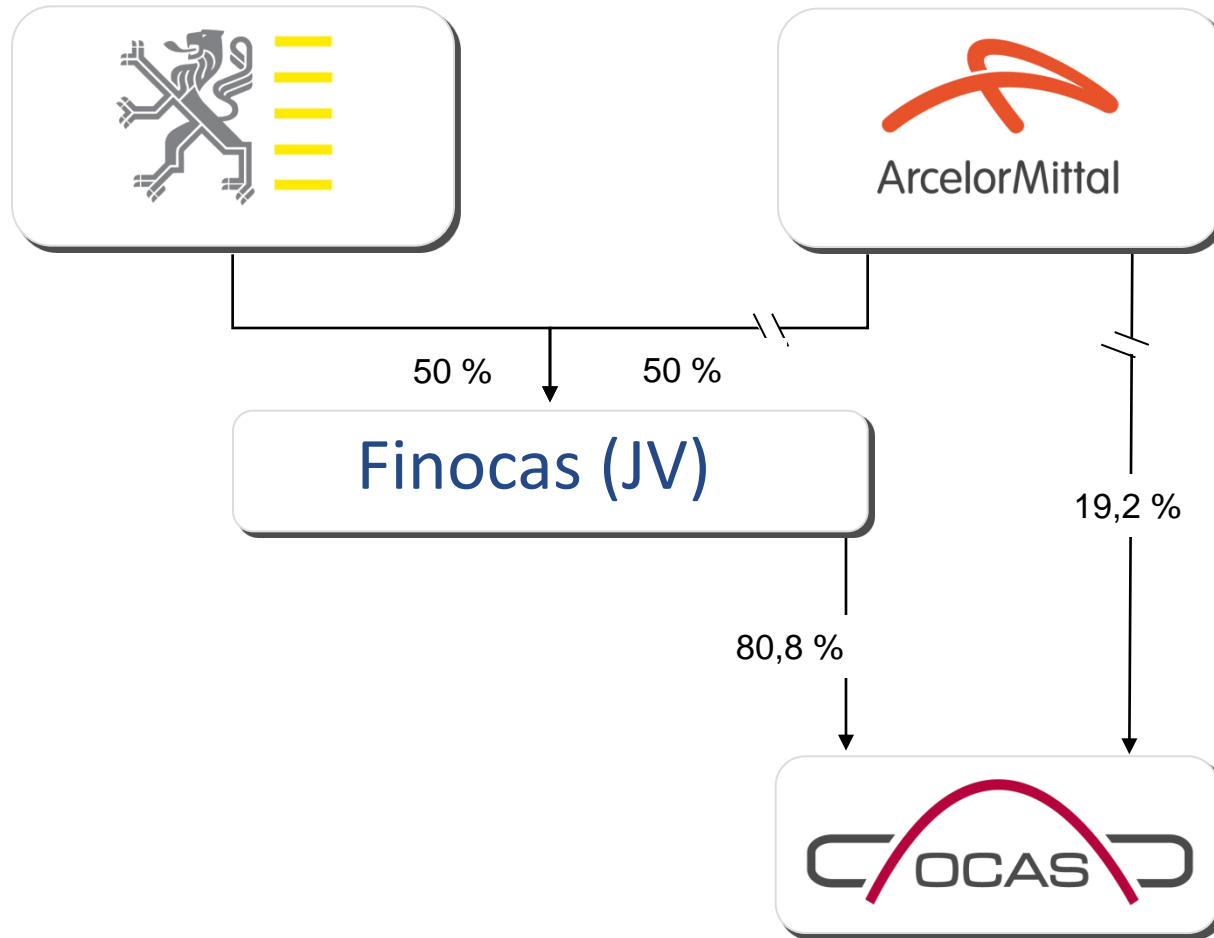


■ Global R&D Liège

- Organic coatings
- New coating technologies
- Steel solutions & design (construction)



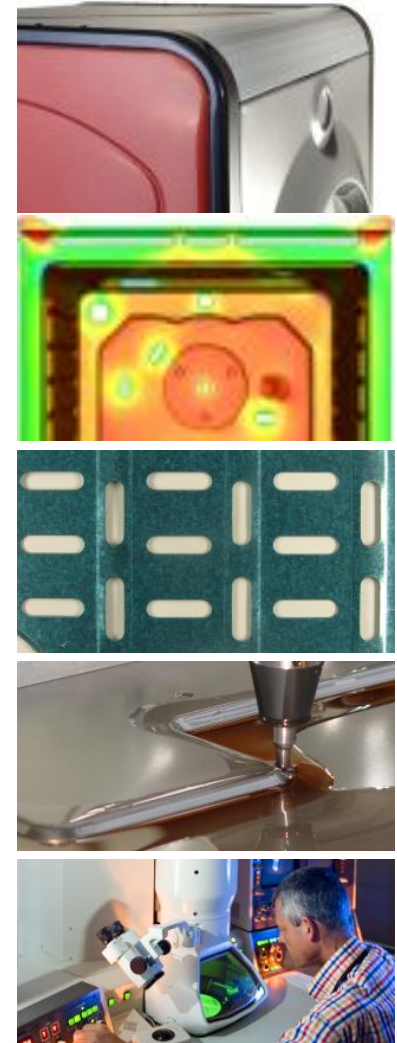
OCAS - Shareholders' structure



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OCAS - Missions

- OCAS meets its **customers'** needs
 - by developing alloys and coatings,
 - by co-developing steel applications,
 - by processing and testing of metal-based samples
- OCAS **valorizes** its know-how through product & solutions development, licenses, joint ventures and spinoffs.



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OCAS - Markets

- Industry includes

- appliances, mechanical construction and engineering, heavy plate, tubes and pipes, HVAC, radiators, drums, furniture, electro-magnetic applications, energy generation, transport and storage systems, off-shore applications etc.
- Covering product mix from 0,2 to 100 mm



OCAS - Core expertise

Metallurgy



steel grades for energy transport



steel grade development for plates



improved efficiency electrical steel



weight reduction thanks to ultra high strength steel



steel grades for future hydrogen economy



Metal Processing Centre

Surfaces



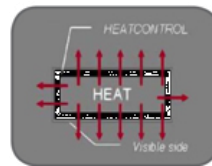
enhanced aesthetics



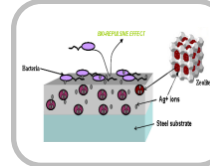
increased corrosion resistance



easy manufacturing: forming, painting, glueing, enamelling, ...



heat transfer coatings

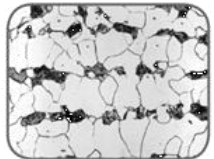


bio-active coatings

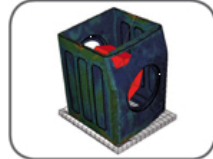


self-cleaning surfaces

Applications & Solutions



smart materials selection



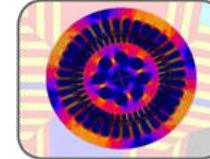
structural design of components



welding



metal sheet rapid prototyping



FEM simulations: forming, electromagnetic, heat, ...



product safety: risk assessment of welding fumes, CrVI, VOCs, ...

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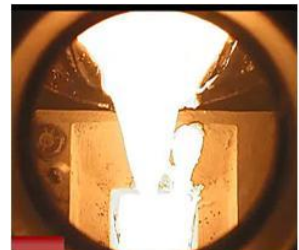
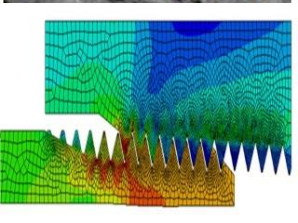
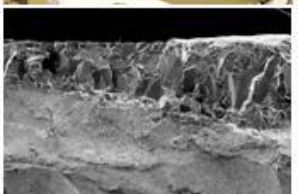
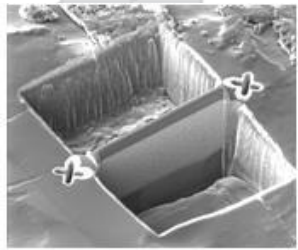
OCAS - Facilities

Unique facilities in processing & characterisation of metal alloys

- Fully equipped chemical characterisation laboratory
- Extensive electron microscope facilities
- Complete coating laboratory including novel curing techniques and corrosion laboratory
- All major welding and cutting techniques available ((hybrid) laser, SAW, MIG/MAG/TIG)
- Forming and rapid prototyping capabilities
- Complete facilities for electromagnetic characterisation
- Large experience in Finite Element Modelling

Fully integrated metallurgical processing centre

- Wide range of casting possibilities
- 5 rolling stand of which 2 continuous
- Multi-purpose dynamic annealing line with transverse flux inductor
- Complete mechanical testing facilities
- Advanced characterisation equipment like dilatometry, torsion and easy access to high speed-compression
- Complete sampling preparation facilities including waterjet cutting
- Unique reactive continuous annealing simulator
- Fully equipped hydrogen lab



OCAS – Example of market driven R&D

- Improved steel grades for industrial use
 - Development of new products
 - Co-engineering and technical assistance
 - Stronger and lighter steels



Weight reduction **20%**

Cost reduction **10%**

OCAS – Example of market driven R&D

- Customer appliances with reduced environmental footprint
 - Energy saving design
 - Ready-to-use steel products
 - Skip labour intensive and energy consuming pre-treatment
 - Reduce firing time



Energy saving 30%

OCAS – Example of market driven R&D

- Integrated steel solutions: the winds of change
 - Steel windmills are more cost-effective and longer lasting
 - Windmill tower height increased thanks to new steel grades, providing larger generators producing more green energy



Tower height increase $\times 2$
2000-2010

Installed generator power $\times 10$
2000-2010

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OCAS - Spin-offs and partnerships

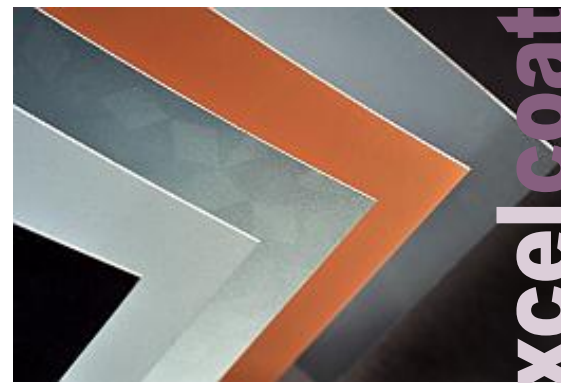
- Incubation of new industrial activities and spin-offs by leveraging steel related product and solution expertise
 - elytra: continuous manufacturing of light weight sandwich panels
 - xcelcoat: industrial deployment of advanced functional coatings
 - borit: embossed panels
- Leverage effect of R&D through partnerships
 - Design and forming centre for industry (JV with AM TOP)
 - Metal Processing Centre (JV with CRM)
 - Flamac, a division of SIM



Roestvaststaal
Koolstofstaal
Aluminium
Curv®
Glasvezelversterkte polymeren

elytra
Composite Panel S

Elytra NV | Lammerdries 18• 2440 Geel | Tel: 01428 20 90 | E-mail: info@elytra.be |



OCAS Day-to-day

- **People** year 2010
 - 140 employees
 - 16 nationalities, 45% researchers of non-Flemish background
 - 17 sponsored PhD's and post docs
 - 42 international trainees for a 3-9 month period

- **Skills**
 - Metallurgy
 - Surfaces
 - Application technologies (forming, welding, numerical simulations, etc.)

OCAS - History

- 1989 Creation of OCAS (Shareholders: Sidmar, Arbed, ALZ)
- 1995 SWB becomes shareholder in OCAS, Arbed↔LDD
- 1999 Aceralia becomes shareholder in OCAS
- 2001 Merger Arbed-Aceralia-Usinor: Arcelor
- 2003 Restructuring R&D Arcelor “Innovation 2005”
from competence centre towards market oriented research
from automotive to industry research centre
- 2004 Ocas becomes joint venture Arcelor - Flemish Region
- 2005 Deployment of R&D Business Development Unit (BDU)
- 2006 Merger Arcelor - Mittal
- 2006 Creation of 1st spin-off “Elytra”
- 2007 Creation of 2nd spin-off “xcelCoat”
- 2008 Creation of “Design and forming centre” a joint venture with AM TOP
- 2008 Creation of “Metal Processing Centre” a joint venture with CRM
- 2009 Creation of “Metal Structures Centre”
- 2009 Creation of spin-off “borit”
- 2011 Creation of “Materials Research Cluster Gent”

OCAS - Sites



Site Zelzate

Pres. J. F. Kennedylaan 3
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BELGIUM



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