

**Interreg  
Europe**



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**INERTWASTE**

**Ecocem / ArcelorMittal:**

**Manufacture of low carbon cement and concrete steelworks slag**

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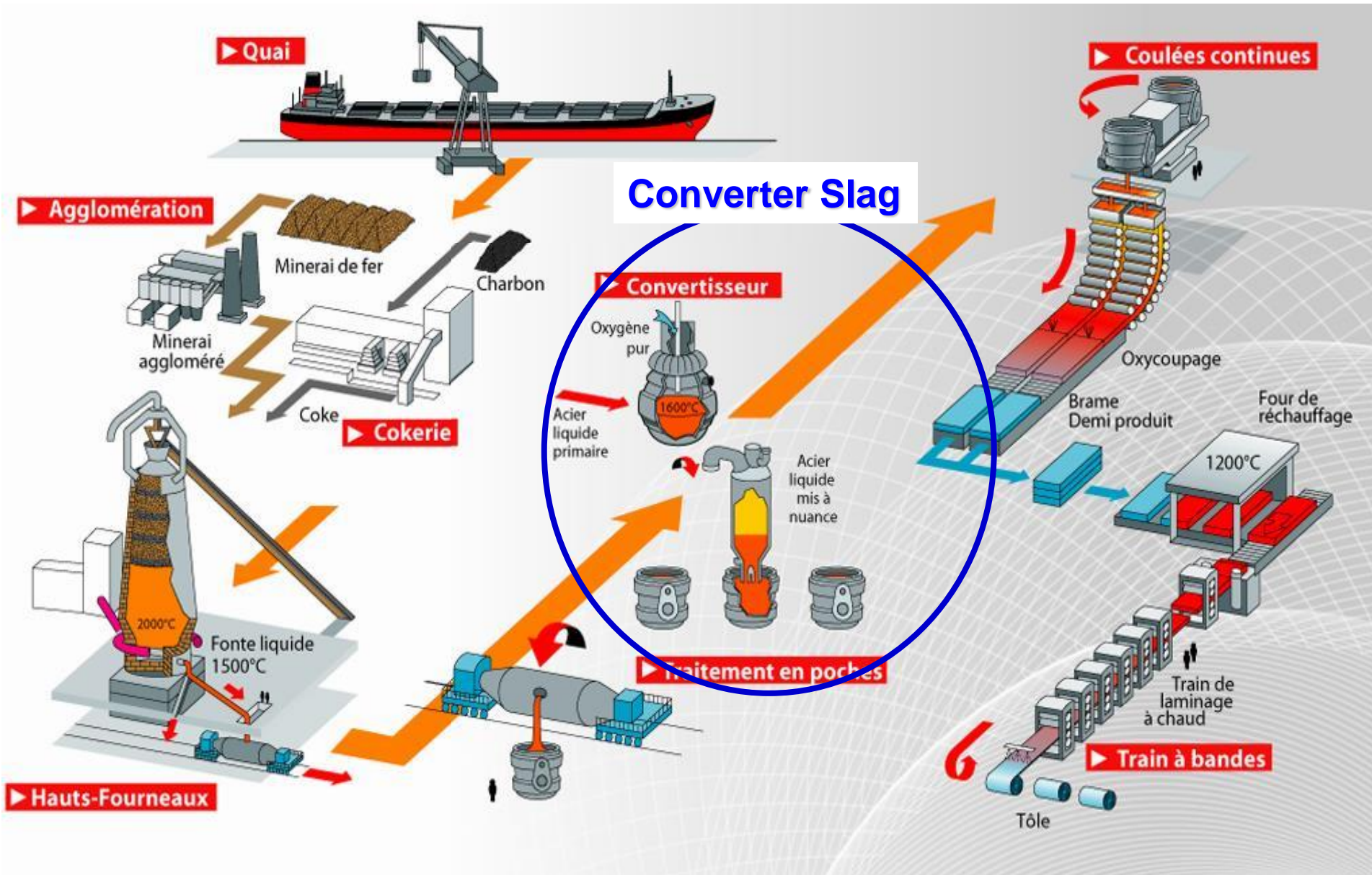
*ArcelorMittal*

9<sup>th</sup> October 2024 | Marseille





ArcelorMittal





ArcelorMittal

## Converter Slag (BOF)

200 kt/y (running at 1 BF)

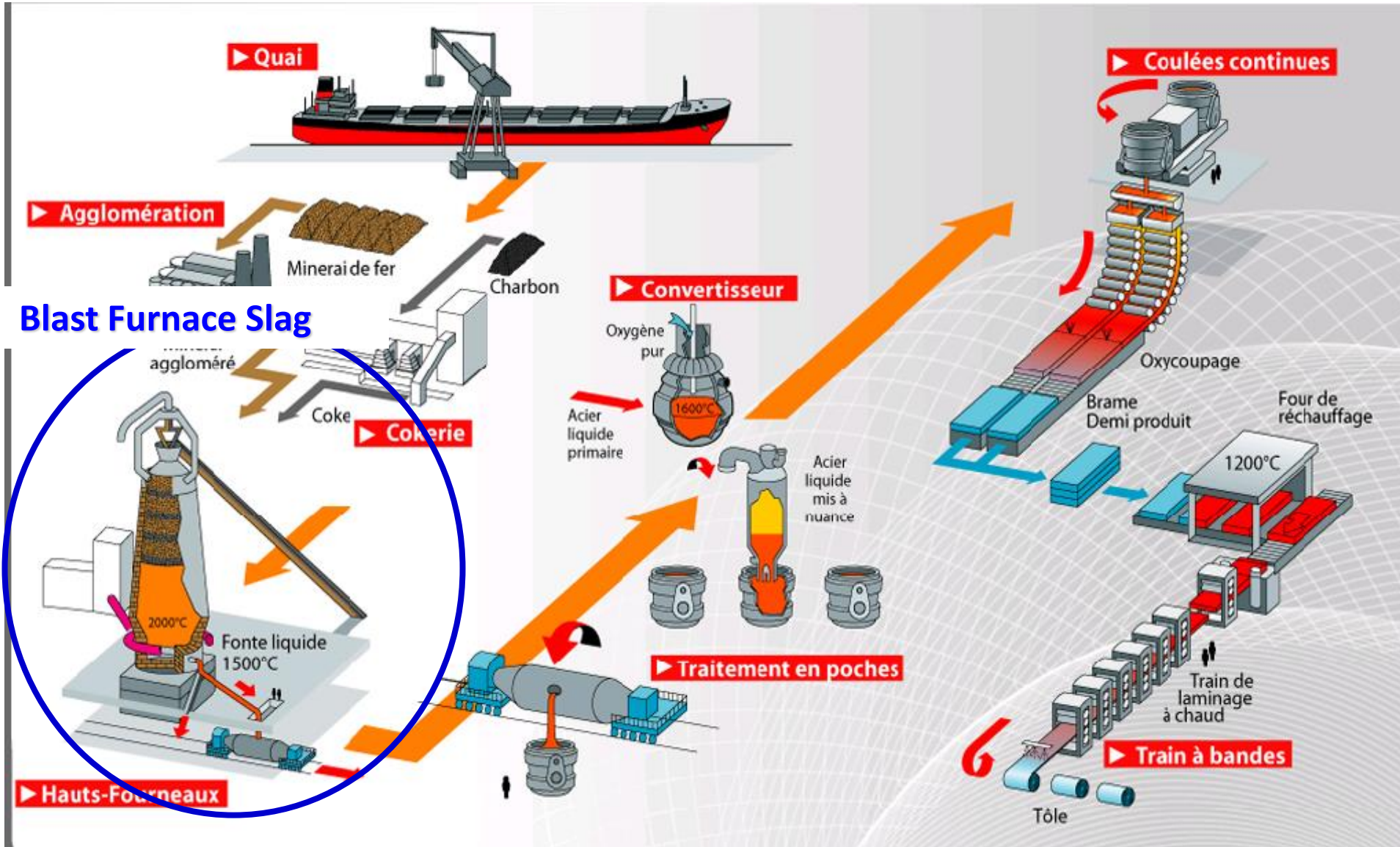
It is similar to natural eruptive stones :

- Used in road construction
- Rockwool manufacturing
- Raw material for clinker kiln

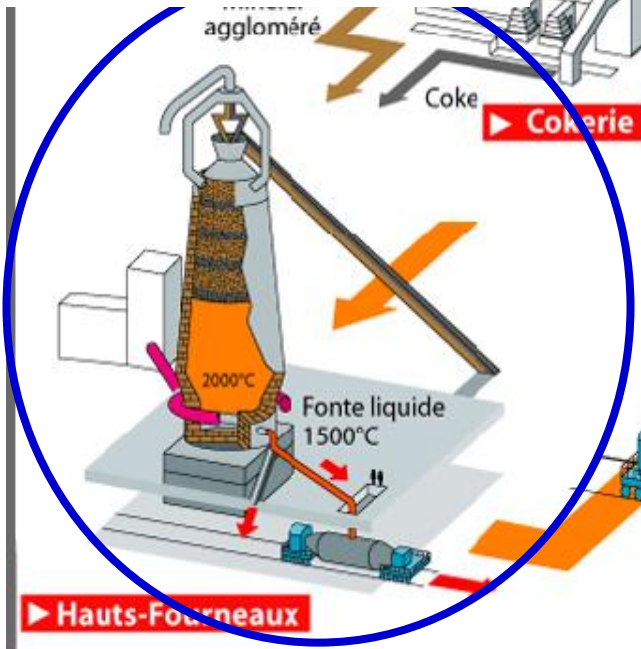




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Blast Furnace Slag



# Granulated Blast Furnace Slag (GBFS)

600 kt/y (running at 1 BF)

- 95% used in cement industry
- 5% hydraulic road binder / waste stabilization
- By replacing clinker produced in kiln, it reduces the CO<sub>2</sub> footprint of cement significantly



ArcelorMittal

# Air Cooled Blast Furnace Slag (ACBF)



ArcelorMittal

Production : 75 Kt/y

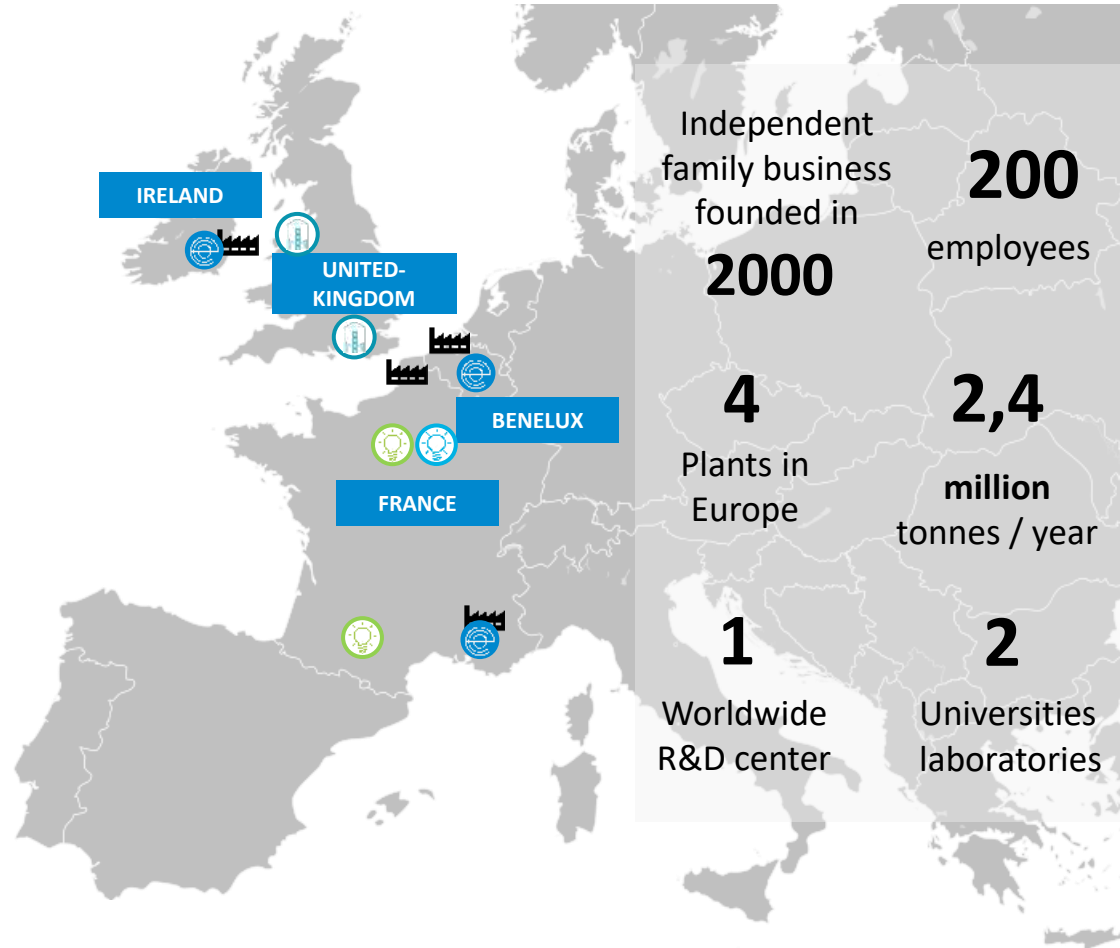
Water cooled in slag pits

It is similar to natural eruptive stones

- Used in road/building construction
- Rockwool manufacturing
- Raw material for clinker kiln



# Ecocem: the pioneer of low-carbon cement in Europe



## ECOCEM France:

**2 plants**  
Fos-sur-Mer & Dunkerque

**> 1 million**  
Ton manufactured /y

**108**  
employees

**Joint-Venture**  
ArcelorMittal: 49%  
Ecocem: 51%



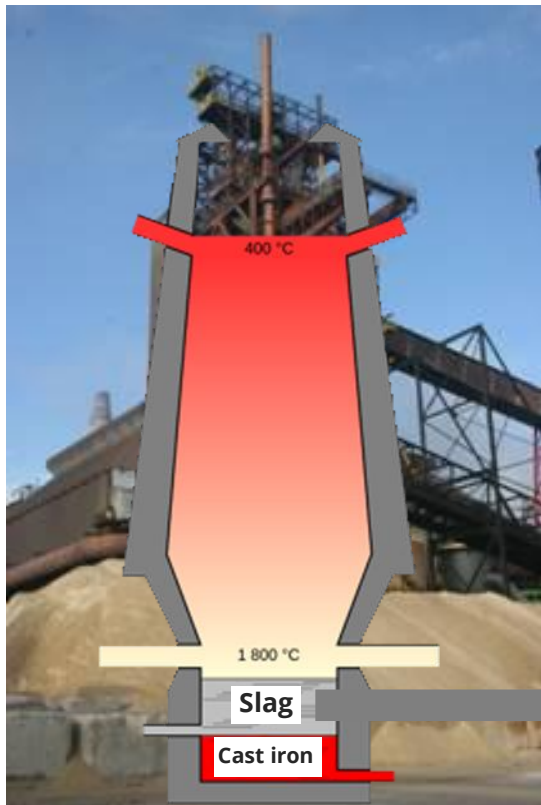
# Slag : from steel industry to granulated slag to cement



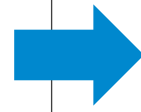
Steel industry



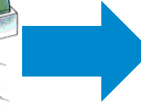
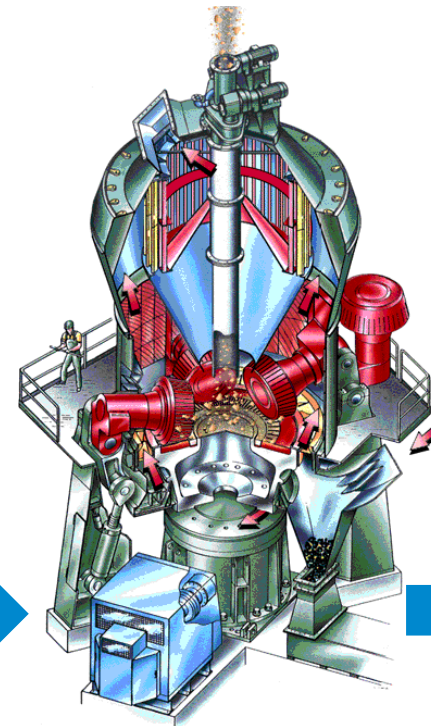
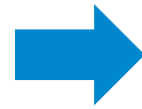
Blast furnace  
Production of cast iron and liquid slag



Water cooling



Granulated slag



GGBS

Production of ground granulated blast furnace slag



Granulated slag

Drying and grinding of granulated slag

Ground granulated blast furnace slag





# Use of GGBS in construction

**Cement is an essential constituent of concrete**



1

**In addition in Ready Mix Plant,  
in replacement of a part of cement :**

- up to 50% of GGBS in prescriptive approach or
- up to 85% with performance approach method

2

**In part for blending cement :**

CEM III/A, CEM III/B, CEM III/C, CEM V,  
CEM II/A-S, CEM VI... (standardized cements)

and other binders no-standardized



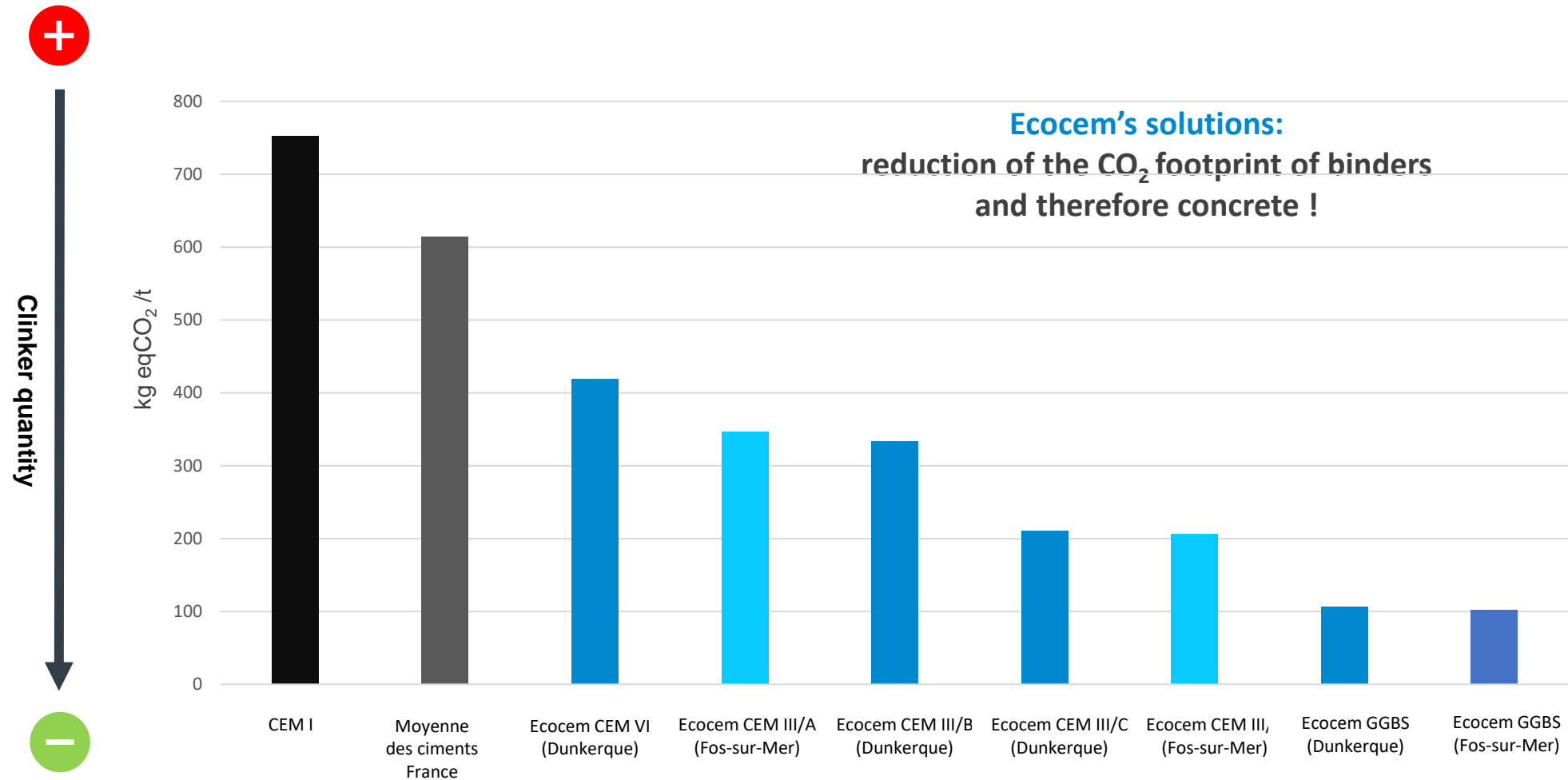
**Authorized in NF EN 206**  
(concrete standard)

- Increase the durability of concrete
- Improve architectural surface
- Decrease the carbon footprint of concrete



# A wide range of low-carbon cement and additives

## A drastic reduction in CO<sub>2</sub> emissions





# Low carbon cement in concrete designed for all construction applications

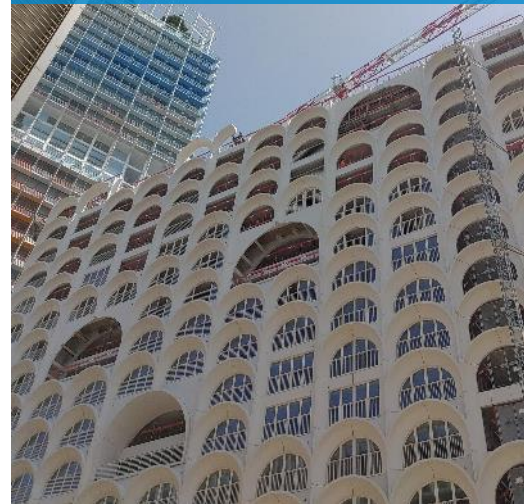
Ready-mix concrete



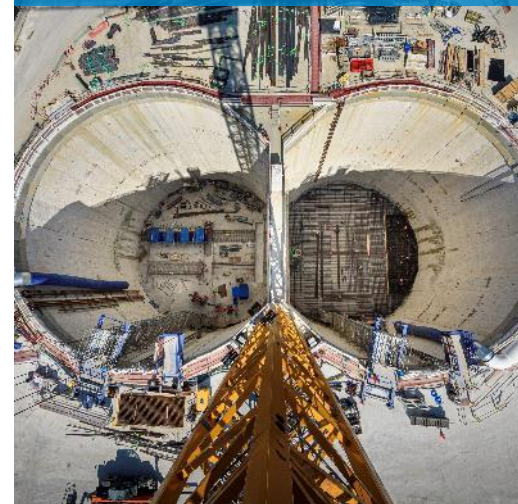
Precast concrete



Buildings



Foundations / undergrounds



Civil engineering



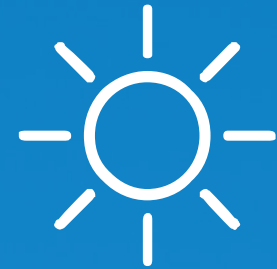
# Cement which are:



**Low carbon**



**Durability**



**Architectural  
Surface**

# Use of GGBS in BUILDINGS

**Kedge Business School**  
(Marseille Luminy)



**La Tour la Marseillaise**

**La Porte Bleue**



**La Porte Bleue Marseille**

CO<sub>2</sub> emissions  
reduction:

up to  
**-50%**

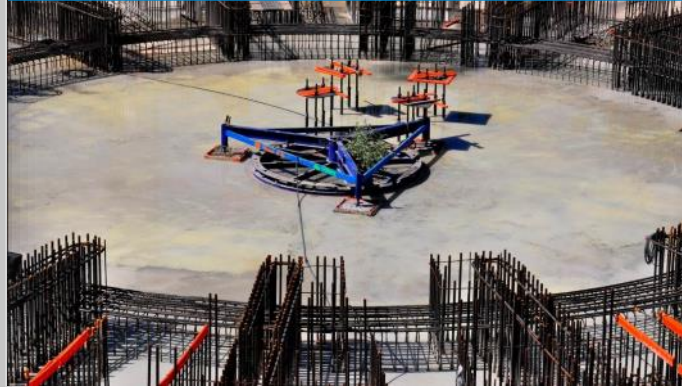
versus CEM I

# Use of GGBS in CIVIL ENGINEERING

Traffic Lane | Nice



Tokamak ITER (Nuclear Center)



Grand Paris Express



Off-shore turbines



Sewage Treatment Plant



Tunnel Segments



CO<sub>2</sub> emissions reduction:

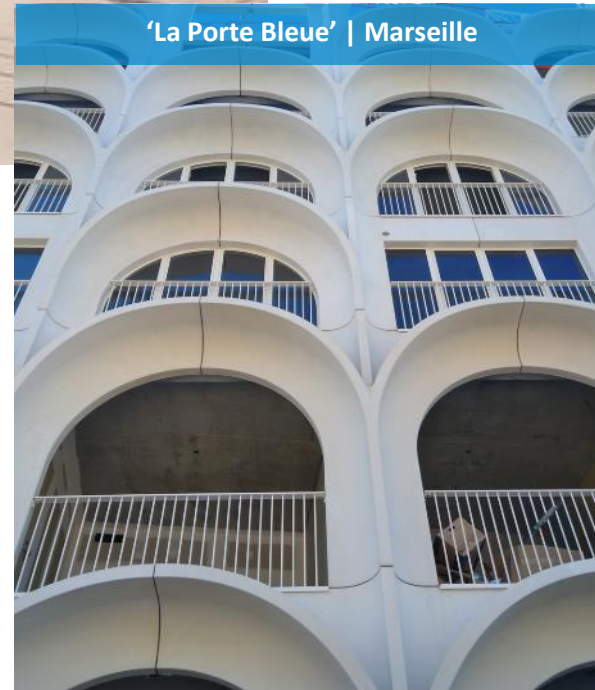
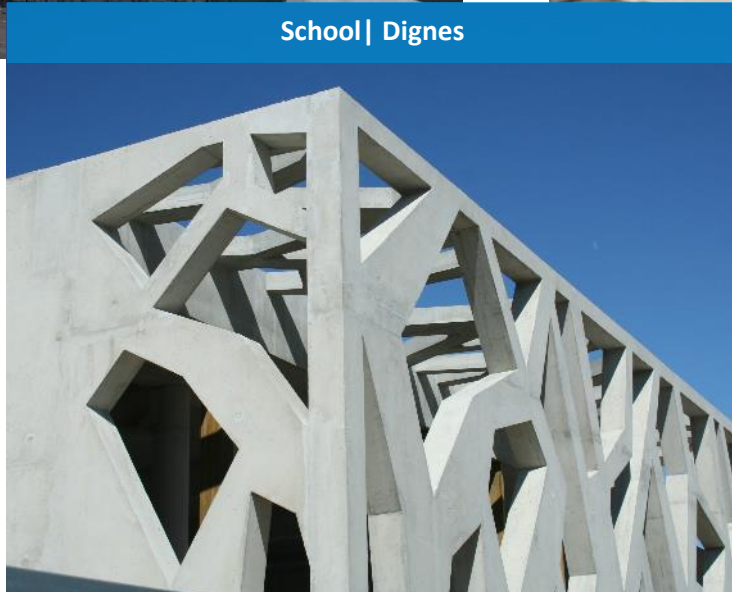
up to **-70%**

versus CEM I

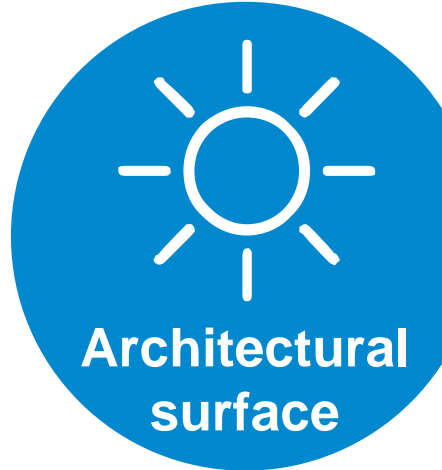


**Durability**

# Use of GGBS for its AESTHETICS ASPECT



CO<sub>2</sub> emissions reduction:  
up to  
**-50%**  
versus CEM I



# Conclusion

***Cement made by transforming a by-product and which :***

- Increase the durability of concrete
- Improve architectural surface
- Decrease the carbon footprint of concrete

***For sustainable constructions***

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