

# Review and improvement of testing Standards for Refractory products

*Objectives of the SME/End users*

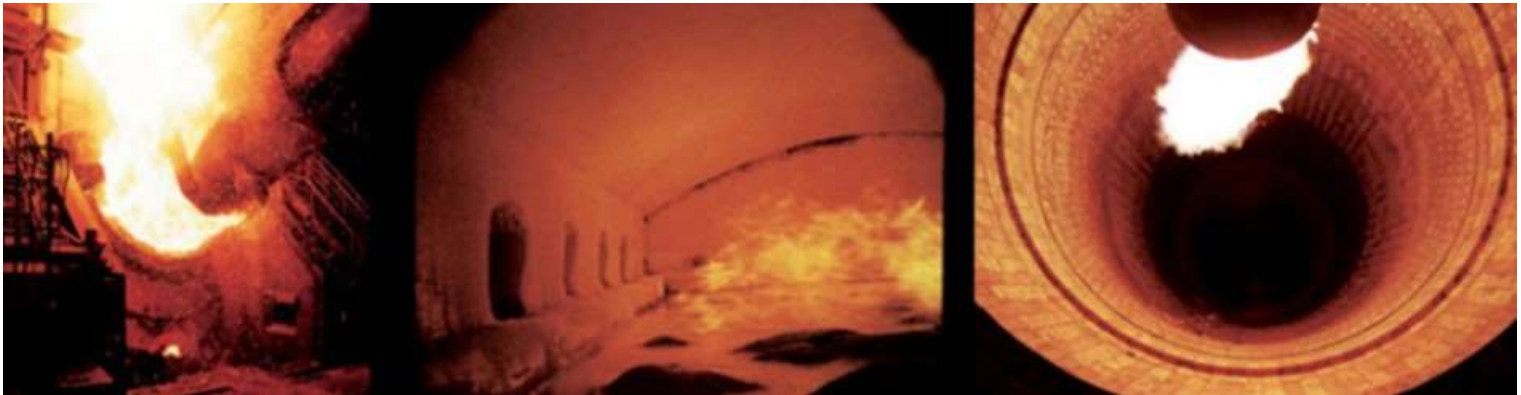
**S. Noël, F. Morin, E. Brochen**

Review Meeting, ReStaR

Brussels, 04.11.2015

## ▶ **What are refractory products ?**

- ▶ Material that retains its strength at high temperatures
- ▶ Essential for all highly industrialised processes performed at high temperatures



- ▶ High economic importance

## European testing standards for refractory products

→ base of the technical data sheets for refractory products

### ► Problem to be solved:



#### Refractory producer (data sheet):

Density : 2,750 g/cm<sup>3</sup>  
Crushing Strength : 55 MPa  
RuL: 1550 °C



#### Refractory user (control):

Density : 2,810 g/cm<sup>3</sup>  
Crushing Strength : 65 MPa  
RuL: 1525 °C



Significant deviation?

To be expected ?

**Could it be improved ?**

## ► Implemented solution:

**Collaborative technical work** involving the major European refractory testing laboratories.



The prime scientific objectives are to:

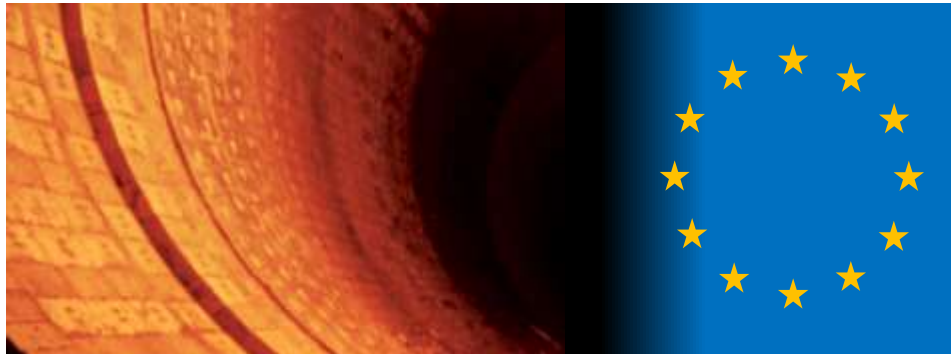
- ▶ figure out and improve the repeatability and reproducibility of the EN testing standards for refractory products;
- ▶ point out and optimize the practice relevant Influencing factors for the different testing methods;
- ▶ get reliable precision data for EN testing standards (reference sheets);
- ▶ bring the EN testing standards in line with the state-of-the-art;
- ▶ develop a robust investigation method for the systematic review of testing standards (guidelines and methodology)

The economic objectives for refractory producers/retailers are to:

- ▶ increase the competitiveness of the European SME refractory producers;
- ▶ improve the reliability of the EN testing standards;
- ▶ prevent the occurrence of off-specification batches and complaints from refractory (end-) users;
- ▶ demonstrate the quality of reviewed EN testing standards with the perspective to adopt European Standards in the ISO system;

The societal objectives are to:

- Defend the interest of SMEs in the standardization work;
- increase the international recognition of EN testing standards;
- promote European collaboration for the standardization work.



Expected output from project

From the side of the involved SMEs

- Investigation results: know-how direct “from first hand”, increasing of own expertise
- Precision Data for the investigated EN testing Standard: securitisation of own quality control
- Methodology to investigate EN testing Standards (ECREF)



Expected output from project

From the side of the European SME-AG (Cerame-Unie / PRE):

- Methodology to investigate EN testing Standards: continuity in the PRE engagement since the issue of “PRE Recommendations”
- Drafts of reviewed EN testing Standard
- Achievement of an European collaboration for the standardization work and defending the interests of SMEs

## Assessment of current status

### Project meetings (second reporting period):

Meeting	Participants	Venue	Date
WP4 technical progress meeting	ECREF, CU/PRE, FGF, ICAR, ITMA, <u>ICiMB</u> , CRIBC, <u>Cald</u> , <u>Lucideon</u> , <u>Refractaria</u>	Aachen, <u>germany</u>	24/09/2014
Project status meeting, 2 <sup>nd</sup> steering committee meeting	ECREF, CU/PRE, ICAR, FGF, ITMA, <u>ICiMB</u> , CRIBC, <u>Lucideon</u> , RHI, <u>Haasser</u> , <u>Refractaria</u> (represented by ITMA)	<u>Moncel-lès-Lunéville</u> , France	22-23/10/2014
WP5 technical progress meeting	ECREF, CU/PRE, FGF, ITMA, ICAR, <u>ICiMB</u> , CRIBC, <u>Cald</u> , <u>Lucideon</u>	Brussels, Belgium	03/03/2015
Project status meeting, 3 <sup>rd</sup> steering committee meeting	ECREF, CU/PRE, ICAR, FGF, ITMA, <u>ICiMB</u> , CRIBC, <u>Lucideon</u> , RHI, <u>Refractaria</u> , <u>Haasser</u> (represented by ICAR)	Gliwice, Poland	18-19/05/2015
Final Project meeting, 4 <sup>th</sup> steering committee meeting	ECREF, CU/PRE, ICAR, FGF, ITMA, <u>ICiMB</u> , CRIBC, <u>Lucideon</u> , RHI, <u>Refractaria</u> (represented by ITMA), <u>Haasser</u> (represented by ICAR)	Leoben, Austria	19&21/09/2015

Minutes of these meetings are available on the private part of the project website.



## Assessment of current status

### Project visibility and dissemination:

- ▶ ReStaR logo



- ▶ ReStaR website: [www.restar.eu](http://www.restar.eu)

- Public website

- Private area



The screenshot shows the public website for the ReStaR project. The header features the ReStaR logo and the tagline "Review and improvement of testing Standards for Refractory products". Below the header, there are three images: a close-up of a refractory material being tested, a large industrial furnace, and a cross-section of a refractory pipe. The main content area includes a navigation menu on the left with links for Home, What are refractory products?, Testing Standards for refractories, Our objectives and approach, At a glance, Consortium, Publications, Work Packages, Contact, and Private. The main text area welcomes visitors to the public website of the FP7 Collaborative Project ReStaR and provides a brief description of the project. A photograph shows a meeting in progress, captioned "Snapshot from the ReStaR final meeting". The project description states that refractories are essential for highly industrialized processes. The right sidebar features logos for the 7th Framework Programme, the European Union, and the European Centre for Refractories (ECREF), along with a mention of the UNITECR 2016 congress.

## Assessment of current status

### Project visibility and dissemination:

- ▶ Newsletters: PRE, Cerame-Unie, CEN, ...



Assessment of current status

**Project visibility and dissemination:**

▸ Events

Date	Event	Location
<b>24-25 September 2014</b>	57 <sup>th</sup> International Colloquium on Refractories	Aachen, Germany
<b>3-4 December 2014</b>	Ceramic Days 2014	Brussels, Belgium
<b>4th March 2015</b>	PRE Technical Committee Meeting	Brussels, Belgium
<b>20-22 May 2015</b>	the XVI International Scientific Conference Refractory materials	Wisla, Poland
<b>27-29 May 2015</b>	2015 PRE Congress	Istanbul, Turkey
<b>12 June 2015</b>	VDFFI (Association of the German Refractory Industry) members meeting	Nuremberg, Germany
<b>15-18 September 2015</b>	Biennial Worldwide Congress UNITECR 2015	Vienna, Austria
<b>22 October 2015</b>	SPMO (Association of Refractory Materials Manufacturers in Poland) members meeting	Poland

## Assessment of current status

### Project visibility and dissemination:

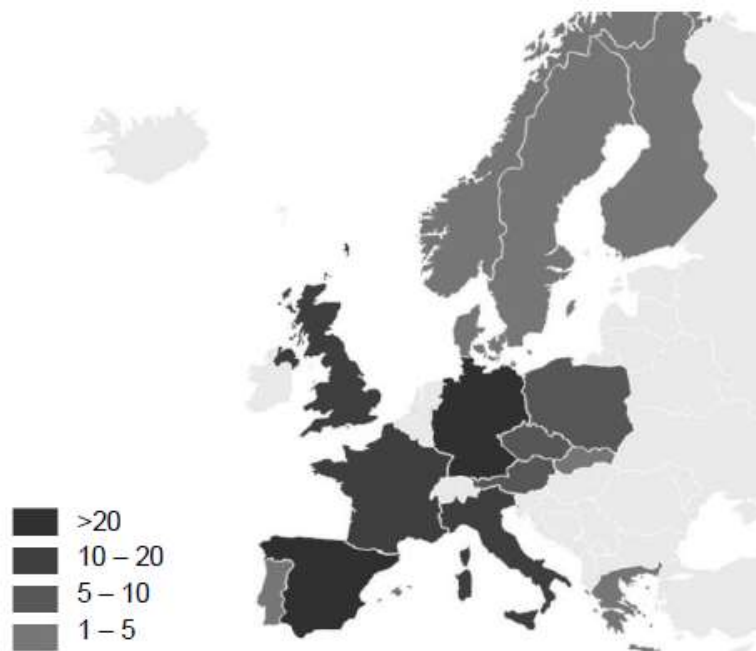
► Publication

Date	Journal	Main leader
July 2014	RHI Bulletin>1>2014	RHI
April 2015	Refractories WORLDFORUM	Calderys
June 2015	Materiały Ceramiczne	ICiMB
July 2015	Refractories WORLDFORUM	ECREF, CU/PRE, ITMA, ICAR, FGF, ICiMB
October 2015	Refractories WORLDFORUM	CRIBC



## Use and exploitation

Cerame-Unie/PRE: disseminate information to national SME AG members



Country	Refractory Producer	SME
AT - Austria	6	4
CZ - Czech republic	7	4
DE - Germany	27	13
DK - Denmark	1	1
ES - Spain	29	20
FI - Finland	2	2
FR - France	19	12
GB - Great Britain	14	6
GR - Greece	1	1
IT - Italy	16	10
PL - Poland	8	4
PT - Portugal	1	1
SE - Sweden	2	
SK - Slovak Republic	5	2

PRE:

13 National associations

4 Direct company members

## Use and exploitation

Revision of the relevant EN testing standards officially initiated at the CEN / TC 187 on the **3<sup>rd</sup> March 2015**

- ▶ Drafts of revised EN testing standards worked out
- ▶ Experimental and precision data compiled in reports

Methodology to review testing standards mapped out

First discussions at the ISO level

