



**ecra**

europaean cement research academy



# PROGRAMME 2017

**Seminars & Workshops**

## Venues 2017

-  Esch-sur-Alzette, Luxembourg
-  Opole, Poland
-  Vienna, Austria
-  Bilbao, Spain
-  Hamburg, Germany
-  Kirchdorf, Austria



European Cement Research Academy

Welcome to our 2017 seminar programme.

ECRA seminars are designed to offer you the latest technological and scientific developments in the field of cement and concrete.

We aim to provide the right balance of theory and practice, with expert speakers sharing the most recent insights into their fields and most seminars including an extensive plant tour during a half-day visit to a cement manufacturer.

Since ECRA was founded more than a decade ago in the European spirit of openness and cooperation, we have held seminars at locations in over twenty countries. Each seminar brings people of different nationalities together, giving you an opportunity to make new contacts and exchange experiences with colleagues working in the cement industry from across Europe and sometimes further afield. Our venues this year are in Austria, Germany, Luxembourg, Poland and Spain.

We hope you will be able to join us!

For more information and to register, please visit [www.ecra-online.org](http://www.ecra-online.org).

*Daniel Gauthier*  
Chairman of the Technical Advisory Board

*Martin Schneider*  
Managing Director

11–12 May 2017

### S17-01 Cement Grinding Technology

**Objective:** *An overview of state-of-the-art grinding technology and optimisation approaches.*

**Target group:** *Process engineers with experience in cement manufacturing, R&D engineers*

The energy consumption arising from the grinding of raw material and cement has been successfully reduced in the cement industry over many years, but increasing cement fineness and the diversity of the product portfolio have made further optimisation a challenging task. Today there are various different grinding technologies in use. Existing ball mills often offer high optimisation potential with regard to the ball charge, filling level or separator operation, but the operation of high pressure grinding aggregates like the VRM or HPGR is also linked to a variety of challenges including vibration, particle size distribution or dehydration. In this context the seminar will give an overview of the existing cement grinding technologies and practical approaches towards their optimisation. The examination of mill systems, the determination of key performance indicators and case studies will also be discussed. The seminar includes a visit to the CIMALUX cement plant in Esch-sur-Alzette in Luxembourg.

#### Topics:

- State of the art in cement grinding
- Future grinding technologies
- Measurement and control techniques
- High pressure comminution
- Mill optimisation: Efficient operation and product design
- Case studies

**Venue:** Esch-sur-Alzette, Luxembourg  
**Nearest airport:** Luxembourg

31 May–1 June 2017

### S17-02 Kiln Firing Systems for Advanced Alternative Fuel Co-firing

**Objective:** *To present the latest developments in alternative fuel co-firing systems and provide an overview of the latest burner technologies and their impact on clinker.*

**Target group:** *Process engineers, combustion experts*

Plant operators are faced with the need to substitute fossil-based fuels by co-firing alternative fuels in order to reduce greenhouse gas emissions and for economic reasons. While the introduction and combustion of alternative fuels in the calciner can be seen as state of the art, there is an ongoing trend towards solid fuels which are fed via the rotary kiln burner into the clinker burning process. A rapid development has been taking place in rotary kiln burner technology concerning the firing of multiple fuels with different combustion characteristics. Alternative fuel co-firing changes the flame shape, heat release and temperature profiles in rotary kilns and thereby impacts clinker and cements properties. A new burner generation fulfills the requirements of clinker processing with regard to the respective fuels and helps to compensate negative effects of alternative fuels by adapting the burner setting. The seminar includes a visit to the HeidelbergCement plant in Goražde, Poland.

#### Topics:

- Burner operation and flame characteristics of kiln firing systems
- Multi-channel burners for alternative fuel utilisation
- Experience with alternative fuel co-firing in cement kilns
- Properties of waste fuels
- Impact of alternative fuel co-firing on clinker and cement properties
- Oxygen enrichment for advanced alternative fuel co-firing
- CFD modelling for optimisation of burner design and operation

**Venue:** Opole, Poland  
**Nearest airports:** Katowice/Wrocław

21–22 June 2017

### S17-03 Performance-based Specifications for Cement and Concrete

**Objective:** *For cement manufacturers to offer a market-driven portfolio it is necessary to understand present and future customer and market demands. The trend towards more performance-based specifications is a topic currently being discussed in various contexts. The aim of the seminar is to inform about and discuss this and other current and anticipated developments and trends.*

**Target group:** *R&D staff, sales and marketing staff*

At present, European concrete standards mainly contain a system of descriptive requirements (e.g. maximum water/cement ratio, minimum cement content, minimum concrete cover) and classes (e.g. exposure, consistency, compressive strength) for describing the durability performance of concrete. In some cases this system can reach its limits, when for example a minimum service life >> 50 years has to be proven, new building materials of which there is no long-term experience are to be used, or when there are special ambient conditions or applications to be taken into consideration, such as ASR in concrete road construction. In these cases the performance of the concrete and of the constituents has to be proven by lab-performance test and/or service-life calculations. Based on practical case studies, key parameters and requirements for lab-performance concepts and service life calculations will be described and discussed. The current situation in standardisation (fib/CEN) and the principles of European Technical Assessments (EAD / ETA) will also be covered. The seminar includes a visit to the laboratories of Smart Minerals GmbH in Vienna.

#### Topics:

- Key parameters and requirements for durability performance concepts
- Verification procedures / Test methods
- Assessment and evaluation procedures
- Attestation of conformity
- Durability indicators
- Cement performance vs. concrete performance
- Durability resistance classes

**Venue: Vienna, Austria**  
**Nearest airport: Vienna**

5–6 October 2017

### W17-01 Kiln Examinations: Energy/ Material Balances and Efficiency

**Objective:** *Introduction to the performance and evaluation of cement kilns and mill trials.*

**Target group:** *Process engineers with experience in cement manufacturing*

Kiln examinations are carried out in order to gather data on the kiln performance and to validate warranty performance data such as the clinker output, fuel-energy consumption, kiln feed/clinker ratio and cooler efficiency. They also provide a reliable foundation for the optimisation of individual operational system components, the cement quality and the reduction of emissions levels. Balances of volatile and non-volatile compounds are carried out to achieve an assessment of material cycles and coating formations. The workshop will introduce the participants to the methods and techniques of kiln examinations. After planning and organising a performance test, measurement and sampling techniques will be shown in the field. Based on real data, energy and material balances will be discussed and material cycles evaluated. The workshop includes a visit to the Cementos Leona plant near Bilbao in Spain.

#### Topics:

- Basics of kiln balances
- Planning, organisation and realisation of kiln trials
- Introduction to energy and mass balances
- Case studies: Energy balance of a cyclone pre-heater plant, mass balance of a cyclone pre-heater plant, energy balance of a clinker cooler
- Examinations at cement mills
- Introduction to measuring techniques
- Discussion of participants' specific questions and problems

**Venue: Bilbao, Spain**  
**Nearest airport: Bilbao**

25 –26 October 2017

### S17-04 Inline/Online Methods for Quality Control in Cement Plants

**Objective:** *An overview of modern techniques of quality control in cement plants with the main focus on inline and online methods*

**Target group:** *Quality managers, supervisors and personnel of cement plant laboratories, technicians in measurement technology*

The requirements on cement put on the European market are laid down in European or national legislation and standards. However, additional requirements may arise for dedicated building applications. In order to fulfil these specifications, cement manufacturers have to test not only the cement ready for dispatch but also, for example, raw materials, fuels, clinker and other cement constituents. Modern inline and online methods enable the optimisation of the production process and product performance, and in particular the constancy of performance. The seminar will explore methods for quality control in cement plants, with the main focus on modern physical and chemical analysis. In particular inline and online methods applied in cement plants will be discussed. The seminar includes a visit to the Holcim cement plant in Lägerdorf, Germany.

#### Topics:

- Overview of offline / atline / online / inline analysis for quality control in cement plants
- The art of representative sampling
- Determination of fineness and particle size distribution
- Methods for automated chemical analysis
- Prompt gamma neutron activation analysis
- Flame control systems
- XRD and Rietveld analysis
- Laboratory automation systems for process control

**Venue: Hamburg, Germany**  
**Nearest airport: Hamburg**

29 –30 November 2017

### S17-05 Secondary Abatement Techniques

**Objective:** *An overview of the latest technologies concerning the secondary abatement of airborne emissions (dust, NO<sub>x</sub>, NH<sub>3</sub>, SO<sub>2</sub>, Hg, CO, TOC) from the clinker burning process with regard to present and future legal requirements.*

**Target group:** *Process engineers, plant design engineers, environmental engineers, national and international associations*

Legal requirements regarding emissions abatement for cement plants, especially those using alternative fuels and raw materials, challenge the cement industry to constantly improve its high level of environmental protection. Further developments at UN level are expected to have a further impact on technological developments in the years to come. Participants will be given an overview of currently used state-of-the-art abatement technologies and the latest developments as well as plant reports from operating full-scale installations. Primary (process-integrated) and secondary (end-of-pipe) technologies for relevant emission parameters will be discussed as well as upcoming or potential developments in legal requirements. The seminar includes a visit to the Kirchdorfer Zement plant in Austria which uses a new DECONOX system for the reduction of NO<sub>x</sub>, organic compounds and CO.

#### Topics:

- Overview of present and future environmental legal requirements and their impact on the cement industry
- Reduction of nitrogenous oxides by secondary abatement techniques
- CO and organic emissions in the cement industry: origin, behaviour and abatement measures
- Impact on SO<sub>2</sub> emissions and reduction measures
- Reduction of mercury emissions by operational measures
- Operational experience of mercury abatement with a split pre-heater system

**Venue: Kirchdorf, Austria**  
**Nearest airports: Linz/Salzburg**

## Registration

Registrations can only be made online via the ECRA website [www.ecra-online.org](http://www.ecra-online.org). All current registration deadlines are shown on the website. Participants will receive written confirmation of their registration.

## Participation fee

Unless stated otherwise, the participation fee per person for each seminar/workshop is 1,350 EUR for participants from ECRA member companies/organisations.

There is a discount of 25% for each additional participant from the same company address.

Cement associations which are ECRA members may delegate one participant to each seminar/workshop free of charge.

Participants from companies or organisations which are not ECRA members will be charged double.

The participation fee includes lectures, handouts, refreshments, lunch, evening dinner and, where necessary and possible, group bus transfers to and from the nearest airport to the venue.

## VAT application:

Invoices issued to recipients in Germany:  
The standard German rate of VAT, currently 19%, will be applied.

Invoices issued to recipients in other EU countries:  
VAT will not be applied if the recipient provides a valid VAT registration number (reverse charge rule according to Art. 196, 205 EU-Directive 2006/112).

Invoices issued to recipients in non-EU countries:  
VAT will not be applied. A certificate of tax residence is required.

The above-mentioned VAT application rules apply only to the participation in ECRA seminars, workshops and training courses.

## Hotel accommodation

Hotel accommodation is not included in the participation fee. ECRA will provide hotel recommendations, but participants must book their accommodation with the hotel directly themselves. In the event of the cancellation of a room reservation the terms and conditions of the hotel apply.

## Payment

Participants will receive an invoice which is payable immediately upon receipt by bank transfer. Payment will be accepted in Euros only.

## Cancellations

Participation fees will be refunded for cancellations made in writing up to seven days before a seminar/workshop takes place. No refund will be made for cancellations received after this date.

ECRA reserves the right to change the content of its seminars and workshops and to cancel these in the case of insufficient bookings or other circumstances beyond its control. In the case of cancellation by ECRA, participants are entitled to a full refund of their participation fee. ECRA is not responsible for any other loss incurred by a participant resulting from the cancellation or alteration of a seminar/workshop by ECRA.

These terms and conditions are governed by German law.

Duesseldorf, January 2017

**For more information please visit [www.ecra-online.org](http://www.ecra-online.org)**

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