Seminar

Who should attend the seminar?

- Production engineers and managers
- Process engineers
- Project engineers
- Technical consultants and decision makers

Please register through the IMCET registration

Venue:

Granada Luxury Belek
Belek Mah.
Cumhuriyet Cad. No:7/102
Belek, Turkey

REGISTRATION FEES
Free For Delegates
For Daily Participant with Accommodation 250 €
For Daily Participant without Accommodation 150 €

Participation is limited to quota.
Please contact imcet@maden.org.tr for register
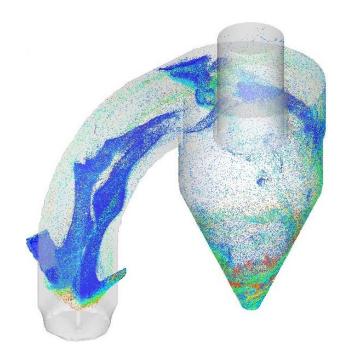
Real-Physics Virtual Reality

The participants will also experience a "walk inside" a running 3D dynamic process simulation with aixergee's „Real Physics"-virtual reality system which will be on display in the exhibition. This novel technology not only makes the process better „accessible" but also facilitates evaluation of the phenomena much better than conventional displays on monitor or paper.

aixergee Process optimization

has been providing supplier-independent technical consultancy for the optimization of production processes specifically for the cement industry and related industries. Founded by Matthias Mersmann, who has been performing equipment design and process optimization for the cement and mining industry for 25 years. Prior to founding aixergee he was vice president Technology with KHD Humboldt Wedag and General Manager with Loesche as aixergee was incorporated into the Loesche group.
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Use Of Modelling And Simulation For The Optimization Of Production Processes In The Cement And Mining Industry

Framework Workshop to:

IMCET 2019
26th INTERNATIONAL MINING CONGRESS AND EXHIBITION OF TURKEY

April 16th 2019
Belek, Turkey

aixergee
process optimization

Seminar Program

Thursday, April 16th 2019

08:30 Welcome and Introduction

08:45 From process knowledge to model building

09:15 Digital twins: Use of models in simulation and plant automation

10:00 Deterministic modelling
- CFD (computerized fluid dynamics), flowsheet modelling
- Multi-physics, specific model adaptations

11:30 Data driven modelling:
- Data mining, data analysis
- Artificial intelligence, machine learning, neural networks

12:00 Case studies - Examples for successful use of modelling and simulation in the cement industry
- Increase of alternative fuel firing
- Reduction of emissions
- Increase of production rate
- Design modification
- Upfront feasibility check
- Automation systems

Seminar Background

The seminar

The seminar gives an overview on the state-of-the-art approaches and tools for the optimization of the production processes in the mining and specifically the cement industry. The theoretical background, which is essential to capture, will be presented in a way that allows also non-specialists to comprehend the major information and easily relate their actual questions to modeling and simulation methods. The seminar closes with some case studies from real projects.

The participants will be able to assess what modeling and digital twins – two buzz-words of today's engineering discussions - can do to assist them within their responsibilities.

Motivation

The optimization of the production processes is an ongoing challenge for the mining and cement industry. Cost pressure, environmental protection and new technological developments are forcing the engineers to improve their processes permanently. Modelling and simulation of those machines and processes can be used to optimize them in various ways: Implemented into appropriate simulation environments, these models can form digital twins which generate information far beyond the measured data of the real plant. These digital twins can be used for off-line analysis and optimization as well as on-line optimization of the production process if incorporated into the automation system and run parallel to the plant in real-time.

Deterministic and data-driven modeling

Modelling generally means setting up a virtual substitute describing the real system as realistic as necessary. This can be done by incorporating as much knowledge about the real system as possible. This method is called "deterministic modelling" because the incorporated knowledge determines the behaviour of the model. Another approach to model the behaviour of the real system is to describe its behaviour by analysing the data produced by it. This approach is called "data-driven modelling". While deterministic modelling provides causal contexts, data-driven models need to be taught and don't provide any causalities. Experience of the recent decades has shown, that neither of the two approaches alone can provide sufficient performance for online-process control optimization. New technologies allow a cooperative linkage of the two modelling concepts for better predictability and more robust performance.