Does your company have the right skills to move up in the world? Train up to the latest know-how, hands-on capabilities and new ways of thinking.

Close performance gaps
Training is one of the best tools for closing performance gaps, improving output and reducing maintenance costs. But how fast can your training investments be turned into results? World-class training shows the immediate results we call "jump-in knowledge": quickly turning newly acquired skills into noticeable improvements. Our focus on the ability of freshly trained staff to achieve this type of knowledge makes FLSmidth Institute's courses and seminars a great investment in individual employees and the plant as a whole.

Last year, our highly specialised and professional trainers helped more than 10,000 people to achieve jump-in knowledge, once again setting the industry standard for cement education. And our courses have received a high satisfaction rating of 8.6 out of 10, as measured by independent analysts.

Making a measurable difference
Of course, if you’re investing time and money in training, you should be able to measure reductions in plant downtime, increased equipment availability and reliability, and greater on-the-job satisfaction. To demonstrate these benefits,
we constantly measure training effectiveness – both in terms of what people learn and remember, and in the success of new skills being transferred to the plant. To maximize these gains, we can arrange post-course assessments and other follow-up activities designed to make the most of your investment.

**Introducing e-learning**

FLSmidth Institute’s new e-learning courses bring a new, highly flexible dimension to cement industry training. These 24/7-accessible courses combine many different elements to make learning and recall easier, such as animations, audio, quizzes, and constant interaction. Trainees can learn at their own pace – when and where they prefer. And the company can enjoy cost savings from reduced travel and less time away from work. For now, e-learning courses cover the basic onboarding/introductory courses primarily aimed at new employees.

E-learning will also be embedded within our normal line-up of courses, following blended learning principles and enhancing the training experience in a number of ways, one of which is to create a common starting point via pre-course preparation exercises.

**Find what you need – or ask us for more**

This catalogue contains courses that address the needs of most companies in the industry. We keep the syllabus fresh and up-to-date; offering training in production, maintenance, process control and quality control, as well as introductory courses for newly hired staff.

If you don’t find what you’re looking for, contact us right away to hear how we can put a customized training solution together. We can be as flexible as you need us to be, creating plant-specific courses and even training at your location.

We look forward to being your cement industry partner in learning, development and performance improvement.

On behalf of FLSmidth,

**Cristina Holmark**

General Manager,

Global FLSmidth Institute

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**What our customers say**

“The International Maintenance Seminar covers how to optimize planning for more predictable and preventative maintenance, reducing downtime to achieve better profitability and more production capacity. For me, the seminar also offered good possibilities for exchanging ideas and benchmarking with participants from other countries and cultures, which I personally find very interesting.

The seminar was a mix of practical tasks and theoretical lessons with real-life cases. Most of the trainers had many years of experience in commissioning, project management and maintenance of cement plants around the world. They were competent, well-prepared and enthusiastic. The whole seminar was well-organised, emphasising punctuality so as not to waste time. And when you come home, you can use the compendium FLSmidth sends after the course to go even deeper.

The FLSmidth Institute seminars really give you the impression that they happily share their expertise instead of delivering a lot of sales arguments!”

**Flemming Kolding Johansen**

Mechanical Manager, Nordic Cement/Cementir Group
All lecturers conducting FLSmidth Institute courses and seminars are highly skilled, professional and with vast experience within the industry. This is only some of our renowned lecturers.

Kirsten Theisen
Senior Research Engineer, MSc. Chem. Eng

Kirsten has worked in Chemical Research and Development during her more than 40 years with FLSmidth. The first projects dealt with development of new and improved laboratory methods. The work area expanded to small- and large-scale grinding and burning tests, characterisation of raw materials, and responsibility for cement plant laboratories delivered by FLSmidth world-wide. Later Kirsten’s extensive knowledge and experience have been used for trouble-shooting and training assignments.

Kim Dam-Johansen
MSc, PhD, Professor at Technical University of Denmark (DTU)

Kim is director of the Combustion and Harmful Emission Control Research Center which he founded in 1987. Being an expert in high temperature processes with more than 200 ISI publications and many patents, Kim was the world’s most cited researcher in Combustion in the period 1998-2008. In the late 1990s, Kim was Group Vice President of Hempel – a chemical company with factories and laboratories all over the world. Since 1997 he has worked with research programs in close cooperation with FLSmidth, and he is an extremely popular guest speaker at the International Cement Production Seminar.
Esmeralda Shpuza
Senior Training Supervisor

Esmeralda Shpuza has been in the cement industry for the past 12 years. She has a Bachelor of Science in Industrial Engineering from Georgia Institute of Technology and a Master of Science in Energy Policy and Climate from Johns Hopkins University. Esmeralda started her career in the cement industry as a process engineer for Holcim Inc., working in 4 plants in the USA and Mexico focusing on operation and process optimization of the clinker manufacturing areas. Her primary focus has been on the optimization of pyro-processes, alternative fuels use and process troubleshooting. In 2008 she joined FLSmidth Inc. working for the FLSmidth Institute in Bethlehem designing training programs and seminars with an emphasis on operations, process optimization and practical simulations training for different plants in the Americas.

Henrik Rask Sønderborg
Training Manager, Valby

Starting his career with FLSmidth in commissioning, Henrik gained a solid knowledge of most areas in the cement plant. After nearly a decade in commissioning, Henrik took up position as process manager in the FLSmidth Brazil office and spent 6 years overseeing FLSmidth process design and process troubleshooting. Upon return to FLSmidth Copenhagen, Henrik has been employed both in the process design department and is now process training manager in the Institute.

Delvi Rodriguez
Manager of Training, Bethlehem

Delvi Rodriguez has been in the industry of cement for more than 20 years with a Bachelor of Science in Mechanical Engineering. He started his career in the cement industry as project engineer, working at the installation of several equipment such as crusher and stacker, wet and dry kiln, coolers, ball mills and vertical mills. Before joining FLSmidth, Delvi was manager of maintenance for 13 years, working in Mexico, Dominican Republic, Puerto Rico and United States. He joined FLSmidth as a senior training engineer in 2012 and from March 2013 is the manager of training of FLSmidth Institute for the Americas.

Bjarne Ivar Jensen
Training Manager, Valby

Bjarne started his career with FLSmidth in the FLSmidth workshop in Valby 1967. Since then, he has been installing cement plants for 10 years in various countries as well as worked as a mill specialist in Copenhagen for 13 years. Bjarne has done numerous mill and kiln jobs while working in the mill department, and he is our top specialist within the field of ball mills. Bjarne is now part of the FLSmidth Institute as training manager, but he still does selected jobs on site; His latest site job was a change of a heavy kiln section with fixed support for planetary coolers in Sweden in July - September 2013.
# Cement seminars and courses 2015

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Production
International Cement Production Seminar

COPENHAGEN DENMARK

General
Our goal is to provide participants with information covering the entire production process and a forum where global cement specialists can benefit from the exchange of ideas.

Learning objectives
The learning objective is to illustrate the cement manufacturing process step by step throughout the factory:
- Module 1: The participants will gain knowledge of different technologies and their advantages in connection with optimization of the process.
- Module 2: In this module, the participants will gain knowledge of which factors influence the cement quality and how to investigate problems.
- Module 3: The participants will gain deeper knowledge of the pyro-process and the inherent processes related to environment and alternative fuels.

Benefits
The experience gained at the seminar will:
- Inspire new ideas for optimizing your plant operation
- Present potential upgrading of your equipment
- Present potential modernization of your equipment
- Create a valuable network among the participants.

Seminar plan
The International Cement Production Seminar consists of more than 40 lectures, group work and discussion groups. The complete seminar is comprised of 3 modules. For all 3 modules the main areas of focus are:
- Review of the cement processes
- Function and design of main equipment, including the newest technology methods for optimization and proposals for improvements, plant modernization and plant operation
- The lectures will be supported by group work.

Target group
This seminar is designed for production managers, plant managers, general managers and production engineers with at least one year of experience in the cement industry.

Features
It is possible to register for one or several modules. This modular structure enables delegates to target their needs and gain maximum benefit of the modules they choose. It is also possible to participate in one module this year and participate in the others the following years.

The seminar also features:
- Direct contact with technical specialists.
- Group work.
- Intensive discussion groups.
- International forum on a managerial level.

Participants
The seminar is limited to the first 45 persons who apply.

Planned seminar days for all 3 modules
3 - 22 May 2015
Module 1: 3 - 8 May
Module 2: 9 - 16 May
Module 3: 17 - 22 May

Location
The seminar takes place at Radisson Blu Scandinavia Hotel in Copenhagen, Denmark, and a hotel during the plant visit tour a modern cement plants (module 2).

Included in registration fee for module 1 and 3 are
- Training sessions
- Seminar documentation
- Single accommodation including full board and lodging (breakfast, lunch, and dinner) at Radisson Blu Scandinavia Hotel in Copenhagen
- Emergency medical insurance
- Laundry service
- Free internet.

Note: The fee does not include private telephone calls, faxes, beverages outside meals, dry cleaning, room service, or extra nights.
Module 1: Crushing and grinding of raw materials, coal and cement:
The subjects covered start with quarry operation, then crushing, raw material grinding and cement grinding:
- Types of raw materials
- Quarry operations
- Crushing and grinding
- Process and equipment for raw material handling
- Raw material grinding
- Comminution and separation theories
- Homogenisation and storage of raw meal
- Grinding theory of vertical mills and roller presses
- Cement grinding
- Coal grinding
- Dedusting of cement plants
- Safety
- Lectures will be supported by group work.

Module 2: Cement chemistry and plant visit tour
Aspects of cement chemistry and cement quality are illustrated by theory and examples:
- Basic cement and clinker theory
- Burnability of clinker
- Grindability of clinker
- Chemical changes in cement during grinding and storage
- Quality of cement
- Blended cement, including Supplementary Cementitious Materials (SCM or CRM)
- Influence of particle size distribution on strength & water demand
- Quantitative X-ray diffraction (Rietveld theory) – XRD
- Visit to a modern cement plant to supplement the theoretical knowledge.

Module 3: Pyro technology
Aspects of the pyro-process itself and also derived environmental effects will be illustrated:
- Kiln system process
- Pyro-processing
- Cooling of clinker
- Fuel and firing systems
- Heat and power consumption
- Alternative fuels in cement kilns
- Heat and mass balance
- Refractory linings
- Waste Heat Recovery
- Gaseous emissions from cement plants
- Process control structures
- Gas analysis
- Conditioning Tower
- Water Injection Systems
- Heat Exchangers
- Lectures will be supported by group work
- Collaboration with Technical University of Denmark.

Included in registration fee for module 2 are:
- Plant visit tour to a modern cement plant
- Training sessions
- Seminar documentation
- Single accommodation including full board and lodging (breakfast, lunch, and dinner) at the hotel during the plant visit tour
- All transportation during the plant visit tour with starting point in Copenhagen
- Emergency medical insurance.

Note: The fee does not include private telephone calls, faxes, beverages outside meals, laundry, dry cleaning, room service, internet or extra nights.

Registration fee
Seminar fee per participant is as follows:
1 module: EUR 4,645 per participant
2 modules: EUR 8,895 per participant
3 modules: EUR 12,755 per participant
All fees are excl. VAT.

Terms of Payment:
100 % Advance Payment

Cancellation
There will be an administrative charge in case of absence or cancellation. The cancellation fees are as follows:
61 days before seminar start = 0% of fee
31-60 days before seminar start = 50% of fee
0-30 days before seminar start = 100% of fee

Abuse or cancellations due to missing visa will not be the responsibility of FLSmidth and will be subject to normal cancellation rules.

Registration
Please contact:
Ms. Pernille Beck
Tel: + 45 36 18 17 27
Fax: +45 36 18 28 04
E-mail: PEBE@flsmidth.com or fslinstitute@flsmidth.com

Early Bird: Sign up before 31 January 2015 and get a 10% discount upon registration for all 3 modules.
**Kiln Process and Operation**

**COPENHAGEN DENMARK**

**General**
To achieve optimum economy, the kiln system must be in continuous operation for as long a period as possible. By upgrading skills and knowledge of the personnel involved in kiln operation, the effect of internal and external influences on kiln operation can be reduced. This will reduce variations in the plant’s capacity utilisation and energy consumption which will improve overall plant profitability.

**Learning objectives**
The purpose of the course is to upgrade the skills and knowledge level of process engineers and operators within the field of kiln operation.

**Benefits**
After the course the participants will have an in-depth understanding of the kiln process and equipment.

Their skills in operation control will be improved, hereby increasing the plants’ capacity utilisation.

**Course Contents:**
- Process and kiln system
- Basic principles of operation
- Fuel types and their characteristics
- Raw material characteristics
- Optimisation of heat consumption
- Alternative fuels
- Kiln refractory
- Heat balances
- Emission of NOx and SOx from cement kilns
- Kiln system process control
- Starting and stopping of the kiln demonstrated with the FLSmidth CEMulator
- Strategies for kiln inspection.
- Visit to the FLSmidth ICE Centre.

**Form**
The course is a combination of theoretical classroom lectures, exercises and calculations supplemented with realistic demonstrations of kiln operation with the FLSmidth CEMulator. Furthermore, the knowledge gained at the course is measured by tests.

**Documentation**
Each participant will receive a complete set of training materials.

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**Target group**
The course is designed for process and operational personnel.

**Participants**
The maximum number of participants is 15.

**Duration**
4 days

**Planned course days**
26 - 29 October 2015

**Location**
The course is held at FLSmidth A/S, Valby Denmark.

**Registration fee**
Tuition fee per participants is EUR 2,625. excl. VAT.
Cost of board, lodging and personal expenses are not covered.

**Terms of Payment:**
100 % Advance Payment

**Cancellation**
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

**Registration**
Please contact:
Ms. Pernille Beck
Tel: +45 36 18 17 27
Fax: +45 36 46 28 04
E-mail: flsinstitute@flsmidth.com
Grinding Technology

COPENHAGEN DENMARK

General
Having a skilled team plays a key role in the optimal utilization of the grinding installation in the cement plant. The operators and process engineers must be able to evaluate all the process variables in order to optimize the production economy. This course provides an in depth understanding of grinding theory and equipment and gives you the tools to audit your own installation.

Learning objectives
The purpose of the course is to give operators and process engineers tools to optimize the output of an existing grinding installation.

Benefits
By having a thorough understanding of the plant power consumption, proper process control and a full understanding of the equipment and grinding theory the participants will be able to evaluate and optimize any existing grinding installation and thereby boost the production rate.

Course contents
- Mass and heat balance
- Separator types and mode of operation
- Separator efficiency, particle size distribution and Tromp curves
- Grinding media charges and mill linings
- Performance testing of ball mills
- Practical ball mill performance evaluation
- Grinding theory of vertical roller mills and roller presses
- Raw material grinding in ball and vertical roller mills
- Coal grinding in ball and vertical roller mills
- Cement grinding in ball and vertical roller mills
- Simulator exercises in ball mills for cement and in VRM for raw materials, coal and cement.

Form
The course is a combination of theoretical classroom lectures, exercises and calculations. Furthermore, the knowledge gained at the course is measured by tests.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for process and operational personnel.

Participants
The maximum number of participants is 15.

Duration
5 days

Planned course days
15 - 19 June 2015

Location
The course is held at FLSmidth A/S, Valby Denmark.

Registration fee
Tuition fee per participants is EUR 3,255. excl. VAT. Cost of board, lodging and personal expenses are not covered.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact:
Ms. Pernille Beck
Tel: +45 36 18 17 27
Fax: +45 36 18 28 04
E-mail: flsinstitute@flsmidth.com
Kiln System Seminar – Operation and Maintenance

MANILA PHILIPPINES

General
This seminar is the perfect way to enhance knowledge on both operation and maintenance of the kiln system. The seminar will cover operational and maintenance aspects of the kiln process and the equipment, thus giving the participants an enhanced knowledge about the process itself and an improved understanding of maintenance concepts related to the kiln system.

Learning objectives
The objective of the seminar is to upgrade the knowledge level of the participants on both operational and maintenance aspects of the kiln system.

Benefits
The participants will acquire knowledge on operation and improved maintenance practices needed to achieve energy savings, reduced maintenance costs and continuous improvement of the operation of equipment. The seminar also offers a valuable networking opportunity in which operational and maintenance personnel can obtain improved understanding of each other’s work areas.

Seminar Contents
Operation
- Kiln System Design and principles of operation
- Fuel Types and Firing systems
- Burnability of Raw meal
- Behaviour of Volatile Matter
- SOx and NOx Emissions
- Use of Alternative fuels in cement kilns.

Maintenance
- Maintenance concepts and maintenance philosophy
- Preheater maintenance
- Kiln maintenance and root causes
- Maintenance aspects of grate coolers.

Form
The course consists of classroom lectures, group work and case studies. Furthermore, the knowledge gained at the seminar is measured by tests.

Documentation
Each participant will receive a complete set of training material.

Target group
The seminar is designed for both process engineers and maintenance engineers with experience from the cement industry.

Participants
The maximum number of participants is 45.

Planned course days
16 - 20 November 2015

Duration
4 ½ days

Location
The course is held at conference facilities in Manila, Philippines

Registration fee
Tuition fee per participant is EUR 2,190. excl. VAT.
Cost of board, lodging and personal expenses are not covered

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact:
Ms. Pernille Beck
Tel: +45 36 18 17 27
Fax: +45 36 18 28 04
E-mail: flsinstitute@flsmidth.com
Ball Mill Seminar  
– Operation and Maintenance

JAKARTA INDONESIA

General
This seminar will provide a thorough understanding of the operation of ball mills and the best and proper maintenance practices.

Learning objectives
The seminar will upgrade the knowledge of the participants within the fields of technology, operation and maintenance best practices needed to achieve energy savings, reduce maintenance costs and continuous improvement of the operation of the equipment.

Benefits
This seminar offers enhanced knowledge on the operations of ball mills as well as on maintenance best practices to prevent breakdowns and ensure availability of the mill system. The seminar also offers a valuable networking opportunity in which operational and maintenance personnel can obtain improved understanding of each other’s work areas.

Seminar contents
Operation
- Ball mill types, design and operation
- Ball mill grinding theory
- Ball mill power consumption calculation
- Grinding media for ball mills
- Heat and mass balance for mill installations
- Separators and their mode of operation
- Cement grinding in ball mills.

Maintenance
- Ball mill types
- Ball mill supports
- Water injection systems
- Ball mill drive systems
- Wear and wear parts for ball mills
- Ball mill lubrication
- Ball mill diaphragms
- Ball mill inspection
- Replacement of slide shoes and white metal bearings
- Ball mill shell replacement
- Trunnion replacement
- Separator.

Form
The course consists of classroom lectures, exercises and case studies. Furthermore, the knowledge gained at the course is measured by tests.

Documentation
Each participant will receive a binder containing a complete set of training material.

Target group
The seminar is designed for both process engineers and maintenance engineers with experience from the cement industry.

Participants
The maximum number of participants is 45.

Location
The course is held at conference facilities in Jakarta, Indonesia.

Duration
4 ½ days

Planned course days
16 - 20 March 2015

Registration fee
Tuition fee per participant is EUR 2,190. excl. VAT.
Cost of board, lodging and personal expenses are not covered

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact:
Ms. Pernille Beck
Tel: +45 36 18 17 27
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E-mail: flsinstitute@flsmidth.com
North America Cement Production Seminar

BETHLEHEM USA

Objective
The annual North America Cement Production Seminar presents the latest technological achievements in cement production.

Benefits
The seminar offers new ideas for
- Optimizing your plant operation, including the possibilities for potential upgrading and modernization of your equipment. After participation in the seminar, it is our experience that a valuable network is created.

Seminar plan
This 5-day seminar uses lectures, case studies, and work sessions to:
- Review the cement processes
- Study the function & design of main equipment, including the newest technology methods for optimization and proposals for improvements of plant modernization and plant operation.

Seminar Contents
- Crushing and grinding of raw materials
- Homogenization and storage of raw materials
- Comminution and separation theories
- Drying and grinding of coal
- Dry kiln systems
- Cooling of clinker
- Influence of operating parameters on kiln systems
- Heat balances
- Behavior of volatile matter
- Gaseous emissions from cement kilns
- Waste derived fuels
- Kiln conversions
- Influence of manufacturing parameters on clinker
- Cement grinding
- Recent developments in process control systems
- The cement plant of the future.

Form
The seminar consists of theoretical classroom lectures. Full interaction with the trainers in the classroom is provided in order to maximize the learning experience among the participants.

Documentation
Each participant will receive a binder with a complete set of training materials.

Features
- Direct contact with technical specialists and trouble-shooters
- Group work
- Intensive discussion groups
- International forum on a managerial level.

Target group
This seminar is designed for process, maintenance, reliability engineers as well as production, process and maintenance managers.

Participants
The maximum number of participants is 20

Location
The seminar is held at FLSmidth Inc., Bethlehem PA, USA.

Planned course days
September 14 - 18, 2015

Registration fee
Tuition fee per participants is $2,500 per person. Taxes may apply.

The fee includes all training materials, and lunch daily. A purchase order is required during registration.

Note: This does not include the cost of your lodging or personal expenses. Nor transportation To and From airport.

Terms of Payment:
100 % Advance Payment

Cancellation
Cancellation of participation
0-30 days before = 100% of fee
Cancellation of participation
31-60 days before = 50% of fee
Cancellation of participation
61 days before = 0% of fee

Registration
Please contact
Ms. Lynn Petrak
Training Coordinator
Tel: +1 610 – 264 6017
Fax: +1 610 – 264 6031
E-mail: lynn.petrak@flsmidth.com
E-mail: flsinstitute_Bethlehem@flsmidth.com
Objetivo
El Seminario Latino Americano de Producción de Cemento presenta los últimos avances tecnológicos en la producción de cemento, tomando en consideración los factores que contribuyen a ahorros en energía, reducción de costos de producción, estabilidad de los sistemas así como la mejora continua de la operación de los equipos en una planta de cemento.

Beneficios
Este seminario ofrece nuevas ideas para optimizar las operaciones de la planta, incluyendo la posibilidad de mejoras potenciales y modernización de los equipos. Después de la participación en este seminario, la experiencia ha mostrado que se ha formado una red valiosa de contactos entre colegas de otras plantas. Además contacto directo con especialistas técnicos e ingenieros de campo de FLSmidth.

Plan del Seminario
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Repaso de las operaciones de fabricación de cemento
- Estudio de la función y el diseño de los equipos principales, incluyendo los últimos métodos para la optimización y las propuestas para mejoras en modernizaciones de planta y operaciones
- Trabajos en grupo, talleres, y discusión intensiva.

Temas
- Trituración de las materias primas
- Pre-homogenización y almacenamiento de materias primas
- Teoría de la molienda y la clasificación
- Molienda de las materias primas
- Homogenización de la harina cruda
- Secado y molienda del carbón y coque de petróleo
- Sistemas de clinkerization por vía seca
- Enfriadores de clinker
- Influencia de los parámetros operativos en el sistema del horno
- Impactos y consecuencias de la entrada de aire falso en los sistemas
- Balances de calor
- Comportamiento del material volátil de los hornos
- Emisiones en los sistemas de clinkerization
- Combustibles alternativos
- Conversiones de hornos
- Influencia de los parámetros de calidad en la quemabilidad del crudo, calidad de clinker y calidad de cemento
- Molienda de cemento
- Desarrollos recientes en los sistemas de control del proceso
- Tendencias y desarrollos para las plantas de cemento del futuro.

Documentación
Cada participante recibirá una carpeta con un conjunto completo de materiales de capacitación. Además se entregará una copia electrónica de materiales didácticos en formato PDF a cada participante en una unidad USB.

Fecha y lugar
Noviembre 16 - 20, 2015

Precio de inscripción
La tarifa por participante es USD $2,500 y no incluye alojamiento, ni gastos de transporte.

Términos de pago:
El pago por participación en el seminario es por adelantado.

Política de Anulación:
Anulación de la participación de 0 - 30 días antes del evento = FLSmidth le cobrara el 100% de la tarifa de inscripción
Anulación de la participación de 31 - 59 días antes del evento = FLSmidth le cobrara el 50% de la tarifa de inscripción
Anulación de la participación de 60 – 90 días antes del evento = FLSmidth le reembolsa el 100% de la tarifa de inscripción

Registro
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Cement Grinding Technology

BETHLEHEM USA

General
The objective of this seminar is an in-depth understanding of the different grinding technologies utilized in the cement industry with focus on potential energy reduction and throughput optimization using the process simulator software for cement grinding systems.

Benefits
The seminar offers new ideas for:
- Having a thorough understanding of the proper process control, power consumption, equipment and grinding theory, the participants would be able to evaluate the systems performance and find potential optimization of the existing grinding installations, hence improving the production rate.
- Optimizing the cement grinding system operation, including the possibilities for potential upgrading and modernization of your equipment.
- Teach the participants to elaborate realistic action plans according to their positions.
- Improvement of synergies between the quality, maintenance and production departments.
- Valuable contact networks are created during and after the seminar.

Seminar plan
The topics covered during the seminar are:
- Cement Mill Types. Design, Operating principles and fundamentals.
- Ball mills, internal installations and grinding media charges.
- Cement Grinding in Vertical mills.
- Vertical Mill Components, internal installations and important parameters.
- Calculation of power consumption for ball mills and grinding media charges.
- Calculation of power consumption for cement vertical mill.
- Automatic process control for cement mill systems.
- Roller Press.
- Separators, types and their mode of operation.
- Calculations for separator control.
- The influence of separator efficiency on power consumption and particle size distribution.
- Cooling and grinding aids
- General measurements and calculations for determination of gas flows
- Optimization of Mill Grinding System
- Sampling and Sample Preparation for clinker and cement
- Dust collector, maintenance and operation
- Recent developments in process control systems
- Practical sessions on the ECS Cemulator
- Case studies on dam ring optimization, nozzle ring velocities optimization, influence of false air entrance and various others.

Form
This 5-day seminar uses lectures, case studies, work sessions and the process simulator software ECS/CEMulator which is the state of the art training tool to:
- Review the cement grinding processes
- Study the function & design of main equipment, including the newest grinding technology methods for optimization, potential for equipment improvement, and plant modernization
- Practice different scenarios with the Cemulator software.

Full interaction with the trainers in the classroom is provided in order to maximize the learning experience among the participants.

Documentation
Each participant will receive a binder with a complete set of training materials. In addition a soft copy of training materials in PDF form will be handed to each participant in a USB drive.

Target group
This seminar is designed for process, operator, engineers as well as production, process and maintenance managers.

Participants
The maximum number of participants is 15.

Duration
5 days

Planned course days
22 - 26 June 2015

Location
The seminar is held at FLSmidth Inc. Headquarters in Bethlehem PA, USA.

Registration fee
Tuition fee per participants is $2,500 per person. Taxes may apply.

The fee includes all training materials, and daily lunch. A purchase order is required during registration.

Note: This does not include the cost of your lodging or personal expenses. Nor transportation To and From airport.

Terms of Payment:
100 % Advance Payment

Cancellation
Cancellation of participation
0-30 days before = 100% of fee
Cancellation of participation
31-60 days before = 50% of fee
Cancellation of participation
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Registration
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Pyro Process, Operations and Process Simulation Seminar

BETHLEHEM USA

**General**
The objective of this seminar is an in-depth understanding of the different components of a pyroprocess system and the technologies utilized to achieve optimum economy, continuous efficient operation and profitability. To attain maximum production rates with minimum thermal and electrical input, while maintaining optimum clinker quality requires a good understanding of the clinker manufacturing process.

**Learning objectives**
The purpose of the course is to give operators, production supervisors, and process engineers the skills and knowledge to optimize the pyro-processing system.

**Benefits**
The participants will be provided with in-depth understanding of the Pyro process and equipment. In addition, the understanding of kiln feed properties (chemistry and fineness) will lead to a better pyroprocess system operation, stability, improve the skills on how to manage variations in the system while maintaining equipment reliability, overall equipment efficiency and better profitability. Furthermore;
- Understand the pyroprocess equipment design and their limitations
- Understand the burnability characteristics and their influence in kiln operation, quality and maintenance reliability
- Optimize and standardize operating techniques improving the overall equipment efficiency and reducing risky operating practices
- Review and implementation of the best operating practices to achieve sustainable and stable operation at maximum production rates
- Develop the necessary skills to cope with the daily operating challenges of kiln feed and fuel variations, volatile materials and their effect in the operation, mechanical faults and how to protect the equipment utilizing hand on training with the use of the FLSmidth process simulator (ECS/CEMulator software)
- Valuable contact networks are created during and after the seminar.

**Seminar plan**
- Kiln Operation
- Process and kiln system design considerations
  - Kiln Zones
  - Raw Material characteristics
  - Chemical Reactions in the Kiln
  - Liquid Phase and importance of Iron and Aluminum content
- Calciner operation
  - Fuel types and their characteristics
  - Alternative fuels use in the calciner and impact in system operation
- Combustion Theory
  - Heat transfer
  - Flame formation
  - Main burner, changes that affect flame formation and lead to better burning conditions

**Target group**
The course is designed for participants with previous experience in pyro system operation and process such as engineers, control room operators, production supervisors and managers.

**Participants**
The maximum number of participants is 15.

**Duration**
5 days

**Planned course days**
4 - 8 May 2015

**Location**
The course is held at FLSmidth Inc. Headquarters in Bethlehem PA, USA.

**Registration fee**
Tuition fee per participants is $2,500 USD per person. Tax may apply. A purchase order is required during registration.
The fee includes all course materials, and daily lunch.

*Note: This does not include the cost of transportation to and from the airport, lodging or personal expenses*

**Terms of Payment:**
100 % Advance Payment

**Cancellation**
Cancellation of participation
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**Registration**
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- Clinker coolers
  - Clinker cooler types
  - Cooler operating philosophy and optimization of clinker coolers
- Heat Balances
  - Heat and Material flows
  - Measurements in the pyro process system (temperature, pressure, O2 profile)
  - Measurements in the cooler, airflows, temperatures and pressures
  - Heat Balance calculations
- Optimization of heat consumption
  - Kiln Feed Burnability
  - Distribution of air and losses in the cooler
  - Clinker formation
  - Behavior of volatile matter
  - Volatile matter work session
- Emissions of NOx, SOx, particulates, mercury etc from cement kilns
  - New emission standards
- Bag House, operation and maintenance
- Refractory Considerations.

Practical sessions with the Use of Pyroprocess Simulation / ECS Cemulator software
- Starting and Stopping the kiln using the ECS Cemulator software
- Interaction of Control Loops between the Kiln and Cooler areas
- Various Disturbances
- Kiln system shut down
- Evaluation running the kiln system to full production.

Form
The course consists of theoretical classroom lectures, case studies, work sessions and hands on practical sessions based on process simulation with the ECS/CEMulator software. Full interaction with the trainer in the classroom is provided in order to maximize the learning experience among the participants.

Documentation
Each participant will receive a manual with a complete set of training materials. In addition a soft copy of training materials in PDF form will be handed to each participant in a USB drive.
Seminario de Producción de Cemento de Latino America

SANTA CRUZ BOLIVIA

Objetivo
El Seminario Latino Americano de Producción de Cemento presenta los últimos avances tecnológicos en la producción de cemento, tomando en consideración los factores que contribuyen a ahorros en energía, reducción de costos de producción, estabilidad de los sistemas así como la mejora continua de la operación de los equipos en una planta de cemento.

Beneficios
Este seminario ofrece nuevas ideas para optimizar las operaciones de la planta, incluyendo la posibilidad de mejoras potenciales y modernización de los equipos. Después de la participación en este seminario, la experiencia ha mostrado que se ha formado una red valiosa de contactos entre colegas de otras plantas. Además contacto directo con especialistas técnicos e ingenieros de campo de FLSmidth.

Plan del Seminario
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Repaso de las operaciones de fabricación de cemento
- Estudio de la función y el diseño de los equipos principales, incluyendo los últimos métodos para la optimización y las propuestas para mejoras en modernizaciones de planta y operaciones
- Trabajos en grupo, talleres, y discusión intensiva.

Temas
- Trituración de las materias primas
- Pre-homogenización y almacenamiento de materias primas
- Teoría de la molienda y la clasificación
- Molienda de las materias primas
- Homogenización de la harina cruda
- Secado y molienda del carbón y coque de petróleo
- Sistemas de clinkerización por vía seca
- Enriadores de clinker
- Influencia de los parámetros operativos en el sistema del horno
- Impactos y consecuencias de la entrada de aire falso en los sistemas
- Balances de calor
- Comportamiento del material volátil de los hornos
- Emisiones en los sistemas de clinkerización
- Combustibles alternativos
- Conversiones de hornos
- Influencia de los parámetros de calidad en la quemabilidad del crudo, calidad de clinker y calidad de cemento
- Molienda de cemento
- Desarrollos recientes en los sistemas de control del proceso
- Tendencias y desarrollos para las plantas de cemento del futuro.

Documentación
Cada participante recibirá una carpeta con un conjunto completo de materiales de capacitación. Además se entregará una copia electrónica de materiales didácticos en formato PDF a cada participante en una unidad USB.

Grupo
Este seminario ha sido diseñado para ingenieros de producción, de proceso, supervisores y gerentes con un mínimo de un año de experiencia en las operaciones de cemento.

Duración:
El seminario tendrá una duración de cinco días e incluye materiales de trabajo, cóctel de bienvenida, almuerzos, cafés/refrescos, traducción simultánea de inglés al español y cena de despedida.

Fecha y lugar
Octubre 5 - 9, 2015

Precio de inscripción
La tarifa por participante es USD $2,800 y no incluye alojamiento, ni gastos de transportación.

Términos de Pago:
El pago por participación en el seminario es por adelantado.

Política de Anulación:
Anulación de la participación de 0 - 30 días antes del evento = FLSmidth le cobrara el 100% de la tarifa de inscripción
Anulación de la participación de 31 - 59 días antes del evento = FLSmidth le cobrara el 50% de la tarifa de inscripción
Anulación de la participación de 60 – 90 días antes del evento = FLSmidth le reembolsa el 100% de la tarifa de inscripción

Registro
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E-mail: lynn.petrak@flsmidth.com
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Objetivo
El seminario del proceso de calcinación de operaciones y mantenimiento, está diseñado para familiarizar al personal con la tecnología y los procedimientos para desarrollar habilidades para operar, optimizar y mantener los sistemas de pyro proceso.

Beneficios
Este seminario ofrece nuevas ideas para optimizar las operaciones de la planta, incluyendo la posibilidad de potenciales mejoras y modernización de los equipos. El seminario está diseñado para mejorar la sinergia entre los departamentos de mantenimiento, producción y calidad y para capacitar a los participantes a elaborar planes de acción realistas que estén al alcance de los participantes. Después de la participación en este seminario, es nuestra experiencia que una red valiosa de contactos será creada.

Plan del Seminario
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Repaso de las operaciones de fabricación de cemento
- Estudio de la función y el diseño del equipo principal, incluyendo los últimos métodos para la optimización y las propuestas para mejoras en modernizaciones de planta y operaciones.

Temas
- Operación del horno
- Operación del calcinador
- Teoría de combustión
- Balances térmicos
- Mediciones en planta del balance térmico
- Optimización del consumo térmico
- Operación del enfriador de clinker
- Emisiones de los hornos rotatorios
- Mantenimiento de hornos rotatorios
- Mantenimiento de enfriadores de clinker
- Inspecciones en la torre pre-calentadora.

Adicionalmente
- Contacto directo con especialistas técnicos e ingenieros de campo
- Trabajos en grupo
- Grupos de discusión intensiva.

Documentación
Cada participante recibirá una carpeta con un conjunto completo de materiales de capacitación. Además se entregará una copia electrónica de materiales didácticos en formato PDF a cada participante en una unidad USB.

Fecha y lugar
Abril 20 - 24, 2015
Quito, Ecuador

Precio de inscripción
La tarifa por participante es USD $2,500 y no incluye alojamiento, ni gastos de transporte.

Términos de Pago:
El pago por participación en el seminario es por adelantado.

Cancelación
Anulación de la participación de 0 - 30 días antes del evento = FLSmidth le cobrará el 100% de la tarifa de inscripción
Anulación de la participación de 31 - 59 días antes del evento = FLSmidth le cobrará el 50% de la tarifa de inscripción
Anulación de la participación de 60 – 90 días antes del evento = FLSmidth le reembolsa el 100% de la tarifa de inscripción

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Seminario de Molinos Verticales (Operaciones y Mantenimiento)

BUENOS AIRES ARGENTINA

Objetivo
El seminario de molinos verticales está diseñado para capacitar al personal sobre la tecnología, operación y las mejoras prácticas de mantenimiento necesarias para poder alcanzar ahorros de energía, reducir costos de mantenimiento, así como la mejora continua de la operación de los equipos.

Beneficios
Este seminario ofrece nuevas ideas para optimizar las operaciones de los molinos verticales, incluyendo la posibilidad de mejoras potenciales y modernización de los equipos. El seminario está diseñado para mejorar la sinergia entre los departamentos de mantenimiento, producción y calidad y para capacitar a los participantes a elaborar planes de acción realistas que estén al alcance de los participantes. Después de la participación en este seminario, la experiencia ha mostrado que se ha formado una red valiosa de contactos. Además contacto directo con especialistas técnicos e ingenieros de campo de FLSmidth.

Plan del Seminario
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Estudio de la función y el diseño del equipo principal, incluyendo los últimos métodos para la optimización y las propuestas para mejoras en modernizaciones del sistema y operaciones
- Trabajos en grupo y discusión intensiva.

Temas
Operación de Molinos Verticales y Sistemas
- Tipos de molinos
- Diseño y principios de operación
- Tipos de separadores y modo de operación
- Distribución de partículas y eficiencia del separador
- Molienda de materia prima
- Sistemas de alimentación a los molinos
- Diseño interno de los molinos
- Flujos de gases en los molinos verticales
- Operación y control de los molinos verticales
- Auditoria, análisis y posibles mejoras del sistema de molinos verticales.
- Molienda y secado de carbón en molinos verticales
- Molienda de cemento en molinos verticales
- Auditoria y análisis del sistema de molienda de cemento y las posibles mejoras

Fecha y lugar
Mayo 18 - 22, 2015
Buenos Aires, Argentina

Precio de inscripción
La tarifa por participante es USD $2,500 y no incluye alojamiento, ni gastos de transporte.

Términos de Pago:
El pago por participacion en el seminario es por adelantado.

Política de Anulación:
Anulacion de la participacion de
0 - 30 días antes del evento = FLSmidth le cobrara el 100% de la tarifa de inscripcion
Anulacion de la participacion de
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Contacto y coordinación
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E-mail: flsinstitute_Bethlehem@flsmidth.com

Grupo
Este seminario está diseñado para ingenieros de proceso, mantenimiento, confiabilidad, así como supervisores y gerentes de las áreas respectivas, con un mínimo de un año de experiencia en las operaciones de cemento.

Duración
El seminario tendrá una duración de cinco días e incluye materiales de trabajo, coctel de bienvenida, almuerzos, cafés/refrescos, traducción simultánea de inglés al español y cena de despedida.
- Diseño y operación de colectores de polvo
- Enclavamientos importantes
- Casos prácticos.

**Mantenimiento de Molinos Verticales**
- Mantenimiento interno de molinos verticales
- Mantenimiento del separador
- Mantenimiento de rodillos hidráulicos, y sistema de lubricación
- Criterios de diseño
- Monitoreo de condición (Lubricación, vibraciones, etc.)
- Repuestos y partes críticas
- Rutinas de mantenimiento preventivo y su importancia
- Desgaste y su impacto en producción
- Mantenimiento preventivo
- Rutinas de mantenimiento para reductores y molinos
- Medidas preventivas y de optimización de los equipos
- Planificación de mantenimiento preventivo
- Mantenimiento de colectores de polvo
- Casos prácticos.

**Tipos de Reductores en Molinos Verticales**
- Tipos de reductores (MAAG, TTCL, etc)
- Reductores de 2 estaciones (WPU) para todas las aplicaciones de molinos verticales (carbón, crudo y cemento)
- Reductores de 3 estaciones (WPV) para todas las aplicaciones de molinos verticales (crudo y cemento)
- Equipos auxiliares, las unidades de lubricación, acoplamientos e instrumentación
- Sistemas de monitoreo del sistema de lubricación del reductor
- Mantenimiento preventivo mecánica, partes y repuestos necesarios
- Casos Prácticos.

**Documentación**
Cada participante recibirá una carpeta con un conjunto completo de materiales de capacitación. Además se entregará una copia electrónica de materiales didácticos en formato PDF a cada participante en una unidad USB.
Maintenance
North America Maintenance Seminar

BETHLEHEM USA

General
The objective of this seminar is an in-depth understanding of the different components of a cement plant (Preheater tower, kiln, cooler, Vertical Mill, Ball Mills) to learn the proper preventive maintenance to ensure production efficiency and equipment reliability, and the technologies utilized to achieve optimum economy, continuous efficient operation and profitability. Inadequate maintenance may result in shorter run time and cause heavy financial losses. Maintenance performed according to the prescribed procedures will greatly improve the availability and efficiency of the plant.

Learning objectives
The purpose of the course is to teach the participants how to perform the specified maintenance activities and repair work to prevent breakdowns and ensure availability of the equipments.

Benefits
The participants will be provided with in-depth understanding of the pyro maintenance and equipment. In addition, a better understanding of the Vertical Mill, the Ball Mill mechanical characteristics and the third generation of cooler with more efficient and effective maintenance programs both short term and long term can be planned. Overall equipment efficiency, reliability and better profitability. Furthermore;
- Understand the equipment design and their limitations
- Optimize and standardize preventive maintenance techniques, improving the overall equipment efficiency and reducing risky of bad practices
- Review and implementation of the best maintenance practices to achieve sustainable and stable run time with the equipments
- Create a valuable network among the participant.

Seminar plan
The seminar covers maintenance aspects of the following 4 main areas:
- Vertical Mills Maintenance
- Types of Gearboxes in Vertical Mills
- Ball Mill Maintenance
- Pyro Maintenance.

Form
The seminar consists of theoretical classroom lectures, case studies, work sessions, exercises and real case study.

Documentation
Each participant will receive a manual with a complete set of training materials.

Target group
The seminar is designed for inspectors, supervisors, planners, engineers and managers with previous experience in maintenance systems.

Location
The seminar is held at FLSmidth Inc. Headquarters in Bethlehem PA, USA.

Duration
5 days

Planned course days
April 27 - May 1, 2015

Registration fee
Tuition fee per participants is $2,500 USD per person. Tax may apply. A purchase order is required during registration. The fee includes all course materials and daily lunch. Note: This does not include the cost of transportation to and from the airport, lodging or personal expenses.

Terms of Payment:
100 % Advance Payment

Cancellation
Cancellation of participation
0-30 days before = 100% of fee
Cancellation of participation
31-60 days before = 50% of fee
Cancellation of participation
61 days before = 0% of fee

Registration
Please contact
Ms. Lynn Petrak
Training Coordinator
Tel: +1 610 – 264 6017
Fax: +1 610 – 264 6031
E-mail: lynn.petrak@flsmidth.com
E-mail: fslinstitute_Bethlehem@flsmidth.com
International Maintenance Seminar

COPENHAGEN DENMARK

General
The International Maintenance Seminar addresses essential cost-efficiency issues by putting great emphasis on the maintenance of the cement plant’s key machinery. The presentations cover some of the most important parameters related to cement plant maintenance such as:
- Availability and cost – the key performance parameters
- State of the art in maintenance.

Learning Objectives
The seminar objective is to give the participants updated knowledge regarding machinery maintenance. The participants will be able to use effective maintenance tools and solutions when returning from the seminar. In addition, during the seminar, the participants will have access to the newest maintenance experiences from modern operation and maintenance of cement plants.

Benefits
Economic advantages are obtained if the production line remains fully available throughout the campaign period. This is more likely to be the case if a planned and structured maintenance programme is implemented. The International Maintenance Seminar is an excellent opportunity for upgrading of personal qualifications within the maintenance field.

Seminar plan
General maintenance
- Policies and strategies
- The Key Performance Indicators
- availability and cost
- Root causes and symptoms
- Effective site inspections
- Safety
- Computerized Maintenance Management Systems
- Ultrasonic analysis.

Maintenance of key machinery
- Kilns
- Ball mills
- Vertical mills
- Coolers
- Gears
- Fans.

The failure mechanisms
- Fatigue crack formation
- Vibrations
- Lubrication
- Corrosion.

Analysis and repair methods
- Vibration analysis
- Balancing
- Oil analysis.

Auxiliary machinery
- Cement plant transport equipment
- Electrostatic Precipitators
- Bag filters (Fabric Filters)
- Electrical equipment
- Feeders
- Crushers.

Target group
This seminar is designed for maintenance managers and maintenance engineers. Future managerial persons, and section heads, whether from maintenance or production, may also benefit significantly by participating.

Participants
The seminar is limited to the first 45 persons who apply.

Duration
13 days

Planned Seminar days
13 - 25 September 2015

Location
The seminar takes place at Radisson Blu Scandinavia Hotel in Copenhagen, Denmark and a cement plant in Europe.

Included in registration fee
- Training sessions
- Seminar documentation
- Single room accommodation including full board (breakfast, lunch, and dinner) at Radisson Blu Scandinavia Hotel in Copenhagen
- Plant visit tour including transportation and hotel
- Emergency medical insurance
- Laundry service, except on the plant visit tour
- Free internet, except during plant visit tour.

Note: The fee does not include private telephone calls, faxes, beverages outside meals, dry cleaning, room service, or extra nights.
Features
- Meeting FLSmidth technical specialists and trouble-shooters
- Group work and structured discussion groups
- International forum on managerial level
- Real-life case studies
- Hands-on presentations with equipment and instruments
- Bring your own case. Send us your maintenance challenge prior to the seminar, and it could be your case that is selected to be presented and discussed at the seminar
- Visit to a European plant, including practical demonstrations of equipment and methods.

Registration fee
Seminar fee per participant is EUR 9,210.00 excl. VAT

Terms of Payment:
100 % Advance Payment

Cancellation
There will be an administrative charge in case of absence or cancellation. The cancellation fees are as follows:

- 61 days before seminar start = 0% of fee
- 31-60 days before seminar start = 50% of fee
- 0-30 days before seminar start = 100% of fee

Absence or cancellations due to missing visa will not be the responsibility of FLSmidth and will be subject to normal cancellation rules.

Registration
Please contact:
Ms. Pernille Beck
Tel: + 45 36 18 17 27
Fax: +45 36 18 28 04
E-mail: PEBE@flsmidth.com
E-mail: fisinstitute@flsmidth.com

Early Bird: Sign up before 31 March 2015 and get a 10% discount.
Kiln System Maintenance

COPENHAGEN DENMARK

General
The kiln is the main machine in the cement manufacturing process. Kiln maintenance and repair are critical activities in ensuring the efficiency of the cement manufacturing plant. If not maintained properly, kiln runtime will be reduced, causing substantial financial losses. This course introduces maintenance understanding, kiln maintenance procedures and techniques.

Learning objectives
The purpose of the course is to teach the participants the understanding of the maintenance concept. How to perform the specified maintenance activities and repair works to prevent breakdowns and ensure desirable availability of the kiln system.

Benefits
The increased knowledge of maintenance, maintenance procedures and implementation of them will significantly improve the productivity of the kiln and increase plant efficiency.

Course Contents
- Modern maintenance, maintenance concepts
- Implementation and management
- Preheater maintenance, design and function
- Design of kiln and kiln components
- Maintenance and design of grate coolers.

Form
The course is a combination of theoretical classroom lectures, exercises and calculations. Furthermore, the knowledge gained at the course is measured by tests.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for maintenance personnel.

Participants
The maximum number of participants is 15.

Duration
4 days

Planned course dates
23 - 26 March 2015

Location
The course is held at FLSmidth A/S, Valby Denmark.

Registration fee
Tuition fee per participant is EUR 2,625. excl. VAT. Cost of board, lodging and personal expenses are not covered.

Terms of Payment:
100% Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact:
Ms. Pernille Beck
Tel: +45 36 18 17 27
Fax: +45 36 18 28 04
E-mail: flsinstitute@flsmidth.com
Kiln System Seminar – Operation and Maintenance

MANILA PHILIPPINES

General
This seminar is the perfect way to enhance knowledge on both operation and maintenance of the kiln system. The seminar will cover operational and maintenance aspects of the kiln process and the equipment, thus giving the participants an enhanced knowledge about the process itself and an improved understanding of maintenance concepts related to the kiln system.

Learning objectives
The objective of the seminar is to upgrade the knowledge level of the participants on both operational and maintenance aspects of the kiln system.

Benefits
The participants will acquire knowledge on operation and improved maintenance practices needed to achieve energy savings, reduced maintenance costs and continuous improvement of the operation of equipment. The seminar also offers a valuable networking opportunity in which operational and maintenance personnel can obtain improved understanding of each other’s work areas.

Seminar Contents
Operation
- Kiln System Design and principles of operation
- Fuel Types and Firing systems
- Burnability of Raw meal
- Behaviour of Volatile Matter
- SOx and NOx Emissions
- Use of Alternative fuels in cement kilns.

Maintenance
- Maintenance concepts and maintenance philosophy
- Preheater maintenance
- Kiln maintenance and root causes
- Maintenance aspects of grate coolers.

Form
The course consists of classroom lectures, group work and case studies. Furthermore, the knowledge gained at the seminar is measured by tests.

Documentation
Each participant will receive a complete set of training material.

Target group
The seminar is designed for both process engineers and maintenance engineers with experience from the cement industry.

Participants
The maximum number of participants is 45.

Planned course days
16 - 20 November 2015

Duration
4 ½ days

Location
The course is held at conference facilities in Manila, Philippines

Registration fee
Tuition fee per participant is EUR 2,190. excl. VAT. Cost of board, lodging and personal expenses are not covered

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact:
Ms. Pernille Beck
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Ball Mill Seminar  
– Operation and Maintenance

JAKARTA INDONESIA

General
This seminar will provide a thorough understanding of the operation of ball mills and the best and proper maintenance practices.

Learning objectives
The seminar will upgrade the knowledge of the participants within the fields of technology, operation and maintenance best practices needed to achieve energy savings, reduce maintenance costs and continuous improvement of the operation of the equipment.

Benefits
This seminar offers enhanced knowledge on the operations of ball mills as well as on maintenance best practices to prevent breakdowns and ensure availability of the mill system. The seminar also offers a valuable networking opportunity in which operational and maintenance personnel can obtain improved understanding of each other’s work areas.

Seminar contents

Operation
- Ball mill types, design and operation
- Ball mill grinding theory
- Ball mill power consumption calculation
- Grinding media for ball mills
- Heat and mass balance for mill installations
- Separators and their mode of operation
- Cement grinding in ball mills.

Maintenance
- Ball mill types
- Ball mill supports
- Water injection systems
- Ball mill drive systems
- Wear and wear parts for ball mills
- Ball mill lubrication
- Ball mill diaphragms
- Ball mill inspection
- Replacement of slide shoes and white metal bearings
- Ball mill shell replacement
- Trunnion replacement
- Separator.

Form
The course consists of classroom lectures, exercises and case studies. Furthermore, the knowledge gained at the course is measured by tests.

Documentation
Each participant will receive a binder containing a complete set of training material.

Target group
The seminar is designed for both process engineers and maintenance engineers with experience from the cement industry.

Participants
The maximum number of participants is 45.

Location
The course is held at conference facilities in Jakarta, Indonesia.

Duration
4 ½ days

Planned course days
16 – 20 March 2015

Registration fee
Tuition fee per participant is EUR 2,190. excl. VAT. Cost of board, lodging and personal expenses are not covered.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact:
Ms. Pernille Beck
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E-mail: flsinstitute@flsmidth.com
General
The Pumps and Compressors maintenance seminar will help participants to understand the principles of operation, and proper maintenance best practices across the industry on FK Pumps and Pneumatic Conveying Equipment.

Learning objectives
The course is designed for maintenance personnel to be able to properly maintain and troubleshoot the mechanical equipment at the manufacturing facility. With a new hands on approach to allow the participant to fully attain the knowledge from the instructor.

Benefits
The participants will be able to address problems related with the equipment as well as review design and operating parameters. They will be exposed to similar problems in the industry and best practices.

Seminar plan
- Introduction to pneumatic conveying
- Principles of Pneumatic Conveying
- Pneumatic Conveying Flow
- Pneumatic Conveying System
- Typical Materials Handled
- System Troubleshooting
- FK Pumps type M, H and Z
- Preventive maintenance
- Screw conveyor, wear and characteristics
- Bearing Arrangements
- Seal Arrangement
- Lubrication
- Purge Air Requirements
- Internal Inspection and Repair
- Spare Parts
- Rotary vane compressors
- Compressor Types
- Types of filter and characteristics
- Design & Construction
- Ful-Vane Oil Viscosity Requirements and lubrication system
- Internal Inspection and Repair
- Blade Visual Inspection
- Preventive maintenance
- SK valves.

Form
The seminar consists of theoretical classroom lectures, full interaction of the trainer with the classroom in order to maximize the learning experience among the participants. The second part of the seminar will involve hands on approach in dismantling and reassembling the machinery in order to fully understand the lectures.

Documentation
Each participant will receive a binder with a complete set of training materials. In addition a soft copy of training materials in PDF form will be handed to each participant in a USB drive.

Target Group
The seminar is designed for entry level and experienced maintenance personnel. The participants will typically be maintenance trades personnel, engineers and managers.

Participants
The maximum number of participants is 20.

Duration
3 days

Planned course days
20 - 22 October 2015

Location
The course is held at FLSmidth Inc., Manheim, PA, USA.

Registration fee
Tuition fee per participants is $1,800 USD per person.

The fee includes all course materials, and lunch daily.

Note: This does not include the cost of your lodging or personal expenses. Nor transportation To and From airport.

Terms of Payment:
100 % Advance Payment

Cancellation
Cancellation of participation
0-30 days before = 100% of fee
Cancellation of participation
31-60 days before = 50% of fee
Cancellation of participation
61 days before = 0% of fee

Registration
Please contact
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Hydraulics Maintenance Seminar

BETHLEHEM PA USA

General
The Hydraulics maintenance seminar will enhance the principles of operation, design and proper maintenance of the different hydraulics systems used in the cement industry. The intent of this seminar is an in-depth understanding of the different components of the hydraulic system, its relationship with operation, and the technologies utilized to increase the skills and knowledge of the personnel involved in the maintenance of this equipment leading to increased availability and equipment efficiency.

Benefits
The participants will be able to address and find solutions to problems related with the hydraulics system as well as review and optimize design and operating parameters. They will be exposed to real situations from other plants, and best practices in the cement industry.

Seminar plan
- Introduction to Hydraulics
- FL Smidth Hydraulic Equipment
- Vertical roller mill spring systems (FRM, Atox, OK)
- Rotary kiln thrust rollers and Rotary kiln friction drives
- Clinker cooler drives and Clinker cooler roll breakers
- Hydraulics Exercises.

Form
The seminar consists of theoretical lectures and hands on approach with the Hydraulics Work Station in order to fully understand the principles of operation and maintenance of the system. Full interaction of the trainer with the participants is provided in order to maximize the learning experience.

Documentation
Each participant will receive a binder with a complete set of training materials. In addition a soft copy of training materials in PDF form will be handed to each participant in a USB drive.

Target group
The seminar is designed for key maintenance personnel involved in hydraulics system operation and maintenance. The participants will typically be maintenance technicians, engineers and supervisors.

Participants
The maximum number of participants is 20.

Duration
5 days

Planned course days
2 - 6 November 2015

Location
The seminar is held at FL Smidth Inc. Headquarters in Bethlehem PA, USA.

Registration fee
Tuition fee per participants is $2,500. Taxes may apply.

Note: This does not include the cost of your lodging or personal expenses. Nor transportation to and from airport.

Terms of Payment:
100 % Advance Payment

Cancellation
Cancellation of participation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact
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E-mail: flsinstitute_Bethlehem@flsmidth.com
Seminario de Mantenimiento Hidráulico

CARTAGENA COLOMBIA

Objetivo
El seminario de mantenimiento Hidráulico mejorará los principios de funcionamiento, diseño y mantenimiento adecuado de los diferentes sistemas hidráulicos utilizados en la industria del cemento. El propósito de este seminario es una comprensión en profundidad de los diferentes componentes del sistema hidráulico, su relación con la operación y las tecnologías utilizadas para aumentar las habilidades y conocimientos del personal que participa en el mantenimiento de estos equipos y así lograr aumentar la disponibilidad y su eficiencia.

Objetivos de aprendizaje
El objetivo del seminario es aumentar el conocimiento de los participantes relacionados con el mantenimiento de los sistemas hidráulicos, aumentar las habilidades necesarias para operar y mantener los componentes de los sistemas utilizando las mejores prácticas probadas en la industria, lo que lleva a la reducción de tiempo de parada, el aumento de fiabilidad y el rendimiento del sistema.

Beneficios
Los participantes serán capaces de abordar y encontrar soluciones a los problemas relacionados con el sistema hidráulico, así como la revisión y optimización de diseño y parámetros de funcionamiento. Serán expuestos a situaciones reales de otras plantas, y las mejores prácticas en la industria cementera.

Temas
- Introducción a la Hidráulica
- Equipos hidráulicos FLSmidth
- Sistemas hidráulico rodillos molino vertical (FRM, Atox, OK)
- Roldana de empuje axial horno y sistema de fricción giratorio
- Enfriadores de clinker y trituradora de clinker
- Ejercicios hidráulicos.

Plan del Seminario
El seminario consta de clases teóricas y prácticas con la Estación Hidráulica de trabajo con el fin de comprender plenamente los principios de funcionamiento y mantenimiento del sistema. Interacción completa del entrenador con los participantes en forma de maximizar la experiencia de aprendizaje.

Documentación
Cada participante recibirá una carpeta con un conjunto completo de materiales de capacitación. Además se entregará una copia electrónica de materiales didácticos en formato PDF a cada participante en una unidad USB.

Grupo
El seminario está dirigido a personal de mantenimiento clave que participan en la operación del sistema hidráulico y el mantenimiento. Los participantes suelen ser los técnicos de mantenimiento, ingenieros y supervisores.

Duración
El seminario tendrá una duración de cinco días e incluye materiales de trabajo, cóctel de bienvenida, almuerzos, cafés/refrescos, traducción simultánea de inglés al español y cena de despedida.

Fecha y lugar
7 - 11 de Septiembre, 2015
Cartagena, Colombia

Precio de inscripción
La tarifa por participante es USD $2,500 y no incluye alojamiento, ni gastos de transportación.

Términos de Pago:
El pago por participación en el seminario es por adelantado.

Cancelación
Anulación de la participacion de 0 - 30 días antes del evento = FLSmidth le cobrara el 100% de la tarifa de inscripción
Anulacion de la participacion de 31 - 59 días antes del evento = FLSmidth le cobrara el 50% de la tarifa de inscripción
Anulacion de la participacion de 60 – 90 días antes del evento = FLSmidth le reembolsa el 100% de la tarifa de inscripción

Contacto y coordinación
Ms. Lynn Petrak
Training Coordinator
Tel: +1 610 – 264 6017
Fax: +1 610 – 264 6031
E-mail: lynn.petrak@flsmidth.com
E-mail: flsinstitute_Bethlehem@flsmidth.com
**Objetivo**
El objetivo de este seminario es aprender el correcto mantenimiento preventivo, la identificación de fallas y el aprendizaje de análisis de causa raíz de los equipos, logrando con esto la disminución de tiempo y frecuencias de paradas, la reducción de costos de mantenimiento y un aumento en rentabilidad. El Seminario Internacional de Mantenimiento presenta una base sólida en las mejores prácticas del mantenimiento de los equipos principales de la industria del cemento.

**Beneficios**
Este seminario ofrece nuevas ideas para optimizar las mejoras prácticas de mantenimiento de los equipos principales en una planta de cemento, incluyendo la posibilidad de mejoras potenciales y modernización de los mismos. Después de la participación en este seminario, la experiencia ha mostrado que se ha formado una red valiosa de contactos entre colegas de otras plantas. Además, contacto directo con especialistas técnicos e ingenieros de campo de FLSmidth.

**Plan del Seminario**
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Estudio y diseño de los equipos principales incluyendo los últimos métodos para mejoras y actualización de los sistemas
- Trabajos en grupo, talleres, y discusión intensiva.

**Temas**
Mantenimiento del horno
- Alineamiento del horno
- Deformaciones de la coraza
- Alineación, ajuste y cálculos de rodillos
- Coraza del horno, espesores y sus consecuencias
- Llantas: Ovalidad, diseños flotantes Vs. Diseño de suspensión tangencial
- Caso de estudio, análisis e informe de interpretación de caso real de Ovalidad
- Soportes y cojinetes del horno
- Transmisión del horno
- Alineación del horno, medición y sus consecuencias.

Mantenimiento de molinos verticales y molinos de bolas
- Mediciones y métodos recomendados para el mantenimiento de los molinos
- Lubricación
- Análisis y partes de desgaste
- Coraza de los molinos
- Modernizaciones existentes para los molinos de bolas.

**Grupo**
Este seminario está diseñado para ingenieros de mantenimiento y confiabilidad, así como supervisores y gerentes de las áreas respectivas, con un mínimo de un año de experiencia en las operaciones de cemento.

**Duración**
El seminario tendrá una duración de cinco días e incluye materiales de trabajo, cóctel de bienvenida, almuerzos, cafés/refrescos, traducción simultánea de inglés al español y cena de despedida.

**Fecha y lugar**
Julio 13 - 17, 2015

**Precio de inscripción**
La tarifa por participante es USD $2,800 y no incluye alojamiento, ni gastos de transportación.

**Cancelación**
Anulación de la participación de 0 - 30 días antes del evento = FLSmidth le cobrara el 100% de la tarifa de inscripción.
Anulacion de la participacion de 31 - 59 días antes del evento = FLSmidth le cobrara el 50% de la tarifa de inscripción
Anulacion de la participacion de 60 – 90 días antes del evento = FLSmidth le reembolsa el 100% de la tarifa de inscripción

**Contacto coordinación**
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E-mail: lynn.petrak@flsmidth.com
E-mail: flsinstitute_Bethlehem@flsmidth.com

**Términos de Pago:**
El pago por participación en el seminario es por adelantado.
Mantenimiento de enfriadores de clinker
- Diseño, mantenimiento y reparación enfriadores 1ra, 2da y 3ra generación
- Dimensiones críticas: Como conseguirlas y mantenerlas
- Secretos de una operación óptima y su relación con mantenimiento
- Instrucciones para la localización y reparación de averías
- Análisis de causa raíz de las fallas más comunes en los enfriadores
- Análisis de partes de desgaste.
Objetivo
El objetivo de este seminario es aprender el correcto mantenimiento preventivo, la identificación de fallas y el aprendizaje de análisis de causa raíz de los equipos, logrando con esto la disminución de tiempo y frecuencias de paradas, la reducción de costos de mantenimiento y un aumento en rentabilidad. El Seminario Internacional de Mantenimiento presenta una base sólida en las mejores prácticas del mantenimiento de los equipos principales de la industria del cemento.

Beneficios
Este seminario ofrece nuevas ideas para optimizar las mejoras prácticas de mantenimiento de los equipos principales en una planta de cemento, incluyendo la posibilidad de mejoras potenciales y modernización de los mismos. Después de la participación en este seminario, la experiencia ha mostrado que se ha formado una red valiosa de contactos entre colegas de otras plantas. Además contacto directo con especialistas técnicos e ingenieros de campo de FLSmidth.

Plan del Seminario
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Estudio y diseño de los equipos principales incluyendo los últimos métodos para mejoras y actualización de los sistemas
- Trabajos en grupo, talleres, y discusión intensiva.

Temas
**Mantenimiento del horno**
- Alineamiento del horno
- Deformaciones de la coraza
- Alineación, ajuste y cálculos de rodillos
- Coraza del horno, espesores y sus consecuencias
- Llantas: Ovalidad, diseños flotantes Vs. Diseño de suspensión tangencial
- Caso de estudio, análisis e informe de interpretación de caso real de Ovalidad
- Soportes y cojinetes del horno
- Transmisión del horno
- Alineación del horno, medición y sus consecuencias.

**Mantenimiento de molinos verticales y molinos de bolas**
- Mediciones y métodos recomendados para el mantenimiento de los molinos
- Lubricación
- Análisis y partes de desgaste
- Coraza de los molinos
- Modernizaciones existentes para los molinos de bolas.

**Mantenimiento de piñones, corona y symetos**
- Tipos de coronas usados en los hornos y molinos
- Mediciones de las coronas y piñones.
- Alineamiento
- Problemas de desgaste
- Lubricación
- Y otros temas de interés por definir.
Mantenimiento de enfriadores de clinker
- Diseño, mantenimiento y reparación enfriadores 1ra, 2da y 3ra generación
- Dimensiones críticas: Como conseguir y mantenerlas
- Secretos de una operación óptima y su relación con mantenimiento
- Instrucciones para la localización y reparación de averías
- Análisis de causa raíz de las fallas más comunes en los enfriadores
- Análisis de partes de desgaste.

Grupo
Este seminario está diseñado para ingenieros de mantenimiento y confiabilidad, así como supervisores y gerentes de las áreas respectivas, con un mínimo de un año de experiencia en las operaciones de cemento.

Duración
El seminario tendrá una duración de cinco días e incluye materiales de trabajo, cocktail de bienvenida, almuerzos, cafés/refrescos, y cena de despedida. El seminario será realizado en idioma español.

Fecha y lugar
Marzo 23 - 27, 2015

Precio de inscripción
La tarifa por participante es USD $2,500 y no incluye alojamiento, ni gastos de transporte.

Términos de Pago:
El pago por participación en el seminario es por adelantado.

Política de Anulación:
Anulación de la participación de 0 - 30 días antes del evento = FLSmidth le cobrará el 100% de la tarifa de inscripción
Anulación de la participación de 31 - 59 días antes del evento = FLSmidth le cobrará el 50% de la tarifa de inscripción
Anulación de la participación de 60 – 90 días antes del evento = FLSmidth le reembolsa el 100% de la tarifa de inscripción

Contacto y coordinación
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E-mail: flsinstitute_Bethlehem@flsmidth.com
Seminario de Molinos Verticales (Operaciones y Mantenimiento)

BUENOS AIRES ARGENTINA

Objetivo
El seminario de molinos verticales está diseñado para capacitar al personal sobre la tecnología, operación y las mejoras prácticas de mantenimiento necesarias para poder alcanzar ahorros de energía, reducir costos de mantenimiento, así como la mejora continua de la operación de los equipos.

Beneficios
Este seminario ofrece nuevas ideas para optimizar las operaciones de los molinos verticales, incluyendo la posibilidad de mejoras potenciales y modernización de los equipos. El seminario está diseñado para mejorar la sinergia entre los departamentos de mantenimiento, producción y calidad y para capacitar a los participantes a elaborar planes de acción realistas que estén al alcance de los participantes. Después de la participación en este seminario, la experiencia ha mostrado que se ha formado una red valiosa de contactos. Además contacto directo con especialistas técnicos e ingenieros de campo de FLSmidth.

Plan del Seminario
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Estudio de la función y el diseño del equipo principal, incluyendo los últimos métodos para la optimización y las propuestas para mejoras en modernizaciones del sistema y operaciones
- Trabajos en grupo y discusión intensiva.

Temas
Operación de Molinos Verticales y Sistemas
- Tipos de molinos
- Diseño y principios de operación
- Tipos de separadores y modo de operación
- Distribución de partículas y eficiencia del separador
- Molienda de materia prima
- Sistemas de alimentación a los molinos
- Diseño interno de los molinos
- Flujos de gases en los molinos verticales
- Operación y control de los molinos verticales
- Auditoria, análisis y posibles mejoras del sistema de molinos verticales
- Molienda y secado de carbón en molinos verticales
- Molienda de cemento en molinos verticales
- Auditoria y análisis del sistema de molienda de cemento y las posibles mejoras
- Diseño y operación de colectores de polvo
- Enclavamientos importantes
- Casos prácticos.

Mantenimiento de Molinos Verticales
- Mantenimiento interno de molinos verticales
- Mantenimiento del separador
- Mantenimiento de rodillos hidráulicos, y sistema de lubricación
- Criterios de diseño
- Monitoreo de condición (Lubricación, vibraciones, etc.)
- Repuestos y partes críticas

Fecha y lugar
Mayo 18 - 22, 2015
Buenos Aires, Argentina

Precio de inscripción
La tarifa por participante es USD $2,500 y no incluye alojamiento, ni gastos de transportación.

Términos de pago:
El pago por participacion en el seminario es por adelantado.

Cancelación
Anulación de la participación de 0 - 30 días antes del evento = FLSmidth le cobrara el 100% de la tarifa de inscripción
Anulación de la participación de 31 - 59 días antes del evento = FLSmidth le cobrara el 50% de la tarifa de inscripción
Anulación de la participación de 60 – 90 días antes del evento = FLSmidth le reembolsa el 100% de la tarifa de inscripción

Contacto y coordinación
Ms. Lynn Petrak
Training Coordinator
Tel: +1 610 – 264 6017
Fax: +1 610 – 264 6031
Email: lynn.petrak@flsmidth.com
E-mail: fslinstitute_Bethlehem@flsmidth.com

Grupo
Este seminario está diseñado para ingenieros de proceso, mantenimiento, confiabilidad, así como supervisores y gerentes de las áreas respectivas, con un mínimo de un año de experiencia en las operaciones de cemento.

Duración
El seminario tendrá una duración de cinco días e incluye materiales de trabajo, coctel de bienvenida, almuerzos, cafés/refrescos, traducción simultánea de inglés al español y cena de despedida.
- Rutinas de mantenimiento preventivo y su importancia
- Desgaste y su impacto en producción
- Mantenimiento preventivo
- Rutinas de mantenimiento para reductores y molinos
- Medidas preventivas y de optimización de los equipos
- Planificación de mantenimiento preventivo
- Mantenimiento de colectores de polvo
- Casos prácticos.

**Tipos de Reductores en Molinos Verticales**
- Tipos de reductores (MAAG, TTVL, etc)
- Reductores de 2 estaciones (WPU) para todas las aplicaciones de molinos verticales (carbón, crudo y cemento)
- Reductores de 3 estaciones (WPV) para todas las aplicaciones de molinos verticales (crudo y cemento)
- Equipos auxiliares, las unidades de lubricación, acoplamientos e instrumentación

- Sistemas de monitoreo del sistema de lubricación del reductor
- Mantenimiento preventivo mecánica, partes y repuestos necesarios
- Casos Prácticos.

**Documentación**
Cada participante recibirá una carpeta con un conjunto completo de materiales de capacitación. Además se entregará una copia electrónica de materiales didácticos en formato PDF a cada participante en una unidad USB.
**Pyro – Seminario del Proceso de Calcincación (Operaciones y Mantenimiento)**

**QUITO ECUADOR**

**Objetivo**
El seminario del proceso de calcinación de operaciones y mantenimiento, está diseñado para familiarizar al personal con la tecnología y los procedimientos para desarrollar habilidades para operar, optimizar y mantener los sistemas de pyro proceso.

**Beneficios**
Este seminario ofrece nuevas ideas para optimizar las operaciones de la planta, incluyendo la posibilidad de potenciales mejoras y modernización de los equipos. El seminario está diseñado para mejorar la sinergia entre los departamentos de mantenimiento, producción y calidad y para capacitar a los participantes a elaborar planes de acción realistas que estén al alcance de los participantes. Después de la participación en este seminario, es nuestra experiencia que una red valiosa de contactos será creada.

**Plan del Seminario**
Este seminario de 5 días ofrece enseñanza directa del instructor, estudio de casos reales, y sesiones de trabajo para:
- Repaso de las operaciones de fabricación de cemento
- Estudio de la función y el diseño del equipo principal, incluyendo los últimos métodos para la optimización y las propuestas para mejoras en modernizaciones de planta y operaciones.

**Temas**
- Operación del horno
- Operación del calcinador
- Teoría de combustión
- Balances térmicos
- Medición en planta del balance térmico
- Optimización del consumo térmico
- Operación del enfriador de clinker
- Emisiones de los hornos rotatorios
- Mantenimiento de hornos rotatorios

**Fecha y lugar**
Abril 20 - 24, 2015
Quito, Ecuador

**Precio de inscripción**
La tarifa por participante es USD $2,500 y no incluye alojamiento, ni gastos de transporte.

**Términos de Pago**
El pago por participación en el seminario se realizará por adelantado.

**Cancelación**
Anulación de la participación de 0 - 30 días antes del evento = FLSmith le cobrará el 100% de la tarifa de inscripción
Anulación de la participación de 31 - 59 días antes del evento = FLSmith le cobrará el 50% de la tarifa de inscripción
Anulación de la participación de 60 – 90 días antes del evento = FLSmith le reembolsa el 100% de la tarifa de inscripción

**Contacto coordinación**
Ms. Lynn Petrak
Training Coordinator
Tel: +1 610 - 264 6017
Fax: +1 610 - 264 6031
E-mail: lynn.petrak@flsmidth.com
E-mail: fslinstitute.us@flsmidth.com

**Grupo**
Este seminario ha sido diseñado para ingenieros de proceso y mantenimiento, así como, supervisores y gerentes con un mínimo de un año de experiencia en las operaciones de cemento.

**Duración**
El seminario tendrá una duración de cinco días e incluye materiales de trabajo, cóctel de bienvenida, almuerzos, cafés/refrescos, traducción simultánea de inglés al español y cena de despedida.

**Adicionalmente**
- Contacto directo con especialistas técnicos e ingenieros de campo
- Trabajos en grupo
- Grupos de discusión intensiva.

**Documentación**
Cada participante recibirá una carpeta con un conjunto completo de materiales de capacitación. Además se entregará una copia electrónica de materiales didácticos en formato PDF a cada participante en una unidad USB.
Pfister Rotorweighfeeders – Basic System Introduction for Optimal Handling

AUGSBURG GERMANY, BETHLEHEM USA, MONTERREY MEXICO

General
Our wealth of experience as the manufacturer of your equipment enables us to share with you unique insight and information. Our training experts are your global resource for knowledge. They assist you in the application of the best industry practices. If you handle your dosing equipment correctly you will not only improve your equipment’s performance but save maintenance costs, too. We will show you how to accomplish this during the course.

Learning objectives
The training course is designed to provide plant staff with the knowledge they need to secure optimal performance and equipment availability.

Benefits
The training aims to improve the participants’ skills and knowledge by developing their awareness of applied procedures concerning the operation and maintenance of equipment. Subjects are chosen and sequenced to meet the staff’s recognised requirements.

Course contents
- Function principles
- Troubleshooting
- Access and handling of feeder controllers
- Calibration procedures
- Interpretation of events and messages
- Back up handling; up- and downloads; spare part replacement
- Diagnostic tools – online data logger, trigger monitor
- Maintenance intervals and wear rating
- Replacement of wear parts
- Adjustments and fine tuning.

Form
Theoretical classroom lectures and practical exercises on feeder simulation units.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for participants, working as electrical or mechanical maintenance personal. The participants will typically be staff from the maintenance departments with responsibility for feeder equipment.

Participants
The maximum number of participants is 10.

Duration
3 days

Planned course days
For Germany (German/English)
24 - 26 March 2015
14 - 16 July 2015
20 - 22 October 2015

For USA (English)
14 - 16 April 2015
15 - 17 September 2015

For Mexico (Spanish)
03 - 05 June 2015

Location
The course is held at
a. Pfister, Augsburg, Germany.
b. Pfister, Bethlehem, US
c. Pfister, Monterrey, Mexico

Registration fee
Tuition free per participants is EUR 1950. Cost of board, lodging or personal expenses are not covered.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
Please contact:
Mr. Armin Hauser
Tel: +49 821 7949 392
Fax: +49 821 7949 240
E-mail: service@flsmidthpfister.com
Mechanical Maintenance of Rotary Dryers

SOUTH SIOUX CITY NE USA

General
The workshops are designed to cover most areas of preventive maintenance practices, as well as alignment methods, and roller skew adjustment best practices.

A dryer is our generic term for any two pier, non-refractory lined drum which can be a tumbler, cooler, granulator, conditioning drum, rock scrubber and so on.

Learning objectives
- Define dryer component names
- Explain basic design concepts
- Identify the most sensitive points for visual inspection
- Explain simple hands-on inspection methods
- Introduce analytical inspection tools and methods
- Explain various gear, pinion and roller alignment concepts
- Explain roller skew and skew management
- Elevate general mechanical knowledge of rotary dryers.

Benefits
- With a better understanding of rotary dryer’s mechanical characteristics more efficient and effective maintenance programs both short term and long term can be planned
- Definitive understanding of support roller alignment and setting skew will dispense commonly held myths and misunderstandings putting everyone “on the same page”
- Provide contacts and resources for future reference.

Course contents
Dryer, 2-pier, no refractory
- Basic design fundamentals, Inspection and Trouble Shooting
  - Shell
  - Tires, mounting styles and hardware
  - Rollers, thrust Rollers and bases
  - Gear, Pinion and other drives
  - Inlet and Outlet Seals
  - Alignment – conventional 2 pier alignment
  - Roller Adjustment and Skew
- Tire and Roller Reconditioning
- Issues with Spherical Roller Bearings used on trunnions
- Thrust Monitor System and Alignments explained
- Lubrication
- Roller adjustments and skew (thrust) control concepts and procedures.

Form
The seminar comprises of classroom presentations and a day of hands-on work making roller adjustments at our training kiln.

Documentation
Each participant receives:
- All the course material in full color hardcover book. This 258-page book (approx.) contains all the pictures, graphics and text
- A memory stick containing all the course materials, videos and animations.

Target group
Maintenance personnel from mechanics, planners to maintenance managers.

Participants
Maximum number of participants is 35.

Duration
4 days

Planned Course days
13 - 16 April 2015
21 - 24 September 2015

Location
South Sioux City, Nebraska - USA

Registration fee
$1,150 per person ($100 per person discount applies if 4+ participants from same company attends)

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 50% of fee
31 days before = 0% of fee

Registration
Please contact: sandy.andersen@flsmidth.com

Please notice: Registration required no later than three weeks prior to the published date

Participants need to bring their own PPE and in case of inclement weather, appropriate clothing.
Mechanical Maintenance of Rotary Kiln

**SOUTH SIOUX CITY NE USA**

**General**
The workshops are designed to cover most areas of preventive maintenance practices, as well as alignment methods, shell ovality or flexing measurement, and roller adjustment and skew best practices.

**Learning objectives**
- Define kiln equipment component names
- Explain basic design concepts
- Identify the most sensitive points for visual inspection
- Explain simple hands-on inspection methods
- Introduce analytical inspection tools and methods
- Explain various gear, pinion and roller alignment concepts
- Explain roller skew and skew management
- Elevate general mechanical knowledge of rotary kilns.

**Benefits**
- With a better understanding of rotary kiln’s mechanical characteristics more efficient and effective maintenance programs both short term and long term can be planned
- Definitive understanding of support roller alignment and setting skew will dispense commonly held myths and misunderstandings putting everyone “on the same page”
- Provide contacts and resources for future reference.

**Course contents**
Kiln, multi-pier, refractory
Basic topics are:
- Basic design fundamentals, Inspection and Trouble Shooting
  - Shell
  - Tires, mounting styles and hardware
  - Rollers, thrust Rollers and bases
  - Gear, Pinion and other drives
  - Inlet and Outlet Seals
- Alignment – multi pier laser / conventional 2 pier alignment
- Shell Flex (Ovality) concepts, measurement, evaluation
- Roller Adjustment and Skew
- Tire and Roller Reconditioning
- Refractory
- Lubrication
- Roller adjustments and skew (thrust) control concepts and procedures.

**Form**
The seminar comprises of presentations and a day of hands-on work roller adjustments on site training kiln.

**Documentation**
Each participant receives:
- All the course material in full color hardcover book. This 322-page book (approx.) contains all the pictures, graphics and text
- A memory stick containing all the course materials, videos and animations.

**Target group**
Maintenance personnel from mechanics, planners to maintenance managers.

**Participants**
Maximum number of participants is 35.

**Duration**
4 days

**Planned Course days**
4 - 7 May 2015
26 - 29 October 2015

**Location**
South Sioux City, Nebraska - USA

**Registration fee**
$1,150 per person ($100 per person discount applies if 4+ participants from same company attends)

**Terms of Payment:**
100 % Advance Payment

**Cancellation**
0-30 days before = 50% of fee
31 days before = 0% of fee

**Registration**
Please contact: sandy.andersen@flsmidth.com

Please notice: Registration required no later than three weeks prior to the published date

Participants need to bring their own PPE and in case of inclement weather, appropriate clothing.
Automation
ECS/ACESYS Programming for Control Logix PLC

BETHLEHEM USA

General
The objective for the course is to develop skills in creating, changing and adding new ACESYS modules in ECS and PLC.

Learning objectives
After attending the course the participants will have an overview of the communication between the ECS/ControlCenter and the PLC’s and knowledge of ACESYS programming possibilities in the PLC. The participants will also get experience in selecting, adding and changing ACESYS Modules in ECS/ControlCenter and PLC.

Benefits
Adaptable Control Engineering System, ACESYS, is used for programming the PLC’s. ACESYS trained staff can maintain PLC software and make the necessary changes in the PLC for optimization or process changes.

Course Contents
This course is focusing on ACESYS for Rockwell ControlLogix PLC’s and programmed with RSlogix5000 Software.

The course covers the following topics:
- ECS and PLC structure and layout
- Departments
- Groups
- Routes
- Uni- and Bi-directional Motors
- MotorGates
- Valves
- Select Points
- Analog and Digital Alarms
- Positioners
- PID Controllers.

The course is based on ECS/ControlCenter version 7.9

Form
The course is a combination of lectures, demonstration, hands-on exercises and discussions. Training is performed using ECS Device Simulation and Rockwell SoftLogix PLC.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for engineers, who work with and program ACESYS installations. The course requires ECS maintenance skills similar to the course “ECS/ControlCenter Maintenance” and experience programming ControlLogix PLC’s using RSLogix5000.

Each participant must have prior experience or training using ECS control systems and PLC programming using RSLogix5000.

Participants
The maximum number of participants is 10.

Duration
5 days

Planned course days
9 - 13 February 2015
21 - 25 September 2015

Location
The course is held at FLSmidth Automation in Bethlehem, USA.

Registration Fee
Tuition fee per participant is USD 3,200
The fee includes all course materials, and lunch daily.

Note: This does not include the cost of your lodging or personal expenses.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
For registration please contact
FLSmidth Automation Customer Service - Training
Tel: +1 (610) 264 6044
Fax: +1 (610) 264 6045
E-mail: support.flsa-us@flsmidth.com

Note: Please note that registration shall be made 8 weeks prior to a course start
ECS/ControlCenter – Daily Use, Mimics and Maintenance

BETHLEHEM USA

General
The course focuses on functions of the ECS control system from FLSmidth for daily operation and maintenance of the system.

Learning objectives
The purpose of the course is to teach the participants daily use of the ECS system, how to monitor and analyze the process, and to setup and configure the system. The course will enable the participant to troubleshoot on/with the system and do general maintenance functions when necessary.

Further, participants will be able to create and maintain mimic pictures using the ECS/OpStation Editor.

Benefits
The overview and knowledge gained from the course will improve the operation of the plant, alarm handling, maintenance and use of the ECS system and in this way improve plant performance.

Course Contents
- Alarm handling, trends, reports and point surveys
- Setup and configuration of the system
- Subsystems such as: Data log system, Point System, Alarm System, Event System, I/O Interface
- Dataflow and Algorithms in the system and interaction with PLC.
- User Access Control
- Static and Dynamic Mimic Pictures.

The course is a combination of ECS/ControlCenter Daily Use, ECS/ControlCenter Mimics and ECS/ControlCenter Maintenance and is based on ECS version 7.9.

Form
The course is a combination of theoretical classroom PC lectures, hands-on exercises and discussions.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for plant engineers with practical experience from a plant, but not yet knowledge about the ECS System.

The course requires basic IT skills and basic knowledge of the process of industrial production.

Participants
The maximum number of participants is 10.

Duration
5 days

Planned course days
2 - 6 February 2015
14 - 18 September 2015

Location
The course is held at FLSmidth Automation in Bethlehem USA

Registration Fee
Tuition fee per participant is USD 3,200
The fee includes all course materials, and lunch daily.

Note: This does not include the cost of your lodging or personal expenses.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
For registration please contact FLSmidth Automation Customer Service - Training
Tel: +1 (610) 264 6044
Fax: +1 (610) 264 6045
E-mail: support.flsa-us@flsmidth.com

Note: Please note that registration shall be made 8 weeks prior to a course start
ECS/PlantGuide Report Handling

BETHLEHEM USA

General
The course focuses on the management information system ECS/PlantGuide application.

Learning objectives
After attending the course the participants will have an overview of what can be achieved with an ECS/PlantGuide application. The participants will also be ready to print reports and participate in report design.

This enables the participants to create specific reports and other kind of data analysis relevant for Plant Management use.

Benefits
ECS/PlantGuide makes information available at the right time, in the right place and in the right format and for the right people.

Course Contents
The first day of this course gives an overview of the ECS/PlantGuide system application. The next days, the focus is on hands-on experience with the ECS/PlantGuide system application.

The course covers the following subjects:
- ECS/PlantGuide points
- ECS/PlantGuide Reports
- Finding or creating the points required for composing the desired report
- ECS/PlantGuide on the office network
- Configuration of site specific ECS/PlantGuide points
- Configuration of site specific ECS/PlantGuide reports
- Maintenance of the ECS/PlantGuide database
- Use of ECS/PlantGuide tools
- Design of Reports
- Collecting data from multiple plants.

The course is a combination of the courses ECS/PlantGuide Daily Use and ECS/PlantGuide Configuration.

Form
The course is a combination of theoretical classroom PC lectures and hands-on exercises.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for Production or quality responsible people delivering reports and data analysis for Management.

Experience in use and configuration of ECS/ControlCenter are required.

Participants
The maximum number of participants is 12.

Duration
3 days

Planned course days
21 - 23 October 2015

Location
The course is held at FLSmidth Automation in Bethlehem USA.

Registration Fee
Tuition fee per participant is USD 1,850
The fee includes all course materials, and lunch daily.

Note: This does not include the cost of your lodging or personal expenses.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
For registration please contact
FLSmidth Automation Customer Service - Training
Tel: +1 (610) 264 6044
Fax: +1 (610) 264 6045
E-mail: support.flsa-us@flsmidth.com

Note: Please note that registration shall be made 8 weeks prior to a course start.
ECS/ProcessExpert
– High Level Process Control of Grinding

BETHLEHEM USA

General
Reduce variability and cost of grinding by implementing high level multivariable process control.

Learning objectives
To develop knowledge of the configuration and use of ECS/ProcessExpert for high level control of grinding circuits.

Benefits
The overview and knowledge gained from the course will enable the implementation of high level control strategies based on the ECS/Process-Expert Toolbox and applications.

Course Contents
- Basics of high level control system
- Main functions of ECS/ProcessExpert and user interface
- General application structure
- Monitoring and tuning options
- On/Off logic and control groups
- Advanced ECS (ECS Points and I/O)
- Control Indices
- Utility Objects
- Applied Control Technique
- Feed Control
- Priority Strategy
- Customization.

Form
The course is a combination of theoretical classroom PC lectures and hands-on exercises.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for plant engineers with practical experience from a plant. The course requires basic IT skills and advanced knowledge of the grinding process.

Participants
The maximum number of participants is 10.

Duration
5 days

Planned course days
5 - 9 October 2015

Location
The course is held at FLSmidth Automation in Bethlehem USA.

Registration Fee
Tuition fee per participant is USD 3,200. The fee includes all course materials, and lunch daily.

Note: This does not include the cost of your lodging or personal expenses.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
For registration please contact FLSmidth Automation Customer Service - Training
Tel: +1 (610) 264 6044
Fax: +1 (610) 264 6045
E-mail: support.flsa-us@flsmidth.com

Note: Please note that registration shall be made 8 weeks prior to a course start
ECS/ProcessExpert
– Kiln High Level Process Control

BETHLEHEM USA

General
This course focus on how to reduce variability and cost of operating rotary kilns by implementing high level multivariable process control.

Learning objectives
The learning objective for this course is to develop knowledge of the configuration and use of ECS/ProcessExpert for high level control of rotary kilns.

Benefits
The overview and knowledge gained from the course will enable the implementation of high level control strategies based on the ECS/ProcessExpert Toolbox and applications.

Course Contents
- Basics of high level control system
- Main functions of ECS/ProcessExpert and user interface
- General application structure
- Monitoring and tuning options
- On/Off logic and control groups
- Advanced ECS (ECS Points and I/O)
- Control Indices
- Utility Objects
- Applied Control Technique
- Fuel Control
- Priority Strategy
- Customization.

Form
The course is a combination of theoretical classroom PC lectures and hands-on exercises.

Documentation
Each participant will receive a binder with a complete set of training materials.

Target group
The course is designed for plant engineers with practical experience from a plant. The course requires basic IT skills and advanced knowledge of the process of rotary kiln operation.

Participants
The maximum number of participants is 10.

Duration
5 days

Planned course days
9 - 13 March 2015

Location
The course is held at FLSmidth Automation in Bethlehem USA

Registration Fee
Tuition fee per participant is USD 3,200. The fee includes all course materials, and lunch daily.

Note: This does not include the cost of your lodging or personal expenses.

Terms of Payment:
100 % Advance Payment

Cancellation
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Registration
For registration please contact FLSmidth Automation Customer Service - Training
Tel: +1 (610) 264 6044
Fax: +1 (610) 264 6045
E-mail: support.flsa-us@flsmidth.com

Note: Please note that registration shall be made 8 weeks prior to a course start
QCX/Basics and Sampling Procedures

COPENHAGEN DENMARK

**General**
After attending the course the participants will understand the concept and applications of FLSmidth’s QCX laboratory automation product.

**Learning objectives**
This course will give the participants detailed knowledge of the LIMS (Laboratory Information Management System) parts of the QCX system. This includes how the software handles sample login, sample analysis, result acceptance and data storages; and how these results can be shown, used for calculations, reports, trends, export to other systems and back up. The course will be loaded with examples and exercises, which will relate the QCX system to chemical process problems, chemical process control and sampling / laboratory procedures.

**Benefits**
The overview and knowledge gained from the course will improve the operation of the QCX System and in this way improve laboratory practices and cement production.

**Course Contents**

**Introduction to the QCX product suite:**
- QCX concept, from Pile to Shipping
- Sampling and analyzing options.

**LIMS use:**
- Sample Login and Analysis
- Basis setup
- Sample Display and Sample list
- Trend
- Reports
- Dynamic data extraction from Excel.

**LIMS Setup:**
- Sample groups and sample point
- Equipments and programs
- Data items and formulas
- Accept limits

- Data export to PLC’s and externals systems
- Equipment communication troubleshooting
- User control.

The course is based upon the QCX Daily Use & Setup version 7 courses.

**Form**
Lectures, hands-on exercises, demonstrations and discussions.

**Documentation**
Each participant will receive a binder with a complete set of training materials.

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**Target group**
The course is designed for Quality Managers and Laboratory responsible personnel with QCX Base Training courses or prior operation in a cement laboratory.

**Participants**
The maximum number of participants is 8.

**Duration**
3 days

**Planned course days**
9 - 11 November 2015

**Location**
The course is held at FLSmidth Automation in Valby, Denmark.

**Registration Fee**
Tuition fee per participant is EUR 1,850
The fee includes all course materials, and lunch daily.

*Note: This does not include the cost of your lodging or personal expenses.*

**Terms of Payment:**
100 % Advance Payment

**Cancellation**
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

**Registration**
Please contact
Customer Service Center
800flsmidth@flsmidth.com
or institute@flsmidth.com

*Note: Please note that registration shall be made 8 weeks prior to a course start*
**General**
The participant will achieve in-depth knowledge on the QCX/BlendExpert™ Mill application. How do the software models the process? What inputs are needed? How does it find the optimal mixing solution? What are the pitfalls concerning lab procedures and software? How can the control be evaluated and how can it be tuned?

The participants will also get to know the fundamentals of the static mixing process and being able to pinpoint the limitations by using the QCX/BlendDesigner.

**Learning objectives**
To give the participants a firm knowledge base on how to mix materials in the context of cement plant process: On the pile for smoothing variation from query, in the raw mill for making chemical steady kiln feed and in the cement mills making different types of cement.

To be familiar with the QCX/BlendExpert™ Mill application to analyze its behavior and have the understanding to make setting changes to improve control and evaluate if the changes have the wanted effect. Participants will gain experience using the QCX/BlendDesigner for calculating and optimizing blends.

**Benefits**
The overview and knowledge gained from the course will help to optimize laboratory practices. Having the skills to analyze and tune the behaviour of your QCX/BlendExpert™ Mill. Investment will be returned in lower derivation on the chemical control of the Kiln Feed.

**Course Contents**
The course focuses on understanding the need for QCX Mix Control in relation to the production process and how your QCX Mix Control can improve and control the process in accordance with international standards. Further the course deals with the theory and practice of chemical control of raw mill or cement mill production. The course focuses on the principles of the QCX/BlendExpert™-Mill software, on basis of both laboratory X-Ray and On-line analysis of laboratory data for automatically control of the raw and/or cement mill production for optimum process operation. Finally we go through the principles of the QCX/blendDesigner software, which is used for examining and estimation the impacts of changing input parameters to the production process. The course is a combination of QCX/ BlendExpert, QCX/BlendExpert Mill and QCX/BlendExpert On-line Analazis.

If you need a QCX Pile course, please have a look at our web-site, www.flsmidth.com.

The course is based on QCX version 7.

**Form**
Lectures, hands-on exercises, demonstrations and discussions.

**Documentation**
Each participant will receive a binder with a complete set of training materials.

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**Target group**
The course is designed for Quality Managers and laboratory responsible personnel with prior knowledge of daily operation in a laboratory and the QCX system. Experience in QCX system set-up and daily use is required.

**Participants**
The maximum number of participants is 8.

**Duration**
4 days

**Planned course days**
16 - 19 November 2015

**Location**
The course is held at FLSmidth Automation in Valby, Denmark.

**Registration Fee**
Tuition fee per participant is EUR 2,450
The fee includes all course materials, and lunch daily.

*Note: This does not include the cost of your lodging or personal expenses.*

**Terms of Payment:**
100 % Advance Payment

**Cancellation**
0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

**Registration**
Please contact
Customer Service Center
800flsmidth@flsmidth.com
or institute@flsmidth.com

*Note: Please note that registration shall be made 8 weeks prior to a course start*
The objective of this course is to provide in-depth knowledge of QCX/RoboLab™ system to ensure correct use of it for quality control operation.

The participants will be able to use the QCX/RoboLab™ for daily operation, do basic trouble-shooting as well as gain overview of the software configuration.

The overview and knowledge gained from the course will improve the operation of the QCX/RoboLab™ system and in this way improve the laboratory practices, the production and ensure consistent quality output.

The course covers the following subjects:
- Cell configuration
- Master recipes and recipes
- Sample arrival from QCX/ AutoSampling™
- Sample structure for QCX/ AutoSampling™ samples
- Sample login from conveyor or other manual entry equipment
- Sample structure for manual entry samples.

The course is based on QCX version 7.

Lectures, hands-on exercises, demonstrations and discussion.

Each participant will receive a binder with a complete set of training materials.

The course is designed for Quality Managers and Laboratory responsible personnel with prior QCX Base Training courses or knowledge on daily operation in a cement laboratory.

Experience in QCX system set-up and daily use is required.

The maximum number of participants is 10.

2 days

0-30 days before = 100% of fee
31-60 days before = 50% of fee
61 days before = 0% of fee

Please contact Customer Service Center 800flsmidth@flsmidth.com or institute@flsmidth.com
Introduction to Cement

ONLINE

Purpose
Introduction to Cement will give newcomers to the cement industry an overall introduction to the main machinery used for making cement, the general cement production processes, and a basic knowledge of the history of cement.

This course is based on FLSmidth equipment and is based on FLSmidth's place in the cement industry and its history.

Learning objectives
After the course you will be able to:
- Recognise the overall process of transforming raw material to cement
- Recognise the process of each department of a cement plant
- Recognise the main machinery and their main functionalities
- Recognise the main terminology of the processes
- Recall the basic history of FLSmidth and cement
- List the raw materials of cement
- Know that different types of cement are used for different purposes.

Benefits
Basic knowledge of the terminology and the industry will help newcomers get an understanding of the industry and help them on their way into their new job.

Course Contents
The course contains the following:
- A basic introduction to the history of cement
- A basic introduction to the main equipment used for cement production
- A basic introduction to the general processes during cement production.

Upon completion of the final assessment, the course will be registered as completed and an email documenting your participation be forwarded to your email.

Form
This is an animated, narrated, online course. The course includes assessments to evaluate the learning effect.

Target group
The primary target group are newcomers to the cement industry, mainly administrative- and other non-technical personnel. However, newly hired technical personnel will also benefit from the course.

Duration
30 minutes

Planned course days
The course is open for 2 days after purchase.

Location
https://institute.flsmidth.com

Registration Fee
€ 90.00 excl. VAT

Terms of Payment:
100 % Advance Payment

Registration
https://institute.flsmidth.com
Introduction to Conveyors

Purpose
Introduction to Conveyors will give newcomers to the cement and mining industries an introduction to operating conveyor systems, including safety, equipment and inspection procedures.

Learning objectives
After the course you will be able to:
- Explain that the process of identifying and controlling hazards on site includes both risk management procedures and personal protective equipment
- Identify hazards commonly associated with the operation of conveyors and the methods used to control those hazards
- Explain why correct site-specific isolation procedures must be followed at all times
- Identify, name and explain the belting and drive types that are used in a typical conveyor system
- Identify, name and explain pulleys, brakes and hold-backs that are used in a typical conveyor system
- Identify, name and explain the belt cleaning devices, chutes and idlers that are used in a typical conveyor system
- Identify, name and explain the belt tensioning devices, detectors, tramp iron magnets and control stations that are used in a typical conveyor system
- Conduct effective pre-start inspections on a typical conveyor system
- Conduct effective running inspections on a typical conveyor system.

Benefits
Basic knowledge of the conveyors will help increase the awareness of safety, the importance of regular maintenance and thorough inspections thereby reducing personal injuries, prolonging the lifetime of the equipment and minimizing unscheduled downtime.

Course Contents
The course consists of seven modules covering an introduction to conveyors, safety, four modules on conveyor equipment and pre-start and running inspections.

Upon completion of the final assessment, the course will be registered as completed and an email documenting your participation be forwarded to your email.

Form
This is an animated and narrated online course. The course includes assessments to evaluate the learning effect.

Target group
The primary target audience are new employees operating conveyors on a daily basis.

Duration
2½ hours

Planned course days
The course is open for two weeks after purchase.

Location
https://institute.flsmidth.com

Registration Fee
€ 450.00 excl. VAT

Terms of Payment:
100 % Advance Payment

Registration
https://institute.flsmidth.com
Basic Cement Chemistry

ONLINE

General
Participating in Basic Cement Chemistry will give you a basic knowledge and a useful vocabulary regarding cement chemistry and an insight into the chemical requirements for optimum cement production.

Learning objectives
This course should enable you to:
- Understand and use basic cement terminology
- Read and understand different laboratory reports using Bogue and Modules
- Understand that a problem may originate from several different processes and equipment.

Benefits
A basic knowledge of the composition of raw meal, clinker and cement and knowing what to test and how to read the lab results will give you an insight into the chemical requirements for optimum cement production and into possible issues with your cement (i.e. low strength).

Course Contents
The course contains episodes about the following:
- Composition of clinker
- Raw meal
- Bogue
- Cement composition and proportions
- Cement quality and quality standards
- And a case on cement of low strength to support your learning.

Upon completion of the final assessment, the course will be registered as completed and an email documenting your participation be forwarded to your email.

Form
This is an animated, narrated, online course. The course includes assessments to evaluate the learning effect.

Target group
Sales personnel, back office personnel and others who need a vocabulary and a basic understanding of cement chemistry. This is a stand-alone, level one course. However, a basic understanding of the processes for making cement and a basic understanding of chemistry would be beneficial.

Duration
20 minutes

Planned course days
The course is open for 2 days after purchase.

Location
https://institute.flsmidth.com

Registration Fee
€ 70.00 excl. VAT

Terms of Payment:
100 % Advance Payment

Registration
https://institute.flsmidth.com
Basic Copper

Purpose
The purpose of Basic Copper is to give the participant detailed explanations of the principles behind the processes and of the different steps in the mineral processing of copper.

Learning objectives
After the course the participant should be able to:
- Describe the flow of copper oxide processing
- Recognize the machinery involved in the copper sulphide processing
- Recognize the machinery involved in the copper oxide processing
- Recognize the different sources and types of copper
- Know the origin of copper deposits
- Know the achievements in the industry regarding sustainability and environmental improvements
- Know the most common uses of copper
- And understand basic terminology.

Benefits
After having completed this course you will know about:
- The flow of the copper sulphide process
- The flow of the copper oxide process, which machinery is involved and the basic terminology
- How copper deposits are formed
- Different sources and types of copper
- The most common uses of copper
- And achievements in the industry including sustainability and environmental improvements.

A basic knowledge and a vocabulary on the processes and machinery involved in copper processing will help newcomers to the industry get an understanding of the equipment and the processes of making copper.

Course Contents
The course contains chapters on the following:
- From ore to metal
- Deposits
- Types of copper minerals
- Sulphides
- Oxides.

This course will activate the learner and let him reflect on basic knowledge.

Upon completion of the final assessment, the course will be registered as completed and an email documenting your participation be forwarded to your email.

Form
This is a narrated, online course with photos and animations.

The course includes assessments to evaluate the learning effect.

Target group
The course is designed for newcomers to the copper industry. This is a stand-alone, level one course. No experience or prior knowledge of the copper processes and machinery is required. However, some technical understanding is an advantage.

Duration
30 minutes

Planned course days
The course is open for 2 days after purchase.

Location
https://institute.flsmidth.com

Registration Fee
€ 95.00 excl. VAT

Terms of Payment:
100 % Advance Payment

Registration
https://institute.flsmidth.com
Ball Mill – Basic Learners Course

ONLINE

General
The purpose of the Ball Mill – Basic Learners Course is to provide the participant with basic knowledge about the ball mill and its key components. After the course, you will be able to name the key elements of the ball mill, understand a closed circuit cement grinding system, and understand the safety precautions necessary in relation to the ball mill. This course is based on the FLSmidth UMS Unidan Ball Mill.

Learning objectives
After the course you will be able to
- Label the components of the Unidan Mill Slide shoe (UMS) ball mill
- Describe the functions of the key components of the UMS ball mill
- Describe the key elements of the closed circuit cement grinding system
- And understand safety in relation to the UMS ball mill.

Benefits
A basic knowledge and a vocabulary on the ball mill will help newcomers to the cement industry get an understanding of the equipment and the processes involving the ball mill and help them on their way into their new job.

Course Contents
- Safety around a ball mill
- An overview of a ball mill
- Ball mill components – functions
- Cement grinding systems (Closed circuit operation).

This course will activate the learner and let him reflect on basic knowledge.

Upon completion of the final assessment, the course will be registered as completed and an email documenting your participation be forwarded to your email.

Form
The course is a narrated, online course with photos and animations.

The course includes assessments to evaluate the learning effect.

Target group
This is a stand-alone, level one course. No experience or prior knowledge of the ball mill is required. Some technical understanding and basic knowledge of cement production is an advantage. The primary target group are newcomers to the cement industry such as recently employed engineers, technicians or project managers.

Duration
20 minutes

Planned course days
The course is open for 2 days after purchase.

Location
https://institute.flsmidth.com

Registration Fee
€ 70.00 excl. VAT

Terms of Payment:
100 % Advance Payment

Registration
https://institute.flsmidth.com
Overview of the FK Pump

ONLINE

Purpose
In this introduction course you will learn about the purpose, components and the principles on which the FK Pump operates.

This course is based on the FLSmidth Type M Fuller-Kinyon Pump.

The course is not updated to include the PNEU-FLAP™.

Learning objectives
After the training you will be able to:
- Explain the purpose of an FK Pump
- Identify the components of the FK Pump
- And identify the principle on which the FK Pump operates.

Benefits
A basic knowledge and a vocabulary on the FK Pump will help newcomers to the industry get an understanding of the equipment and the processes involving the FK Pump and help them on their way into their new job.

Course Contents
- Principle of pneumatic conveying
- Application of FK Pump
- Key component of the FK Pump
- Principles of operation.

This course will activate the learner and let him reflect on basic knowledge.

Upon completion of the final assessment, the course will be registered as completed and an email documenting your participation be forwarded to your email.

Form
This is a narrated, online course with photos and animations.

The course includes assessments to evaluate the learning effect.

Target group
The primary target group are newcomers to any industry who will be working with the FK Pump. This is a stand-alone, level one course. No experience or prior knowledge of the FK Mill is required.

Duration
25 minutes

Planned course days
The course is open for 2 days after purchase.

Location
https://institute.flsmidth.com

Registration Fee
€ 85.00 excl. VAT

Terms of Payment:
100 % Advance Payment

Registration
https://institute.flsmidth.com
General
**Cement Plant ABC – An introduction to Cement**

**COPENHAGEN DENMARK**

### General
Many people are working in the cement industry without ever being involved in the actual manufacture of cement. In order to be able to support the production people, it is important that they know what goes on at a cement plant.

### Learning objectives
The purpose of the course is to give non-engineers an overall knowledge of the operations of a cement plant. This includes getting acquainted with the vocabulary used in the cement industry.

### Benefits
The participants will be able to better support the operational side of the cement plant by learning to speak the same language as the production people. This will eliminate misunderstandings and confusions in daily work and optimize cooperation between the departments. The ultimate result may very well be increased profitability of the cement plant.

### Course contents
- What is cement? How is it made?
- The raw materials, basic chemistry
- Raw material crushing process
- Stores with and without pre-homogenisation
- Production of raw meal
- Homogenisation of raw meal
- The kiln feed system
- The processes in the kiln
- The elements in the pyro system (preheater, calciner, kiln)
- Clinker cooling
- Combustion incl. fuel types, burners, flame formation
- Cement grinding incl. cement types, cement quality
- Coal grinding.

### Form
The course is theoretical classroom tuition. Furthermore, the knowledge gained at the course is measured by tests.

### Documentation
Each participant will receive a complete set of training materials.

### Target group
The course is designed for participants with no or little knowledge of chemistry and engineering in general. The participants will typically be staff from the accounting, purchasing, human resources, marketing, sales or other supporting departments.

### Participants
The maximum number of participants is 15.

### Location
The course is held at FLSmidth, Copenhagen, Denmark.

### Duration
3 days

### Planned Course days
27 - 29 January 2015

### Registration fee
Tuition fee per participant is EUR 1,950. excl. VAT.

**Cost of board, lodging or personal expenses are not covered.**

### Terms of Payment:
100 % Advance Payment

### Cancellation
- 0-30 days before = 100% of fee
- 31-60 days before = 50% of fee
- 61 days before = 0% of fee

### Registration
Please contact:
Ms. Pernille Beck
Tel: +45 36 18 17 27
Fax: +45 36 18 28 04
E-mail: flsinstitute@flsmidth.com
Customized
Customized Training

General
FLSmidth offers customized training courses designed from the ground up to meet the needs of your cement plant in all its uniqueness. This is the best way of ensuring that you get maximum value out of your investment in training.

Our customized training programs are flexible solutions designed to address the specific challenges facing the staff at your plant. We take into account the actual processes and machinery in use, pinpoint the areas of development and structure each program with topics relevant to your organization.

We develop customized training programs to help increase awareness and understanding of:
- Mechanical and electrical maintenance practices
- Proper operating procedures
- Maintenance and operational safety
- Training need analysis by testing of personnel.

Customized training
When FLSmidth prepares a customized training course, we ensure that all key aspects of the course are tailored to your individual needs. These aspects include:

- **Scope**: You decide what topics and issues are to be covered, as well as the duration of the course.
- **Theory**: We provide the exact amount and type of theoretical background needed to make the most of the practical training.
- **Practical training**: This is tailored precisely to your own plant and the scope of the training course.
- **Case studies**: These are carefully selected to ensure that they apply to your operations.
- **Materials**: We provide expertly developed training materials that reinforce your learning.

- **Language**: We can offer training in your native language, either by our instructors speaking the local language or with an interpreter. The training material can also be translated into the language requested.
- **Working culture**: We consider more than just the equipment, also tailoring our training to the way you operate your plant.

This amounts to a training course that is truly customized, meeting our needs exactly.

Value for money
Customized training is often the best solution for plants acquiring new equipment or facing specific challenges with existing lines. Focusing exclusively on the topics agreed between you and FLSmidth, every minute of a customized training course helps you meet the challenges you face. This ensures unparalleled value for money and a very fast return on investment.

Customer satisfaction
FLSmidth conducts customer satisfaction evaluations. And we continue to refine our ability to measure the effect of our training through assessment tools that provide “before-and-after” evaluation. We aim for, and frequently exceed, a 30 per cent jump in knowledge in our participants. Customer satisfaction is very high – Many companies are so impressed with the benefit that they incorporate customized training as a regular part of their operations.

Training materials
Customized training materials are based on the technical documentation specific to your plant. These include flow sheets, FLSmidth instructions and sub-suppliers’ user manuals. In addition, FLSmidth’s own training material, group work and exercises, audio-visual aids and computer-based training will also be used when needed.

Participants
The number of participants will be agreed upon with the customer.

Duration
To be agreed upon with the customer.

Location
FLSmidth headquarters or on-site abroad.

Registration
Feel free to contact us by e-mail, fax or telephone. Contact information available on the back page.
Registration
General Information

**Application procedure**
Please follow the guidelines listed below for the training you are interested in attending. Remember to specify which seminar you are planning to attend on the application.

Fill in the application form or register on-line on www.flsmidth.com.

Upon receipt of the application form, a registration package including detailed information on the seminar and an invoice will be forwarded to you.

Please e-mail or fax the application form to:

**FLSmidth**  
Vigerslev Allé 77  
2500 Valby, Denmark  
Attn: Ms. Pernille Beck  
Tel: +45 36 18 17 27  
Fax: +45 36 18 28 04  
E-mail: flsinstitute@flsmidth.com

**or if applying for the USA seminars:**

**FLSmidth**  
2040 Avenue C  
Bethlehem, PA 18017-2188, USA  
Attn: Ms. Lynn Petrak  
Tel: +1 610 264 6017  
Fax: +1 610 264 6031  
E-mail: flsinstitute_Bethlehem@flsmidth.com

For training in India, please contact:

**FLSmidth**  
FLSmidth House  
34 Egatoor, Kelambakkam  
(Old Mahabalipuram Road – Chennai)  
Tamil Nadu – 603 103, India  
Attn: Mr. M. Shyamsundar  
Tel: +91-44-47481000  
Fax: + 91-44-27470301  
E-mail: flsinstitute.in@flsmidth.com

**Language**
All seminars and training courses will be conducted in English except if otherwise stated under the descriptions.

**Accommodation**
For further information please refer to the individual seminar or training course description.

**Payment**
An invoice will be forwarded to you as soon as we have received the registration to a seminar or training course.

Registration is not considered final until payment is received.

**Cancellation Policy**
There will be an administrative charge in case of absence or cancellation. The cancellation fees are as follows:

- 0-30 days before seminar start = 100% of fee
- 31-60 days before seminar start = 50% of fee
- 61 days before seminar start = 0% of fee

Absence or cancellation due to missing visa will not be the responsibility of FLSmidth and will be subject to normal cancellation rules of the international seminars and courses.

FLSmidth reserves the right to cancel seminars and training courses if there are not enough applicants to meet the objectives of a given seminar or training course. In case of cancellation, notification will be sent direct to all applicants.

Seminars and courses are differentiated by the breadth and depth of their content, as well as by teaching materials and instruction format. For more information and advice about exactly which seminars and courses are best for your needs, please e-mail or telephone FLSmidth.

For online registration go to: www.flsmidth.com
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November

- 02.11 - 06.11 Hydraulics Maintenance Seminar, USA
- 09.11 - 11.11 QCX/Basics and Sampling Procedures, Denmark
- 12.11 - 13.11 QCX/RoboLab™, Denmark
- 16.11 - 20.11 Kiln System Seminar – Operation and Maintenance, Philippines
- 16.11 - 20.11 Brazil Seminario de Producción de Cemento, Brazil
- 16.11 - 20.11 Kiln System Seminar – Operation and Maintenance, Philippines
- 16.11 - 19.11 QCX/Mix Control and Optimisation of Mills, Denmark

December

PLANNED INDIVIDUALLY

- Customized training
- E-learning
  - Introduction to Cement
  - Introduction to Conveyors
  - Basic Cement Chemistry
  - Basic Copper
  - Ball Mill – Basic Learners Course
  - Overview of the FK Pump