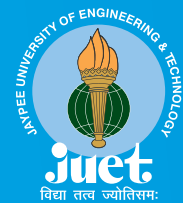
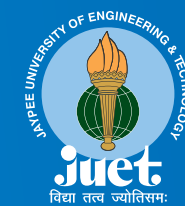


Short-term Training Program In Cement Production & Quality Control



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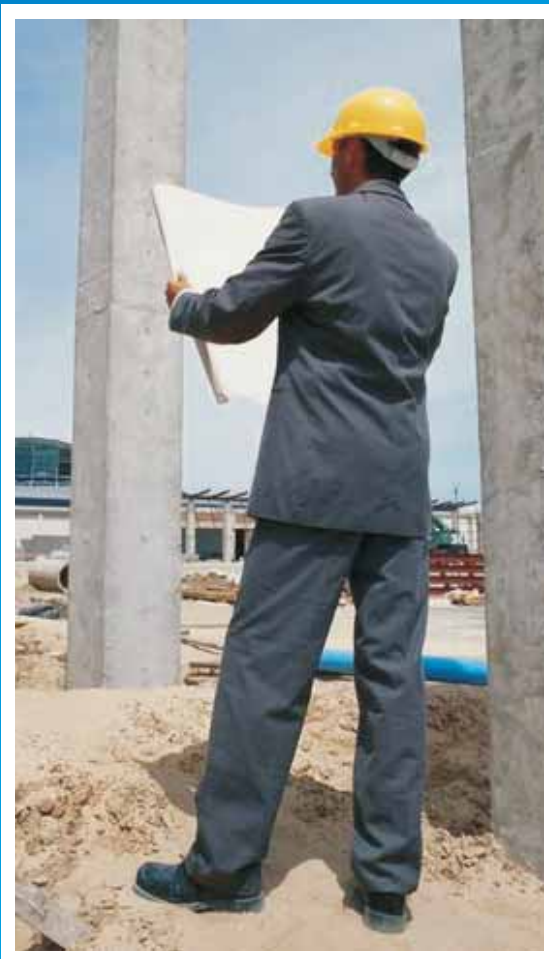
Customized Training Services

If you are looking for engaging, cost-effective training and professional development programs for your workforce then our Customized Training Services can provide you and your organization with the right solutions. Our Customized Training programs are a flexible solution designed to address the specific challenges facing the staff at your plant. We take into account the actual processes and machinery in use, pinpoint areas for development and structure each program with topics relevant to your organization.



We offer unique insight and the information you need to keep your plant and people up-to-speed. All training is carried out by our experienced personnel so this ensures that you receive the most up-to-date technical training and information on the latest technologies available on the market today.

Our goal is to design a program that covers exactly what you want your employees to learn; so, we work closely with you to assess your needs, identify training topics and content, and determine the most effective training delivery methods. From lectures to lab sessions we can provide a custom mix of topics and approaches at your site, a convenient off-site location. And whether we're training a group as small as four people or a much larger one, we're committed to providing alternatives that fit your objectives—and your budget. With our custom programs, you can train more of your people for less by eliminating travel expenses, reducing costs-per-student, and minimizing the time employees spend away from the job. Customized training gives your employees the opportunity to discuss sensitive company



Training and Knowledge Transfer

To achieve world-class performance, it is essential to have the necessary skills available at the plant. At JUET GUNA our CRDC ensures the skills gaps have been identified and training can be arranged and focused specifically on areas that will impact plant profitability. The short-term training programs are designed to cover all aspects of cement production and quality control. The programs are structured around the following modules of interest:

- Program for cement Process engineers
- Program for cement quality control for chemists
- Customized Training

Whether you are currently working in the cement industry or a beginner our CRDC is here to help you learn about the cement industry. As a leader in the cement manufacturing



business, we have available to us a great deal of educational resources we can share. We designed this section for the purpose of helping educate cement community.

Program for Process Engineers

This program is specifically designed for new employees in the cement industry. It is especially beneficial for those personnel who need to get up to speed and understand the basics of cement and understand the use of mass and energy calculations to optimize the cement manufacturing process. Although this program covers much technical ground and is well suited for those entering the cement industry from other technical fields, it is equally beneficial for personnel without any previous

technical experience. A computationally intensive 5-day program highlighting heat and mass balances perfect for process engineers and production supervisors at the plant level.

This is a 5-day computationally intensive course that focuses on the use of mass and energy calculations to optimize the cement manufacturing process. Participants will also learn how to pinpoint excessive energy wastes and save the environment.



Course Contents:

Introduction

Indian cement Industry, The global scenario, Trends and concerns, Process of cement Manufacture-Dry, Semi Dry and Wet, Overview of various unit operations in Cement Manufacture. and their significance, Raw Mix Design for 2, 3 and 4 component raw mix

Raw Materials Mining and Raw Mix Design

Calcareous and Argillaceous Materials, Corrective Materials and usage of Industrial Wastes as Cement raw materials, Limestone Mining, Solid Fuels- basic characteristics and usage, Raw mix composition, Various Moduli values

Size Reduction and Raw Material Handling

Limestone Crushing - Various types of Crushers, Pre-blending of limestone and Raw Mix Homogenization, Various types of Mills for Raw Material Grinding, Separators and Classifiers Clinker cooling and types of coolers, Refractory and refractory practices.

Pyroprocessing

Different Zones in rotary kilns, Reactions Temperature and Draft profiles, Pre-heaters and Pre-calciners, Types of burners and flame characteristics, Fuels (Coke and Pet-Coke),

Energy Conservation

Energy requirements (Thermal and Electrical), Heat and Mass balance, Energy audits in Cement Industry, Energy efficient equipments for grinding and Pyro-processing, Approaches to Energy conservation in Indian Cement Industry, Energy conservation in Global and Indian Cement Industry.

Environmental Issues

Pollution Control including particulate emissions in a Cement Plant, ESP, Bag, House Filters, Pulse Jet Cleaners and GCT, Measuring instruments for Exit gas in Cement Plants (Sox, NOx and CO) and control, Noise abatement, Vibration, Ecology and Environment around mines, Aforestation, Concept of EIP, EMP and LCA, Hazardous materials and handling rules.

Program for Cement Quality Control for Chemists

This course provides a practical approach to the application of statistical methods for quality control in cement manufacturing. A key element is functional quality control, which sets the stage for a quality program that not only recognizes the relevance of product specifications and quality requirements for clinker and cement, but also performance characteristics required in the marketplace.

The Training program's thorough description of statistical methods along with clear, real-world examples from cement plant operations makes this an extremely useful to anyone responsible for making uniformly high-quality cement. It is an important reference for plant managers, and corporate and plant quality department personnel. It will also be of interest to cement users and specifiers, and the academic community.

To maintain quality at all stages of cement manufacture,



precise sampling and testing must be conducted. This includes sampling of cement raw materials as well as fuels. Students may be involved in the sampling, testing, and analysis required maintaining the extensive quality system.

Course Contents:

Introduction

Indian cement Industry, The global scenario, Trends and concerns, Process of cement Manufacture-Dry, Semi Dry and Wet, Overview of various unit operations in Cement Manufacture.

Chemistry Of Cement

Types of Cements and their quality requirements, Chemical and mineralogical composition of Cement, Bogue calculations, Physical and Chemical aspects of setting, Hardening and strength development, Role of sulphates and usage of various types of Gypsum.

B-Raw Materials, Mining and Crushing

Calcareous and Argillaceous Materials, Corrective Materials and usage of Industrial Wastes as Cement raw materials, Limestone Mining, Solid fuels; basic characteristics and usage

Raw Mix Design

Pre-blending of limestone and Raw Mix homogenization, Raw mix composition, Various Moduli values and their significance, Raw Mix Design for 2, 3 and 4 component raw mix, Burnability of Raw Mix Effect of various factors on burnability of Raw Mix, Effect of Coal Ash.

Quality Control

Pre-blending of Raw Materials and coal, Homogenization of Raw Mix, Sampling & Statistical techniques of Quality Control, Quality control methodology in a Cement Plant, Scheme of Testing and Inspection in a Plant, Requirements in National and International Standards, Chemical and Physical Testing of Cement.

Physical Testing of Cement

All physical tests like Specific Surface, Setting Time, Soundness and Compressive Strength of Cement.



Training Program at Cement Research & Development Centre, Guna



The Jaypee Group with its strong involvement in the areas of hydropower projects, cement manufacturing and infrastructure development has established a Cement Research Development Centre (CRDC) for Research Development and Manpower Training in the Jaypee University of Engineering and Technology (JUET) Guna, Madhya Pradesh.

JUET is one of the three institutions of higher learning in the field of Degree level Engineering education established under the Jaiprakash Sewa Sansthan (JSS), an educational trust which recognizes the role of IT and emerging technologies in improving the quality of life of the people of India. The campus is being built on a well thought out "Seven Phase" plan to make it a self sufficient, vibrant modern center of excellence with well equipped state-of-the-art laboratories and has a mission of providing an excellent quality of undergraduate and postgraduate education, with a strong emphasis on research and innovation and close interaction with the industry.

It aims to produce professionals who can be leaders in innovation, entrepreneurship, creativity and management. It also has well developed facilities in civil, mechanical and chemical engineering teaching and research.

The institution strives to maintain the highest academic standards, experiences and outcomes in all learning and teaching activities. A key part of this is the value that the institution places on research-led teaching and learning that enables students to

creatively engage with new and exciting ideas. A major part of the institute's mission is to provide students with opportunities to develop a wide range of skills that help them with the transition in becoming a true professional.

The institution also employs the highest quality faculty to undertake teaching and learning support. The institution has a reputation for innovation and teaching and learning excellence and continually looks for innovative ways to enhance and promote the teaching and learning experience of its staff and its students. The institution runs an extensive range of programs. It also offers specially tailored courses in Cement Technology.

Our objective is to provide you with efficient access to the education and services you need to develop and maintain your company's most valuable assets - Your people.

Our CRDC is dedicated to deliver business performance and profitability to our clients through our expert's knowledge of the cement production and quality control. Our experts have many years of experience in technical, managerial and corporate positions within various cement manufacturing companies/ research organizations.

Using a combination of practicing professionals with vast experience and the latest in simulations, course participants master the skills they need to make cement more efficiently, more economically, and with as little impact to the environment as possible.

issues without being concerned about divulging information inappropriately. In addition, when employees train with their colleagues, it encourages an atmosphere of idea-sharing and support that carries over into the workplace.

Some renowned experts who are well known for their depth and breadth of technical knowledge and their insights into cutting-edge technology would be advising the CRDC.



Dr. A. K. Mullick

Dr.A.K.Mullick is M.Sc. (Engineering) and Ph.D. in Civil Engineering from University of Calgary, Canada. He is former director general NCB and has more than 40 years experience in research, design and construction.

Dr. K. Mohan

Dr.K.Mohan is Ph.D. in Cement Chemistry from University of Aberdeen (U.K.) under the guidance of Professor H.F.W.Taylor. He is former director general of NCB and has published more than 60 research papers.

Prof. N. J. Rao

Prof.N.J.Rao is B.Tech. (Hons) and M.Tech. in Chemical Engineering from IIT Kharagpur and PhD in Chemical Engineering from University of Roorkee. Working as director at Jaypee University of Engineering and Technology, Guna (M.P.) he has published more than 150 research papers.