

CPI Training Services

Introduction

One of the key service offerings of Cement Performance International (**CPI**) is the Training and Skills Development of cement plant personnel. Whilst **CPI** has a standard portfolio of training subjects and formats in which they are delivered, in general each training course is unique and tailored to our Clients specific requirements, considering their process types and raw materials as well as the target audience for the training. All of the **CPI** Associates are experienced trainers in their field; they are highly skilled communicators who are able to stimulate discussion and interaction during the training sessions. They have worked in many different countries, are culturally aware and have a good understanding of the most appropriate form of delivering training. A key to the development of any training programme is to understand the starting point i.e. who is the audience, what is already known and what should the audience know, what is the target end point of the training and how will the success of the training be measured? The course content and format can then be decided and developed, the training can be delivered and finally the assessment of the success of the course measured.

The aim of this document is to explain in more detail how **CPI** approaches each of these steps, the different formats of the training on offer, the areas where **CPI** can provide training and finally some of the reasons why Clients have chosen **CPI** to provide training services over other companies. As previously stated, all **CPI** courses are tailored to the Clients individual/specific needs and as such, if the subject/topic that is required by your company is not on the enclosed list please contact **CPI** who will identify the required resources and design a course for your specific requirements.

Design of Training Course

CPI will work with our Clients' to design a course by identifying the objectives and aims of the course. Often the Client has a clear idea of what is to be achieved but in some instances this is not the case and **CPI** has developed a skills matrix for all levels of personnel and all disciplines within the cement manufacturing process. Discussions between the Client and **CPI** using the matrix will allow the skills gap to be identified and then the required subjects can be designed into the course programme. If required, **CPI** can perform a pre-course evaluation of candidates/students which could take the form

of a questionnaire or written test, and/or an assessment in the working environment by one of the **CPI** trainers.

Training Formats

Training has moved on from simply lecturing to participants in a room for long periods of time; the format of the training must suit both the participants and the desired objectives. It is essential that there is interaction between the trainer and the participants and that the participants understand the material that is being taught. **CPI** has devised a number of formats that suit the different requirements of the participants:

Interactive Classroom Training:

Normally short sessions of two to three days, aimed at plant based operatives focusing on kiln and mill operations. Such courses are normally presented by process engineers and/or kiln burners with tasks incorporated into the sessions to check the understanding as the course is delivered. The sessions have time set aside for discussions within the group such that the participants can discuss their experiences and methods of operating the plant. In this way, participants are much more involved and feel able to express their understanding of the process so that they trainers can then explain the correct methodology for operating the plant. In this way a more consistent operation of the plant should be achieved once all of the operators understand the science behind the equipment that they operate. Often this training is backed up by the kiln burner remaining on site and working in the control room to assist in the implementation of the theory that has been learnt and to give confidence to the operators.

Modular training course:

The modular format is recommended when the aim is to teach a small group a specific area/unit operation of the cement plant in detail such that they understand both the theoretical and practical aspects of that area. Examples of modules would be raw milling, pyro-processing, cement milling, cement chemistry etc. Courses would typically last two or three days and would be split between theoretical presentations and practical sessions/assignments out on site completing the physical testing of the equipment or raw materials. For example, in the cement milling course the mill would be crash stopped and a full mill survey completed, followed by analysis of the samples in the lab by

the participants. Similarly for the pyro-processing modular course, a full preheater survey would be completed after the theory sessions.

CPI provides all of the necessary tools for the analysis of the results from the testwork such that the participants understand the theory, know how to perform the testwork and analyse the results. As a test of the understanding of the course, **CPI** will also analyse the results and conclusions of subsequent testwork carried out by the participants.

Profitability and Performance Courses:

Whilst based on a classroom teaching format, the above course focuses on how to translate the specific technical parameters associated with the cement manufacturing process into profitability for the company. Therefore to provide the interaction during the course and to monitor the learning during the course the participants will work through the course with a case study relating to a cement business. The case develops over the week long course and gives the participants options as to how they would develop the business and what decisions they would take to improve performance and profitability based upon the information that they have learnt during the lectures. Participants normally work in small groups under the supervision of the **CPI** trainers and therefore also learn about group working, evaluation of options and decision making.

Mentoring Process:

The mentoring process is a way of developing individuals or small groups of plant personnel by providing remote support for the individuals as well as on-site interaction with the **CPI** Mentor. It can be used for any technical discipline or for management roles, whereby the **CPI** Mentor will work progressively through the target areas identified from the skills matrix and will assign certain tasks for the individual to accomplish in between the visits from the Mentor. The Mentor will be available for guidance and support during this time and during each visit the work accomplished during the previous visit is reviewed followed by discussion and target setting for the next period. Typical examples of candidates for this process would be process engineers, production and engineering managers and in some cases plant managers.

Training Subjects

As a result of the depth of experience within **CPI**, training can be provided on any subject relating to the cement manufacturing process across a range of disciplines. Listed below are some of the key training areas most often requested by **CPI** Clients:

- Quarry operations and crusher operation
- Raw materials chemistry and mix design
- Raw materials blending systems
- Raw Materials handling systems
- Raw Milling systems – operation and control
- Raw Mill testing and optimisation
- Kiln systems and pyro-processing
- Optimisation of kiln systems and plant testing
- Kiln burning and kiln control
- Optimisation of flames and fuel firing systems
- Cooler operation, troubleshooting and optimisation
- Refractory installation, design and monitoring
- Alternative fuels and raw materials
- Cement Mill systems - operation and control
- Cement Mill testing and optimisation
- Quality aspects of cement milling
- Cement Chemistry
- Impact of variability on cement manufacturing process
- Cement additives and product development
- Cement performance in concrete – customer perspective
- Benchmarking and targeting of cement manufacture equipment
- Heat and mass balance for plant equipment
- Cement Process Overview
- Profitable Manufacture of Cement
- Cement Technology for Managers and Executives
- Root Cause Analysis techniques
- Kiln and mill maintenance
- Maintenance Management
- Use of maintenance tools to improve reliability

Shutdown planning
Health and Safety Management
Environmental protection systems
Laboratory analysis and modern laboratory equipment

This list is by no means exhaustive but is intended to demonstrate the range and capabilities of the **CPI** network in providing skills development to its clients. Should a specific subject not appear on the list please contact **CPI** for further discussion.

Benefits of Using CPI

CPI appreciates that there are a number of suppliers of training available to cement producers. This can range from multinational equipment suppliers to one-person consultancy businesses. However using **CPI** to train plant personnel has the following benefits:

CPI has the full range of disciplines required to cover the whole cement manufacturing process and as such can cover all subjects in depth, as opposed to having a generalist trainer who can pass on the basic information in each subject.

CPI has personnel who have operated and optimised cement plants, not just personnel who have been involved in the design and commissioning of cement plants. It is only through this long term operation of cement plants that sufficient/relevant experience is built up to understand all of the potential challenges and solutions to cement plant operation.

Many of the **CPI** trainers have a proven track record of developing, inspiring and mentoring groups of young engineers who have been recruited into technical centres for deployment around the operations of some of the largest Multi-national heavy building materials groups.

CPI trainers all have many years of experience in training cement plant personnel in varied international locations and therefore understand the local culture and the best method for transferring their knowledge to the participants.

CPI is independent of all equipment suppliers and as such is completely impartial and has no motive to sell equipment as part of the training process.