

Peter Doyer, Technical Director, Cement Performance International, UK, considers the advantages of self-financing training to optimise plant performance and improve profitability.

Training That Performs

Introduction

One of the main services that Cement Performance International Ltd (cpi) offers to its clients is to improve the operating performance of their plants to maximise profitability. Increasingly, the company is finding that a key element in delivering these performance improvements is to ensure that plant operators and managers have a thorough understanding of their process and equipment and thus to ensure that the plant is operated optimally.

Traditionally, operational and technical training for cement plants is carried out either in-house (for those companies large enough to have the resources to do so) by equipment and materials suppliers, or sometimes through national cement organisations, such as the PCA. Of these, in-house training is the one most likely to be focused on individual plant performance, but it is obviously not available to outside companies. This results in a potential competitive advantage for the large, multi-national companies over the medium and small groups, who do not have the resources or expertise to provide the in-depth knowledge necessary to achieve world-class plant performance. Training provided by equipment and materials suppliers is also generally of high quality, but it is mainly used as a tool to market their particular equipment or brand, and naturally does not address the concerns of the plant personnel in an unbiased fashion.

How to do it

Over the years, from its experience in providing unbiased operational support to a number of small and medium size cement operations, cpi has developed a series of training packages that are tailored to individual plants and focused on improving the performance and efficiency of personnel and equipment therein.

In the development of these training packages there are a number of important factors that have to be considered if the training is to be successful:

- The benefits of the training need to be measurable.
- These benefits must be sustainable over a long period.
- There needs to be access to a wide range of technical and operational skills covering all aspects of managing and operating the plant, from the quarry to the use of the final product by the customer.
- It should be tailored specifically to the raw materials, equipment, products and markets relevant to the plant.
- It should take into account the existing skill and educational level of the plant personnel.
- It should reflect the local plant organisation and culture.
- Measures must be taken to overcome any language barriers.

Optimisation

In optimising cement plant performance, or any plant containing a number of discrete unit operations, it is very unlikely that the whole operation will be optimised if only one area of operations is optimised. For example if the output of a kiln is increased without regard to the quality of the clinker produced, then this will cause problems in cement grinding and in the quality of the final product. For this reason, it is important that any technical training programme includes an appreciation for the whole process, and that it describes the interaction between each processing stage. Using trainers who are only expert in one particular aspect of cement manufacture can lead to problems elsewhere in the process.

Most of the training programmes available to small and medium-sized cement producers are general in nature, and, while of some benefit, it has been found that focusing the training on the actual equipment, processes, fuels and raw materials in use at a specific plant leads to greater success. Here, issues relating specifically to that plant can be addressed, which can lead to some rapid improvements in performance.

Training should also be designed so that it is appropriate to the current knowledge and abilities of the personnel being trained, particularly when dealing with the operator level. Whereas knowledge transfer to qualified engineers is relatively easy, as they are accustomed to receiving information and explanations, communicating effectively at the plant operator level is more of a challenge – unless the plant is fortunate enough to have qualified engineers as operators. The proven technique for training

operators, so that they operate the plant efficiently, with common procedures and a common approach, is to use the concept of an operations engineer, who is also an experienced plant operator. They are able to communicate effectively, while at the same time making any necessary changes to the plant operation to ensure maximum efficiency and to develop procedures that all the plant operators can follow. Demonstrating that improved kiln performance, in terms of output and fuel consumption, can actually be achieved is a powerful tool in convincing plant operators of the benefits of change.

Language is a significant barrier in the delivery of any training programme to international clients. Although training materials can be translated with reasonable accuracy, an important part of the knowledge transfer can be lost in the informal interchanges and questions during the training sessions. To lessen the impact of this problem, cpi has developed the concept of “train the trainer”, where in-depth training is given in English to a small number of engineers that are also fluent in English, and they deliver the programmes to other plant personnel in their native language. This has the added advantage that the detailed knowledge and information is retained within the company.

Executive resistance

One of the most difficult barriers to overcome in relation to operational and technical training for plant personnel is to convince owners and executives of its worth. All too often cpi encounters situations where the training of plant personnel is seen as a human resource function; and there is an implicit – and erroneous – assumption by many human resource professionals that plant people do not need technical training. After all, they would not be doing the job if they did not know how to do it!

Although it is relatively easy to assess the immediate impact of a technical training course by the use of initial and final testing of the participants (and it should be emphasised that this is a useful exercise in any case so that the training programme can be optimised), what is important is the sustainability of the knowledge imparted and that the knowledge gained is used to improve plant performance. By linking the training with a targeted programme of plant performance improvements, it becomes possible to provide a very effective means of measurement by using the change in the targeted key performance indicators (kpi) over time.

Self-financing

By completing a rapid audit of current plant performance, it is possible to identify a number of areas where profit improvements can be made, if the supervisors and operators can modify their operating procedures and methodologies. This, along with an evaluation of their current knowledge, can be used to identify individual training needs. At the same time, a value can be placed on the kpi enhancement identified in the audit, and a balance can be found. In nearly all cases, the annual value of the benefits can be shown to exceed several times the cost of

the training. A further advantage of the audit is that it ensures the trainers are focused on the real issues at the plant, and that the trainers transmit real advice and experience to plant personnel, rather than just generalised knowledge

In a recent example, an annual sustained profit increase in excess of US\$500 000 was identified, while the training packages needed to achieve this target were a one-off cost of \$225 000 over a 12 month period. Although the programme is yet to be completed, projections indicate that profit improvement will be achieved.

Normal rules still apply

Although with this approach the training is more focused, there is still the need to follow the normal rules for training. The different types of training methods, such as classroom and on-the-job, are still required, together with practical-based training, which gives participants hands-on interaction with the main plant equipment. All cpi training programmes are reinforced with web-based support and each customer has an allocated area on the company's website where further technical queries can be raised and the on-going process of technical updating can continue to provide access to a large pool of expertise.

Operators to executives

The training of kiln operators has continued to be a very important contributor to improved plant performance

with the resultant increase in production rates and reduced fuel consumption bringing significant cost benefits. This work is typically carried out with small groups (4 – 6) and involves discussion on the theory and, most importantly, practical demonstrations of how to operate the plant more efficiently.

One method of overcoming the resistance of senior managers and executives to cement-specific technical training programmes is to give them a basic technical understanding of the key profit drivers. This helps them to identify potential improvements.

Conclusion

In summary, the key elements for effective training are:

- The training programme must be cost effective.
- The benefits from the training must be quantifiable.
- The training benefits must be profit focused.
- The management must be committed to encouraging employees to apply new knowledge.
- The training should be focused on the skills and knowledge personnel need to perform their jobs more effectively.

The concept of self-financing training is proving to be an effective method to convince senior executives that the net benefits from training are measurable and thus of considerable value. ●