



# All About **Audits**

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THE AUDITING PROCESS FOR A CEMENT PLANT.

## **Introduction**

In a world where prescribed methods and systems are increasingly common, the word 'audit' is frequently used to describe the method of making sure that everything is working as it should. The results can be used in a positive manner (improving performance) or negatively (blame apportionment). Unsurprisingly, cement plant operators should concentrate on the positive aspects of the process.

Auditing should be a part of the normal routine of plant management in order to monitor and maintain plant operations. The capture and treatment of process information should be designed to facilitate this critical duty. However, there is also a strong case for 'independent' audits at regular intervals to assist plant management or to meet specific requirements, e.g. a review of plant ability to meet future developments.

A professionally planned and properly conducted cement plant audit is a powerful tool in understanding current performance, identifying limiting factors, developing improvement plans, justifying proposed investment and eventually confirming (or otherwise) the new performance level.



## What is a plant audit?

The principle of auditing can, and does apply to many facets of business life, including the process of manufacturing cement.

While the audit can be applied to a number of areas within the cement industry, e.g. quality, environment, logistics, product portfolio and markets management, each having an impact on the commercial performance of an organisation, this article will examine the role of the operational audit – a role that should take into account both technical and commercial (profit) factors.

Continual monitoring and auditing of plant performance is a key function of the plant management team in the effort to maintain stable optimum (existing) plant performance levels and to improve the short term operational aspects of the plant. Over and above this routine plant function, an external (to the plant) audit is desirable at regular intervals (e.g. annually) to check the accuracy of the conclusions being drawn at site level and to integrate these findings into the business planning cycle.

In this context, the external plant audit results in an objective assessment of plant performance, which, when compared to known levels of performance (benchmarking), can be used to generate a number of potential courses of action, with the intention of either:

- Achieving consistent operation at the existing 'best' production level at the site.
- Increasing production to a known level, e.g. to an 'in-company' benchmark, to world-class performance or to a technically based-plant limitation.
- Developing profit improvement plans, through integration of findings in the business planning cycle, to achieve:
  - ◆ Short term benefits with or without minimal capital investment.
  - ◆ Medium term benefits with limited capital investment.
  - ◆ Long term benefits involving significant capital investment.

## Why should plant audits be undertaken?

The reason for conducting a plant audit is to improve profit, irrespective of the timescale involved. Implementing short or long term capital projects purely to increase product output, if the product cannot be sold, would seem unwise; rather, the focus of the improvement plan must be orientated to increasing profit.

The efficient operation of a cement plant has always been important because of the relatively high capital cost of the plant and the relatively low price of the product. It is now more important than ever that plant efficiencies are maximised because of the increase in modern plant capacities. A small deterioration in plant efficiency now has even greater consequences for company profits.

## When should plant audits take place?

In many cement facilities, no fixed timescale is involved for plant audits. It is suggested that plant auditing, both

internal and external, forms a regular and planned component of every company's business planning cycle, thus allowing a coordinated identification, planning, execution and evaluation of the outcomes of plant audits.

- Well-managed plants audit their processes constantly.
- Well-managed companies audit their plants at a fixed frequency.
- Well-managed major projects are based upon a thorough plant audit.

## Who should be responsible?

Continuous internal audits should be led by a dedicated process engineer with strong management support. To achieve the best results, all onsite departments need to be involved with analysis of data, development of conclusions and implementation of improvement programmes.

More formal audits should be conducted by independent consultants, i.e. independent from banks, equipment manufacturers and cement producers.

## How should audits be conducted?

The methodology employed for an 'independent' plant audit consists of:

- Completion of a standard questionnaire and submission of relevant documentation enabling a 'high level' desk top analysis of plant performance to be conducted. The analysis includes the preliminary identification of performance against key indicators, performance when compared to normal design standards and performance when compared to 'world class' standards. Potential bottlenecks and possible solutions are identified, with an indication of implementation timescale and cost.
- A site visit by a group of qualified engineers. The visit should verify key data from the information previously supplied, obtain further detailed information, clarify any outstanding issues with local site personnel and identify local factors that may impact upon the conclusions drawn.

A formal report should be prepared and should include:

- A full description of the whole plant with a site orientated SWOT analysis identifying strengths, weaknesses, opportunities and threats.
- An evaluation of performance of each plant section, with confirmation of bottlenecks and areas for improvement.
- Confirmation of the key performance indicators and how they compare to agreed standards.
- Establishment of targets for the performance indicators.
- Actions required, necessary timescale, estimated capital cost and equipment list (if appropriate) for achieving these targets.
- Identification of area for further study.
- Definition of timeframe for implementation and achievement of performance indicators.



The submission, discussion and acceptance of the report are crucial to the success of the plant audit. Without acceptance of the potential for improvement and an agreed method of achieving that potential, no improvement will be realised.

The following steps should beneficially include the 'independent' auditors but can be conducted by the host organisation unilaterally.

- Development of an action plan, with resources, timescales and responsibilities established and agreed.
- Review of action plan progress, with management action to meet agreed progress targets.
- Confirmation of the achievement of the agreed targets or otherwise.

## Conclusion

The cement plant audit is a vital part of ensuring the efficient operation of an existing cement plant and can be an important method of ensuring that investment opportunities are not overlooked. It provides an agreed 'independent' basis for future reference. There is significant knowhow and expertise involved with conducting a professional plant audit. The processes used are based upon the good management principles that are employed in many facets of business life.

- Analyse the current situation.
- Compare against the selected benchmarks.

An 'independent' plant audit requires strong and visible senior management support (local and corporate) to provide the necessary data and resources.

- Identify areas for improvement.
- Develop plans to achieve the improvement.
- Implement the plans.
- Check the effectiveness of the changes.

An 'independent' plant audit requires strong and visible senior management support (local and corporate) to provide the necessary data and resources. Time, people, management effort and capital (when appropriate) will be required at various stages of the process. Without that commitment, the process can either die or continue interminably without providing any real results or findings. 🗑️

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