

Process Technologies

The fundamentals underlying every commercially successful Portland cement operation rely on the capability to produce quality consistent product while maintaining lowest cost for manufacturing and delivery of this product.

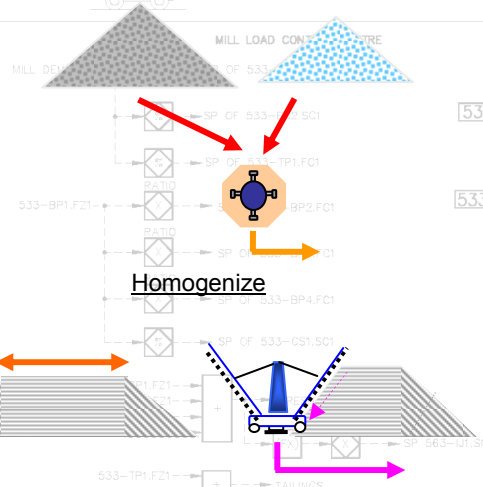
Selecting a proven process concept and cost effective equipment are essential for maintaining a successful operation.

Chemistry

Process engineering in cement manufacturing begins with understanding the basics of cement chemistry in order to achieve the objectives of product quality and consistency. It defines how to manage:

- the flow of the selected raw materials
- proportioning and blending of these materials and fuels
- the chemical transformation to clinker

Select and Proportion



Homogenize

The importance of reducing chemical variability in order to achieve product consistency and satisfactory manufacturing performance is one of the most important factors in cement chemistry.

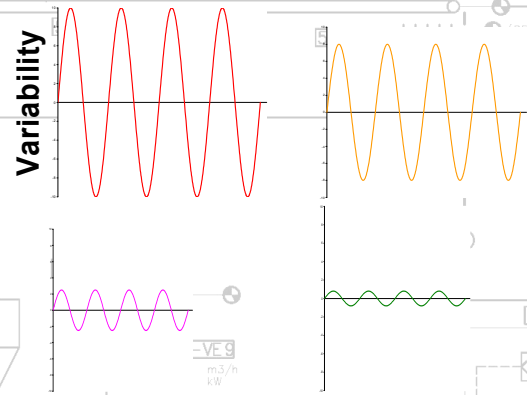
It also cannot be over emphasized the impact that seemingly minor elements could play in generating gaseous components that are emitted to atmosphere or to form

volatile compounds that could concentrate inside the kiln system causing build-ups.

Blend



Variability



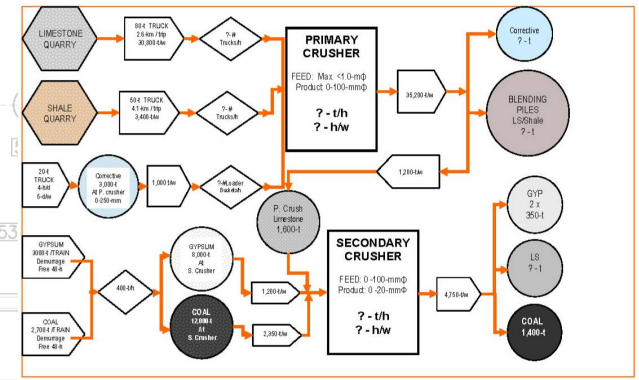
Correctly interpreting the raw material laboratory results ensures that the selected process concepts address the requirements for material flow, energy efficiency and environmental performance.

Conceptual Engineering

At the onset we begin by establishing the goals of the project and defining the constraints imposed by logistics, environmental factors, physical layout, downtime schedules and budgets.

We rely on our hands on experience with the cement manufacturing process and our knowledge of the developments occurring in the industry to ensure that the proposed solution will be optimized.

During the conceptual engineering stage the mass flow of materials and the capacities of the major process equipment and material storage are established. These capacities are then reviewed to confirm that the goals of the project are satisfied and that safety margins and allowances for departmental preventative maintenance programs are respected.



Mass Flow diagram

Equipment Selection

We use our expertise and knowledge of the capabilities and unique features of the different process equipment available from the OEM, to select those which are necessary to achieve the objectives set for quality, energy efficiency, reliability and environmental compliance.

We have in-depth understanding of the key features, advantages and disadvantages of the equipment provided by the various equipment manufacturers.

We further add value to the project by looking beyond the traditional single source of main equipment suppliers to find the most modern equipment tailored to suit the particular raw materials and fuel processing requirements.

A decision made during the initial stages of a project play a significant role in shaping the commercial viability of the operation. With the additional knowledge of chemistry and selected process machinery features, one can rest assured that the selected equipment will fulfill operational objectives with the lowest ownership cost.

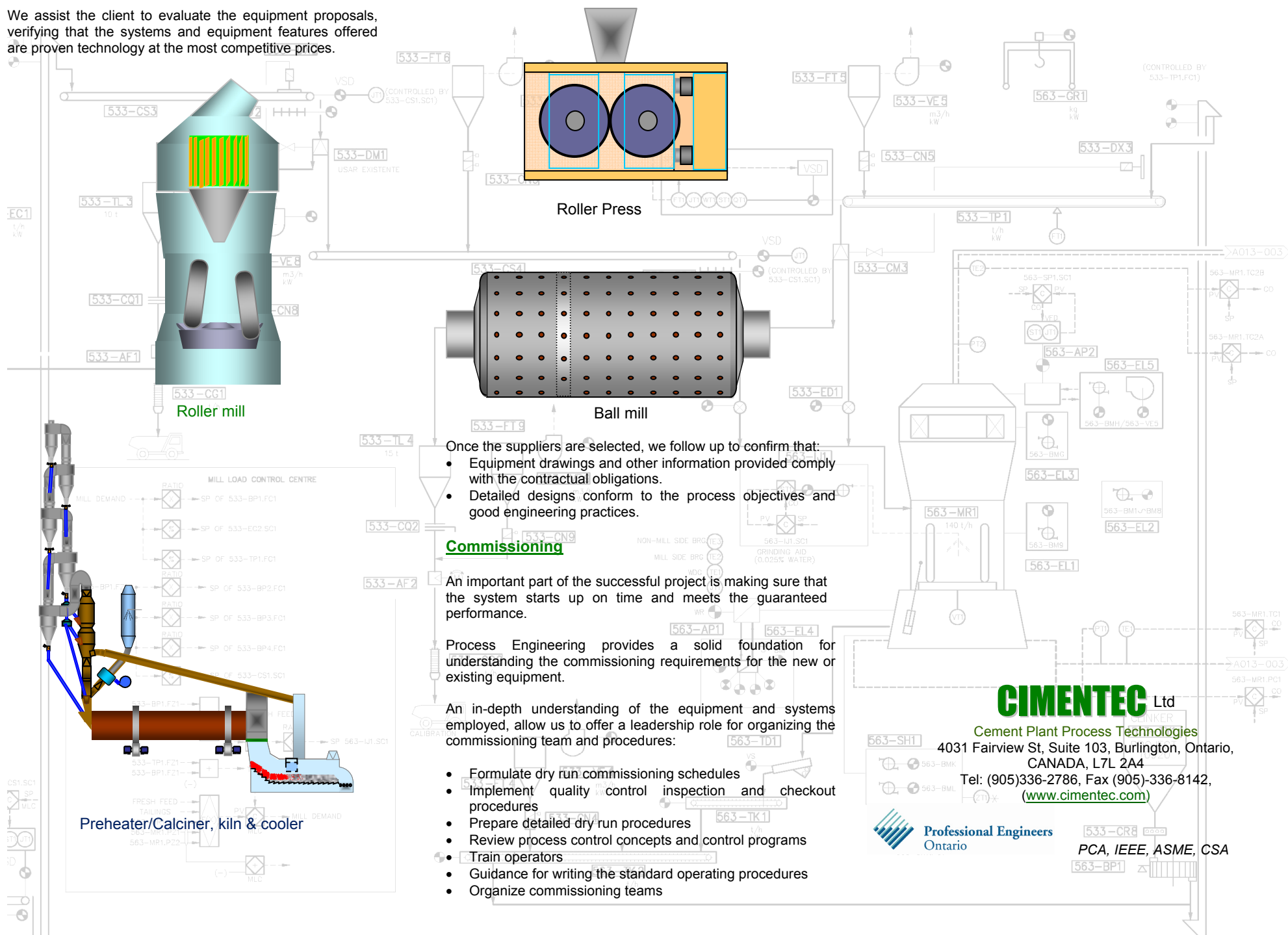
Equipment procurement Specifications

Our services include the preparation of technical requirements and equipment specifications. These specifications ensure that each potential supplier is clear on the requirements, scope of the supply and the information that must be provided in the proposals.

Whereas the nominal, reserve capacities, absorbed power ratings and the overall performance of the proposed rests with the OEM, we take the additional steps to verify the vendor's ratings to ensure that there is sufficient reserve in the proposed equipment.

Equipment Evaluation and Follow Up

We assist the client to evaluate the equipment proposals, verifying that the systems and equipment features offered are proven technology at the most competitive prices.



- Once the suppliers are selected, we follow up to confirm that:
- Equipment drawings and other information provided comply with the contractual obligations.
 - Detailed designs conform to the process objectives and good engineering practices.

Commissioning

An important part of the successful project is making sure that the system starts up on time and meets the guaranteed performance.

Process Engineering provides a solid foundation for understanding the commissioning requirements for the new or existing equipment.

An in-depth understanding of the equipment and systems employed, allow us to offer a leadership role for organizing the commissioning team and procedures:

- Formulate dry run commissioning schedules
- Implement quality control inspection and checkout procedures
- Prepare detailed dry run procedures
- Review process control concepts and control programs
- Train operators
- Guidance for writing the standard operating procedures
- Organize commissioning teams

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