



M.E. ENGINEERING
PROCESS ENGINEERING SOLUTIONS

CAPABILITY STATEMENT

CHEMICAL INDUSTRIES



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1. INTRODUCTION

M.E. Engineering is an engineering consulting company with more than twenty five years of continuous experience in the design, supply and installation of process plants and associated facilities. All aspects of design, drafting and the supervision of mechanical and electrical fabrication subcontractors can be carried out from our offices in Sydney, NSW.

Our engineers are mainly chemical and mechanical with wide ranging experience in the design of equipment and plants, plus materials selection, interaction with services, energy consumption and waste treatment.

We have also worked as members of multi-contractor teams on major projects, utilising specialist designers, suppliers or fabricators as needed to meet project requirements. We can develop engineering designs in-house or work with basic engineering packages provided by others. We also work comfortably in conjunction with specialist technology companies from Europe, America and Japan.

Our usual mode of operation is to provide engineering services for an EPCM (Engineering, Procurement, Construction, Management) style of project implementation. We offer the services as a lump sum contract providing clients with a fixed fee for services provided. This allows our clients to budget for engineering as part of the project capital cost and hold the project to budget. Typically *M.E. Engineering* cost ranges from 5 to 10 % of the total capital expenditure.

M.E. Engineering is a privately owned company, with ownership by one of our practising senior process engineers.



M.E. Engineering provides quality and cost effective services

2. WHY USE M.E. ENGINEERING

- *M.E. Engineering* analyse stated requirements, understand system needs and implement solutions
- Strong process sensitivity
- Specialise in turning process needs into a physical reality
- Experience: We have been along the learning curve with...
 - load cell systems
 - very precise temperature control
 - flameproof environments
 - flammable and dangerous goods
 - control systems and instrumentation
- In-house resources of process, chemical, mechanical engineers
- Experience in locations remote from our offices, supervising local sub-contractors and tradesmen

3. EXPERIENCE

The staff of *M.E. Engineering* have extensive experience in batch refined chemical plants including herbicides such as glyphosate, resins for surface coatings such as paints and inks, adhesive plants and reactor systems for such diverse products as cosmetic additives, veterinary products and grease. The scope of work within these projects range from total plant contracts to specific unit operations.

Key elements of the process and systems include:

- Reactors both steam and HTHO heated
- Let-down tanks
- Agitators for both rapid liquid and powder blending
- Condensers, phase separation
- Pumping of non-Newtonian liquids at viscosities to 200,000 centipoise.
- Dust control and wet scrubber systems
- Hot oil heaters and oil systems
- Grease Kettles and plant
- Resin melters
- Shell and tube, and plate frame heat exchangers
- Ventilation and extraction systems
- Control and instrumentation
- Flameproof electrics

- Caustic and solvent washes
- Storage of raw materials and intermediates
- Dangerous goods handling and storage
- Material handling both powder and liquids
- Effluent treatment
- Varnish kettles

4. AVAILABLE SERVICES

Project management:

Organisation and control of cost, schedule, quality and performance of projects

Preliminary engineering

Establishing operating and process parameters for Board approval approaches to statutory authorities and potential clients

Feasibility studies:

Preliminary cost and budget estimates, scope input and past experience are a valuable segment of feasibility studies. *M.E. Engineering* can work as part of the team examining project feasibility

Turnkey process plants:

Scope can range from total manufacturing operations including buildings, process, services and storage facilities, to subsets of these

Unit operations:

Specific elements of a process can be provided as either site installed elements or skid mounted units

Upgrades and de-bottlenecking:

Existing operations can be enhanced by examining plant for changes that will improve productivity and/or flexibility



Site upgrades increase existing production

5. QUALITY ASSURANCE

M.E. Engineering is completely familiar with ISO 9001-1994: Quality Systems for Design, Development, Production, Installation and Servicing. Tailored quality plans can be prepared on an individual to suit client's specific requirements for such documentation. Alternatively *M.E. Engineering* uses a system of personal accountability to ensure the system output achieves the required quality.

6. MANAGEMENT SYSTEMS

M.E. Engineering's approach to successful projects is based on qualified, experienced personnel supported by good organisation and systems. The major elements of our management systems are outlined here.

a) Cost Control

M.E. Engineering operates a computerised system for collation, reporting and control of costs on projects. Labour, purchasing and sub-contract activities are budgeted at the start of each project and the project manager monitors all activities against these budgets.

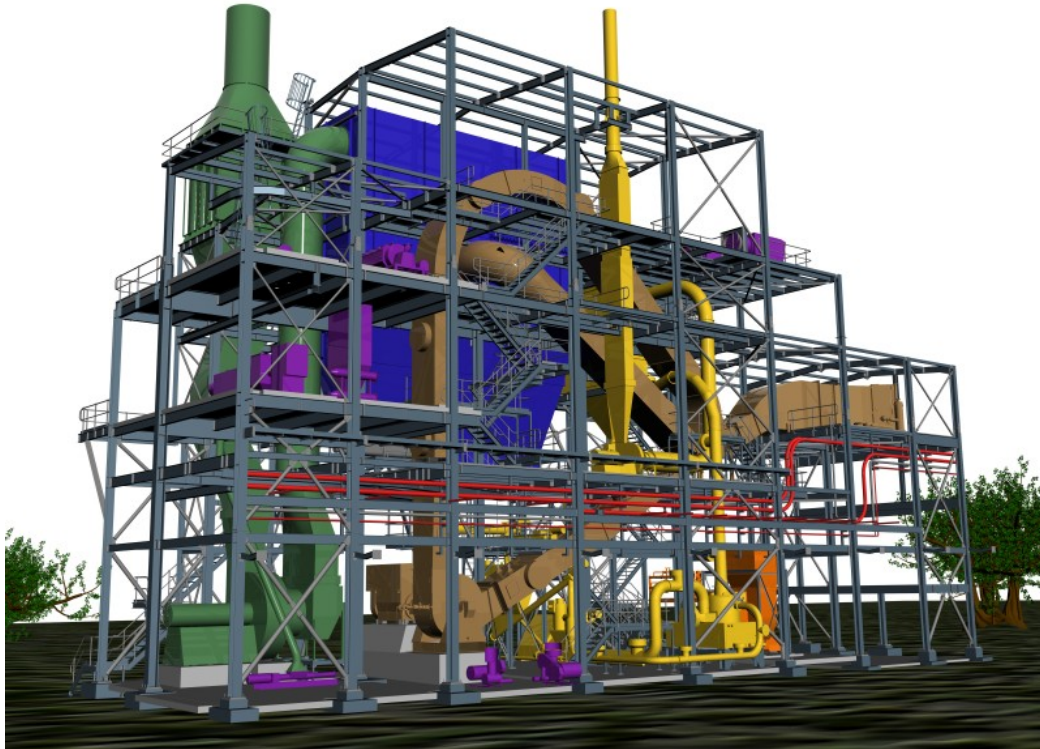
Where changes to the agreed scope of work occur on a project, the *M.E. Engineering* manager will notify the client of the nature of the change and its impact on cost and timing. When approved, these variations are incorporated into the project cost control system for proper monitoring.

b) Project Planning

M.E. Engineering uses Microsoft Project for planning and scheduling activities. Preliminary schedules are normally developed during the tender period and then expanded significantly during project mobilisation to incorporate all key project activities and identify long lead items and critical paths. The schedule is updated regularly during the course of the project. Sub-schedules are established when necessary, for example when site activities require careful planning on a day by day basis.

c) Drafting Systems

Drafting at *M.E. Engineering* is carried out using the latest version of AutoCAD and includes 3D modelling capabilities.



3D rendering brings projects to life

d) Safety

M.E. Engineering has a strong commitment to safety, both in the good design of plants and in site supervision practices. We have an excellent record for injury free work.

We develop Safety Management Plans for specific projects where the size of the project justifies or we can work within a client's safety management system.

e) Insurance

M.E. Engineering has the following insurance policies

- Professional Indemnity Insurance of \$2,000,000
- Public Liability Insurance of \$10,000,000
- Workcover for *M.E. Engineering* employees
- Comprehensive motor vehicle insurance for *M.E. Engineering* vehicles