With an experience of several decades in the field of process control and steam engineering, Forbes Marshall provides end-to-end solutions in the form of complete automation packages for instrumentation and control, right up to erection, for various industries. A strong knowledge base coupled with an application oriented approach and precise engineering has made us the preferred supplier for these packages.

The concept of a complete engineering, supply and erection package with field instrumentation as well as control systems, provides an enhanced value to the industry in terms of accurate control over process parameters and ensures safety. Forbes Marshall has installed and proven packages for chemical and petro-chemical industries like methanol plant, aroma chemicals, oleo chemicals, etc.

Our team of finest engineers are dedicated to serve the process industry across diverse sectors. World class manufacturing facilities and technology enables us deliver quality solution globally. Our unique complimentary expertise enables us engineer customized systems that simplifies transfer operation and precise process control. We partner customers with our knowledge, comprehensive range of services, products and solutions for precise measurement and control of process.
Distillation is the most commonly used separation technique in Industry. It consumes an enormous amount of energy, both in terms of cooling and heating requirement. It can contribute to more than 50% of a plant’s operating cost.

Each type of distillation process has its own complexity and control loops associated with it. It is necessary to implement appropriate control mechanisms, considering the simplicity or criticality involved in each type of distillation, with the help of established OEMs and automation experts.

Further distillation columns are designed for either continuous distillation or batch distillation. The control system needs to be selected appropriately, based on design of the column and its operation cycle.

Distillation is a process used to separate components from its liquid feed by using the difference in their boiling points.

To separate the mixture of liquids, the liquid is heated till the component with lower boiling point is converted to vapour.

This vapour is cooled in a condenser and converted back to liquid and the reflux is returned to distillation column while the distillate is drawn out.

For the distillation column to operate efficiently, automation is required at various stages. Some of the common control loops are:

- Feed flow control
- Column temperature control
- Column pressure control
- Column level control
- Reflux control
- Utility pressure and flow control

All these loops, should be properly synchronised with specialised algorithms for a product of desired quality. To achieve this, each column is automated so that the plant can be operated efficiently through central monitoring, with limited man power and controlled wastage.
**The Forbes Marshall Solution**

Forbes Marshall has provided automation solutions for most complex processes where the column may be multi-component, multi-pressure or operating under vacuum, either packed or in tray columns. Specialised control algorithms have been designed and successfully implemented for mass and energy balance of the column. Cascade control systems with interlocks provide additional safety/control accuracy since the parameters are interdependent. Special function blocks have been used to compensate for the slow dynamics of the distillation process.

Although it is difficult to generalise distillation column controls, some of the control strategies commonly used include utility pressure/flow control, feed flow, bottom level control, top temperature, reflux ratio or flow control with override from accumulator level and side stream draw controls.

Forbes Marshall’s unique experience in field instruments including control valves, flow meters, level pressure and temperature transmitters, help in appropriate selection and sizing of instruments, even on very low pressure or vacuum applications, where the overall resistance needs to be maintained substantially low in order to maintain overall column equilibrium.

**Offerings**

- Field instruments required for monitoring and control in distillation column automation
- Control system (DCS / PLC) with control algorithms for column control
- Configuration and operator software for dynamic graphics, process mimics, real-time and historical trends, group displays, faceplate displays, alarm management and report generation
- Utility monitoring system to optimise the energy balance and heat recovery
- Erection and commissioning service
- Project documentation for complete automation package

**Benefits**

- Central control for functionality of the entire plant
- Optimised control for reduction in wastage
- Improved product yield and throughput
- Improved product consistency and plant efficiency
- Steam / utility savings
- Flexibility of generating various reports for maintenance management, planning and process optimisation
- Specific safety interlocks to maximise plant safety
- User friendly design, customised considering all requirements right from operator level to administrator level