PROJECT EXECUTION

DESIGN & ENGINEERING

This is the most important part of a batching plant automation project. Various parameters such as production capacity, raw materials and their flow characteristics, recipe and sequence information, mixing, pre-mixing and post mixing process details – all these have to be carefully studied before a proper design process is initiated. Once the high level design and plant – equipment layout is approved by the customer, detailed engineering drawings, fabrication drawings bill of materials to be purchased, panel drawings, wiring diagrams, cabling layouts etc. are prepared.

MANUFACTURING, TESTING AND DELIVERY

This is mostly done by us at our facility in Chennai, unless there is an economic case of fabricating some large structures at or near site.

ERECTION, INSTALLATION, COMMISSIONING, TRAINING AND SUPPORT

Our team of engineers will supervise the complete erection and commissioning at site, do trial runs, train operators / supervisors and educate managers on how to monitor and manage the process from the master control room.

FIXED PRICE CONTRACT

Autosys undertake complete end to end plant automation on fixed price basis, with assured delivery commitments. Since we have such deep domain knowledge, we can even guarantee performance parameters such as throughput, consistency, change over time etc.

Apart from our engineering skills and domain knowledge, it is our ability to accurately estimate a complex project and execute it within time and budget that differentiates us from others.

COMPLIMENTARY PRODUCTS

AUTOMATIC DOSING SYSTEMS FROM XELEER

Xeleer is the product division of Autosys. We supply standardised dosing systems for delivering small quantities of a single material in to the process at a very high accuracy.

Example : 5 Kg every minute at an accuracy of 20 grams or 100 grams every 30 seconds at an accuracy of 1 gram. Specialist (patented) dosing systems are available for fibres and fibrous composites.

PARTNERS

Rockwell Automation
www.rockwellautomation.com

METTLER TOLEDO
www.mt.com

DINI ARGEO Scales · Weighing systems
www.diniargeo.com

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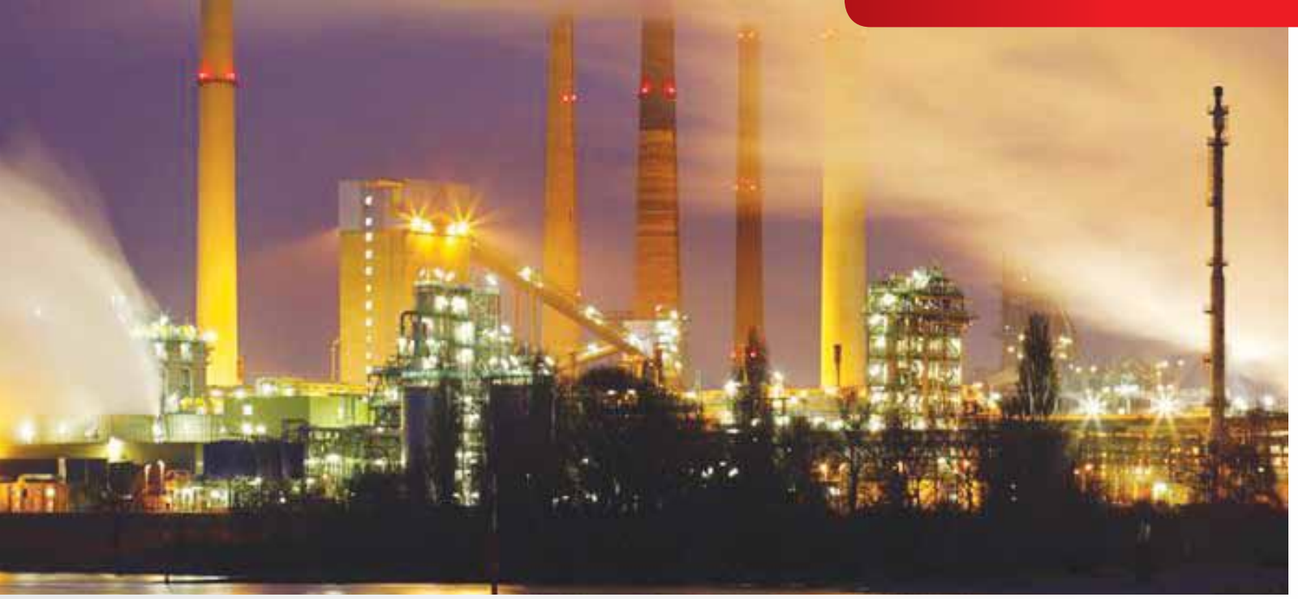
BATCHING PLANT AUTOMATION

Autosys™

The Autosys Engineering & Design team has more than 2 decades of experience in Batching Plant Automation and it is one of their core-competency area.



SAMPLE INDUSTRIES

Some select industry where batching plays a very important role:

• Refractory, Ceramics and Abrasives • Ferro Alloys • Building Materials

• Friction Materials such as Brake shoe / Clutch plate • Animal / Poultry Feed • Food, Pharma etc.

CHALLENGES:

Each industry poses its unique set of challenges

- Large number of raw materials
- Combination of Major, Minor and Micro ingredients
- Lack of plant space, roof height, storage areas
- Difficult to flow materials such as fibres or fibrous composites
- Large no. of recipes, Complex sequence of batching and mixing

There are many vendors who specialize in specific industry verticals and many more who specialize in specific components like batching controllers and PLCs. But Autosys is the only company that has a combination of deep vertical domain expertise and wide horizontal inter-disciplinary skills. We can execute projects anywhere in the world directly or through local partners.

THE SUB-SYSTEMS

ANY BATCHING PLANT AUTOMATION WILL INVOLVE ONE OR MORE OF THE FOLLOWING SUB-SYSTEMS:

INCOMING MATERIAL HANDLING

Electro-mechanical equipment such as loading / unloading equipment, conveyors, mono-rails and bucket elevators, MCCs, control panels and interfaces to the master control system.

STORAGE

Jumbo bag storage or bulk storage in overhead / underground storage bins / tanks.

DRAWING THE MATERIAL OUT OF STORAGE

Jumbo bag handlers, Bin gates, Valves, Divertors that help in controlling the drawing of materials and their sequence.

FEEDING

Feeding is often part of drawing or a separate sub system. Certain materials flow easily through gravity and they do not need specialist feeders, but some others need specially designed vibration or screw based feeders.

Feeders also are classified in to Coarse, Fine and Superfine feeders, that help control the quantum of material flow. The same feeder could operate in multiple speeds or multiple feeders could be used for each stage. The idea of Coarse, Fine and Superfine is to achieve higher throughput and speed of batching process, without compromising on the accuracy of each material taken per batch.

WEIGH OR VOLUME HOPPER(S)

Most batching processes require the raw materials to be added in specific proportions, specified in Kgs or Grams, but there could also be processes, where a few materials have to be measured and added volumetrically.

Multiple weigh hoppers could be used to do create multiple batches in parallel, so that we can increase the throughput of the batching plant (batchers per hour). Sometimes different recipes are prepared in different hoppers after which they are combined or sequenced to the downstream process.

DISCHARGE TO

The discharge from the weigh/volume hopper can be directly in to a mixer, or on to a discharge hopper, conveyor or skip hoist. In some cases, the discharge is done in to jumbo bags fitted on mobile trolleys, that move automatically on rail from one place to another.

TRANSPORT TO MIXER AND MIXER CONTROL

Most batching processes require the material to be taken to a mixer and mixed with additional inputs such as water, special liquids, manually added ingredients.

Certain processes also require parameters such as temperature and density to be monitored and controlled during the mixing process.

POST MIXER PROCESSES

Some industries have no further processes after mixing and the output of the mixer is ready for packing. Elsewhere, the mixed material goes through further transformation / process, which are also controlled from a centralized automation system.

BAGGING

From 25-50 Kgs bags to Jumbo bags up to 1000Kgs, the final finished product has to be automatically weighed, packed and stiched or sealed. These machines are controlled by an independent controller with communication interfaces to the master control room.

PALLETISATION

Automatic palletisation is another way to pack finished products using robotic / semi-automatic systems.

FINISHED PRODUCT HANDLING, STORAGE, LOADING

Some plants automate even the loading of the finished products in to waiting trucks or wagons. Or they could be conveyed and stored in a separate holding area.

PANELS

All the electricals and controls are routed through panels with manual interfaces with alarms and buttons.

PLCs AND PCs

The entire plant is controlled by PLCs (such as Rockwell Automation) and SCADA systems running on industrial grade PCs.

SOFTWARE

The PLC software and the SCADA software (and any other custom software such as remote monitoring through web / mobile etc) have to be custom developed for each project.

QUALITY STANDARDS

The following Quality standards have to be followed at various steps of a batching plant automation:

• ISA S88 • ISA S95