Original Article

Automation of Explosives Manufacturing Plant Bolsters Safety, Quality and Productivity (PQS)

Dr Manoj K Patel
(Research, Findings and Views in this article are that of the Author)

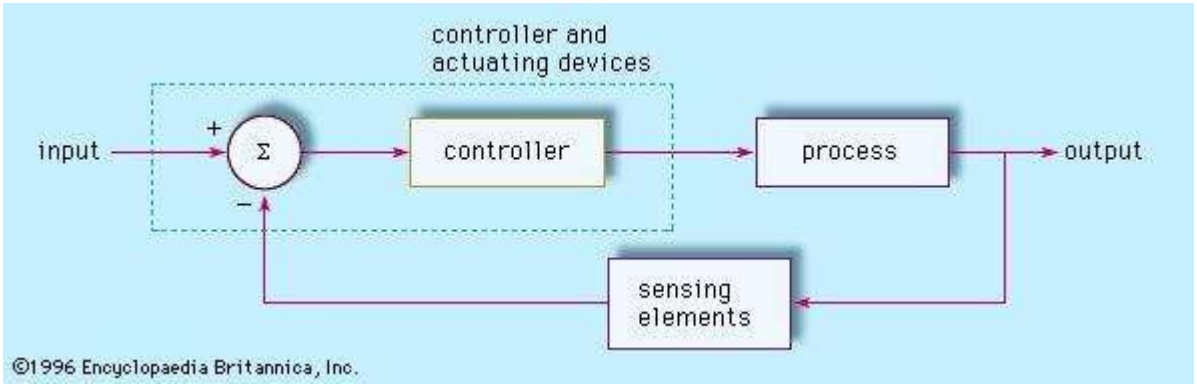
Mobile No: +91 82492 06647
Email ID: manojkumarpatel1963@gmail.com
Email ID: manjubeti@rediffmail.com

Automation of any process plant yields a myriad of benefits. The prime three benefits are Safety, Quality and Productivity; term it as PQS.

Explosives manufacturing plants in many locations are getting aged and need refurbishing. Under such circumstances, it is prudent to make some investment (with quick ROI) and go for automation of the plant. Benefits will be in terms of: (a) improved safety, (b) increased productivity, (c) reduction in workforce, (d) improved and consistent product quality, and (e) competitive advantage in terms of plant and machineries.

We have worked out with an automation method for Site Mixed Emulsion (SME) Explosives Plant of capacity 50000 MT per year. The same automation process may be for SME Plants manufacturing 10000 MT up to 100000 MT per year.

The automation will be implemented on the logic of:



The control system of a SME plant will be responsible for a variety of machine, process and safety control functions in a number of physically separated process areas. The automation process will involve integration of units, namely, boilers or other steam producing units, raw materials stores, material movement machineries, semi finished goods (SFG) manufacturing tanks, finished goods (FG) manufacturing machineries, and then to storage silos. Plants and machineries will be optimized with lesser number of preparation tanks, minimum steam needs and agility in changes from one product to the other without process interruptions. Safety devices like sensors for temperature, RTD, low-high pressure detection and corrections, alarms, auto tripping followed by re-circulation systems will be backed by PLCs and HMIs. Thus, the automation system would fit in to a control room while ensuring the safety instrumented system complies with today's current standards. The scope of automation would include upgrades to the distributed control system (DCS), programmable logic controllers (PLC), operator interfaces, and network infrastructure.

With an investment of about Rs 50 lakhs an existing SME plant of 50000 to 100000 MT per year capacity can be made fully automatic with drastic reduction in operational manpower.

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debahuti Consultants
The Energetics Group