Case Study: Automated Liquid Management System – M & M Ltd.

The meaning of new buzz words in technology viz. Industry 4.0 is different in the Indian subcontinent. Most industrialists believe that shifting to automation is the only way of minimizing losses and maximizing outputs. Industry 4.0 for most Indian production plant owners is still a concept. To achieve Industry 4.0, effective Industry 3.0 is required.
At M&M manual methods led to higher filling cycle time and low efficiency. Due to manual interventions like shutting off a pump or valve to avoid spillage, a large dependency was placed on labor. Accountability and transparency in operations was also a problem.



Fig. Turnkey Project of Liquid Management System at M&M Zaheerabad Plant

The following were the main pain-points of the customer

- Pump failure due to wrong operation
- Poor safety precautions by site professionals
- Human error causing spillage of costly liquid
- Downtime and inability to meet deadlines
- Possibility of inflammable liquids igniting due to mobile phone signals
- Natural Disasters
- Less liquid sensing equipment

The main purpose of Fluidyne PLC based automation is used to completely automate a system leaving no room for human error. Mahindra team entrusted us with responsibility of design, construction and testing of automated liquid transfer, dispensing and filtration systems for their all manufacturing plants.

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Fig. Automated Liquid Dispensing Systems with common server data integration

The solution brought the following advantages to M&M group -

- The system was built in-house and required no human intervention. Manual mode option was made available too
- Compact design with 10-15 years life cycle. System is capable of 24x7 operating time
- The entire fiber optic line is run in a redundant two-way loop to avoid data loss in case of switch failure.
- Fluidyne-make drip free guns enable 100% dripless applications
- Vacuum based systems fill liquid 100% of total quantity of liquid in one cycle
- Each dispenser buffer tank has a flowmeter at the inlet. This is helpful during audits for consumption vs receival
- Data is carried to PLCs via Ethernet which is a de-facto standard in plant automation and is seamlessly scalable
- Fluidyne-make P D Flowmeter ensures accuracy at **±1%** and **repeatability better than ±0.1%** of total reading.
- Range can be extended by adding more ethernet-fiber optic hubs in the future
- Two stage control valves are used to getting more accuracy in any batch quantity.
- Troubleshooting is easy and does **not** require skilled personnel reducing OpEx
- Each PLC control panel is powered by highly reliable SMPS sources
- Data is accessed via master Fluidyne control panel with aesthetic HMI display
- Statistical records can share on daily, weekly and monthly with main server
- Capable of quick dispensing to achieve maximum productivity per shift

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