DISTILLATION PROCESS AUTOMATION

Process Overview

Distillation is a process in which a liquid mixture is separated into its component parts by vaporization. It is a widely used method for separating mixtures. To **separate a mixture which has different boiling points forced** into gas phase and then the gas is condensed into liquid form and collected. Distillation is most favored separation technique. Distillation is generally of two types, **Batch & Continuous** Distillation. The feed is introduced at column. The difference in gravity between vapor and liquid phase, liquid runs down the column, while vapor flows up the column. Liquid reaching the bottom of the column is partially vaporized in a heated reboiler; which is sent back up the column. The remainder of the bottom liquid is withdrawn as bottoms/ **bottom product**. Vapor reaching the top of the column is cooled and condensed in the overhead condenser. Part of this liquid is returned to the column as **reflux** to provide liquid overflow. The remainder of the overhead stream is withdrawn as distillate or **overhead product**.

Need For Automation

Distillation Process Automation can be addressed only with the **domain expertise** on the process & when the **process constrains** is well understood. Distillation is the most **energy-intensive unit operation**; the major costs for distillation columns are in their operation rather than in their initial investment costs. Distillation can **consume more than 50% of a plants operating energy cost**. The automation is extremely preferred for Distillation process to maintain the process with efficient monitoring & controlling of Process Temperature, Continuous Utility monitoring, Ratio Feed & Reflux Addition, Monitoring of Production Collection, Flow & Level monitoring at required stages etc., These optimization techniques **can improve productivity and profitability by 25 percent to 33 percent** by reducing the operational cost & effective process. controlling.

The Process Automation by understanding **Regulatory needs & with guidance of Quality Systems** will address the audit requirements efficiently.

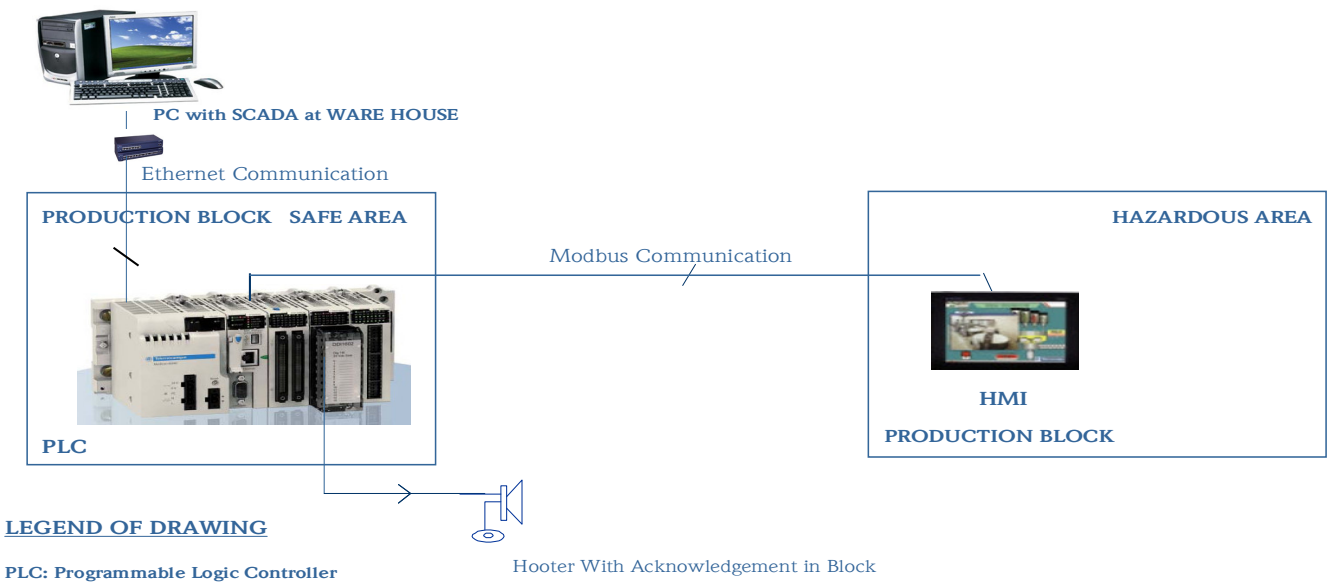
System Components Control System (Software- Hardware) HMI, SCADA

A **control system** with Open architecture design provides complete flexibility, high performance & ease of operation to the end user. The high-performance processor is considered which is capable of multi-tasking, best memory management & high reliable. **Remote I/O modules** for far spread blocks, **HMI's** at various production blocks for ease of operation. Remote process monitoring is performed by **SCADA** and various management information reports.

The system uses advanced software tools and components to build the necessary logic for better process controlling and process. The software includes features like Graphics, Trending, History and reports on customized formats.

An **internal FAT** will be conducted on the Panel Engineered & simulation test will be conducted at our in-house to analysis right logic & controlling developed in the system to ensure stringent control.

System Architecture



System Components Field Instruments (Sensors, Transmitters, Control Elements)

The better controlling needs effective sensors to read the process, transmitters to send the read parameters to control system, better logic to address and best control element to execute. The hooters & annunciators, alarms on process deviation. The precise controlling enhances the accuracy of the system. The performance of the system is dependant on the Instruments.

The field instruments used in the projects is from **POLMON manufactured** instruments or **from the reputed manufactures**. The instruments used are **tested at our in-house** and sent to end-user after checking to ensure product quality.

System Benefits

- Stabilized maintaining of temperature during the batch in set period
- Achieved Purity of the product
- Greatly minimized manual intervention
- Efficient Resource Management
- Immediate alarm for operators attention on any deviation
- Prevents unauthorized access of the system
- Minimizes the time consumed and batch duration.

More Information

For more information on POLMON solutions, contact your POLMON account manager

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