

HEATING VENTILATION & AIR CONDITIONING (HVAC) SYSTEMS AUTOMATION

Process Overview

A **Clean room** is an environment, typically used in manufacturing or scientific research that has a **low level of environmental pollutants** such as dust, airborne microbes, aerosol particles and chemical vapors. Clean Rooms have **controlled level of contamination** that is specified by the **number of particles per cubic meter** at a specified particle size. The air entering a clean room from outside is **filtered to exclude** dust, and the air inside is constantly re-circulated to remove internally generated contaminants through filters. In Clean Rooms the **HVAC systems** are to provide **conditioned air**, to maintain **thermal comfort** & good **indoor air quality (IAQ)**, and to keep system **costs and energy requirements to minimum**.

Need For Automation

In **Clean rooms** the main functionality is to ensure the environment **free from Contaminants**, maintain good **indoor air quality**. The **Air Handling Units(AHU's)** which establishes the desired environment should be automated by control system, this contains **Outdoor air intake, Mixed-air plenum and outdoor air control, Air filters, Heating and cooling coils, Humidification and/or de-humidification** equipment. The parameters to be monitored and controlled in clean rooms are **Temperature (T), Differential Pressure (DP), Relative Humidity (RH)**. The **Particle counts** in the Clean rooms are also a vital parameter to monitor. The **filter status** of AHU is to be monitored strictly as per the FDA regulatory requirements. The aim of automation is to **monitor and control the AHU operations** & maintain the required atmosphere in the clean rooms with **21 CFR Part11 compliance systems** addressing the regulatory needs.

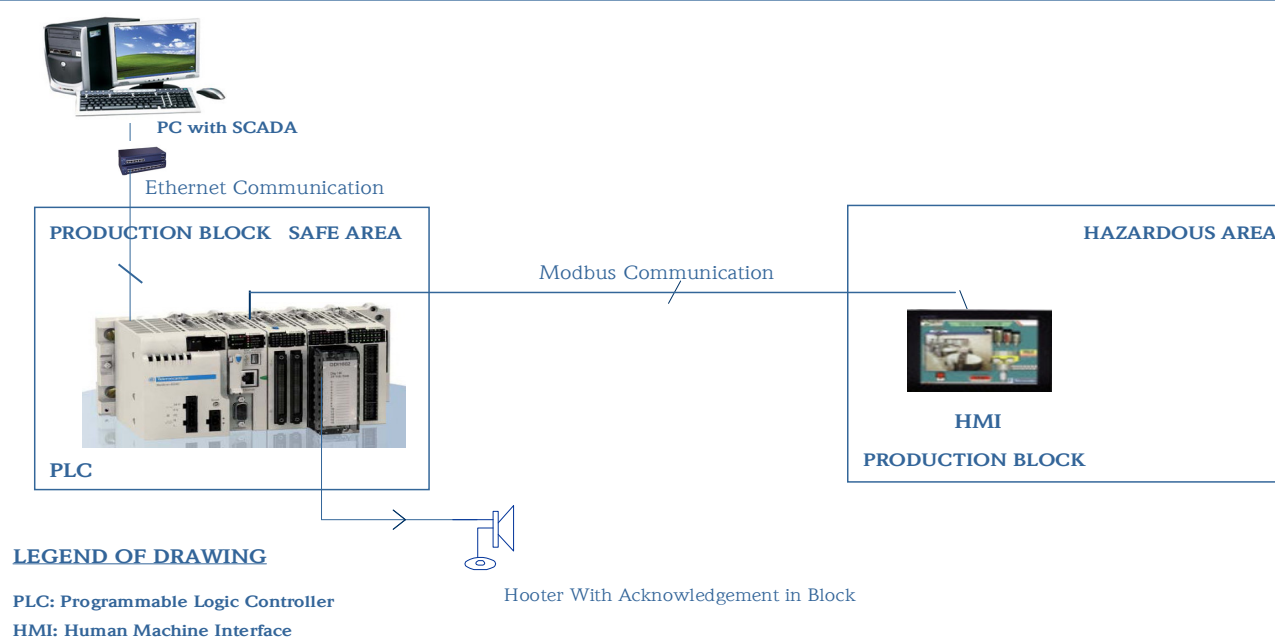
System Components Control System (Software- Hardware) HMI, SCADA

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

- Centralized controlling & Monitoring System
- Consistently maintains the Desired parameters in the rooms
- Improves System accuracy, Less Maintenance Cost .
- Optimized energy usage and minimizes energy wastages.
- Greatly reduces manual interventions
- Efficient operator alert system
- Historical data storage
- 21 CFR Part 11 Compliance SCADA Systems.
- Restriction to unauthorized access.

More Information

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

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