Monitoring and Control System for Hazardous Material Storage

Application: Facility Management
Location: China

Project Introduction:

Although you may never have heard of it, Epoxypropane is an important chemical material, used to produce propylene glycol, polypropylene glycol, and the compound glycerin. This flammable liquid has a boiling point of 34.24° C, and a freezing point of -112.13° C, with a density of 0.859. Due to these volatile conditions it cannot be stored under normal temperatures, but must be stored in a controlled environment with close monitoring.

System Requirements:

To develop a safe monitoring system for hazardous or volatile chemicals, we need to develop an automatic control system with advanced management capabilities. To realize this goal, we need automatic control for the cooling system, and we need redundancy in the event of a failure.

Project Implementation:

- **TPC-1260TE:**   AMD LX800 Touch Panel Computer with 12.1" SVGA TFT LCD
- **ADAM-5550KW:**   8-slot Programmable Automation Controller
- **EKI-7629:**   Industrial Gigabit Ethernet Switch with 8 x 10/100Base-TX Ports & 2 Combo 10/100/1000Base-TX/SFP (mini-GBIC) Ports
- **ADAM-5017:**   8-ch Analog Input Module
- **ADAM-5051D:**   16-ch Digital Input Module
- **ADAM-5068:**   8-ch Relay Output Module

System Diagram:
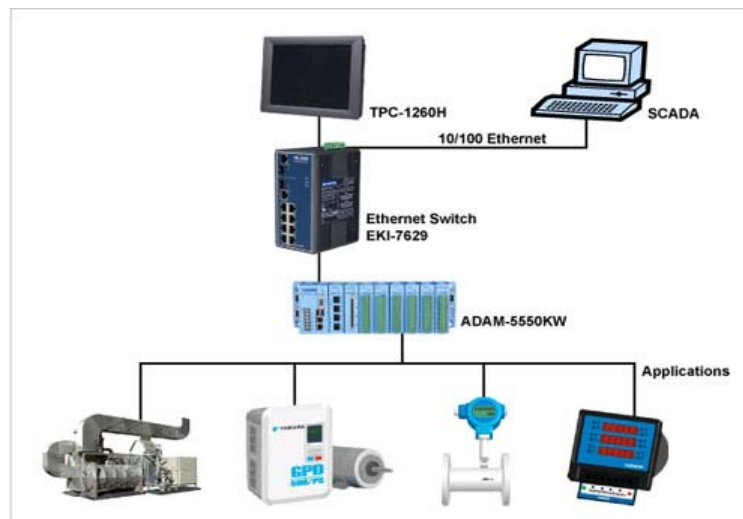
System Description:

The TPC can communicate with ADAM-5550KW by Modbus/TCP to achieve the data collection and control. TPC can display the alarm status, analysis of system failure and HMI interface. So our system can display the flow chart on the screen, which would be a nice friendly user interface. ADAM-5550KW can work through 2 LAN port with the TPC-1260. Two controllers can backup each other.

The monitoring system includes the monitor, system start/stop, temp setting, alarm log and trend chart. We can display the operate status through the change of color, including; Not Ready, Ready, Operating, & Alarm. The corresponding colors are white, yellow, green and red. The value sensors are displayed on the monitor, and the data history is saved to the database. The whole system is simple, visual and easy to operate.

ADAM-5017 takes care of the data acquisition and loop control, including the temperature of the storage tanks, and the pressure of the A/C pipes. MULTIPROG is a high performance control and automation software, with the IEC61131-3 standard. It can support 5 standard programming languages: Function Block, Ladder Diagram, Instruction List, Structure Text and Sequential Function Chart. MULTIPROG provides a plenty of Function Blocks including; data conversion, mathematical operations, comparison, logic and PID.

Conclusion:

ADAM-5550KW is Programmable Automation Controller; it can support the IEC61131-3 programming languages. User could use the programming tool seamless and they have a lot of function blocks and easy programming. Ethernet which is so mature for Industrial, it has clear protocol, easy expand and high speed communication. Touch Panel PC (TPC-1260H) which be designed for Industrial complex environment has stable system, friendly user interface, reliability and continues working under 40° C .