

Chemical Plant Safety

Chemical plants undergo constant maintenance schedules to maintain safety and ensure optimal results from the processes. Starting up a complex petrochemical process requires establishing stable flows, levels, temperatures, and pressures within large-scale equipment. Startup requires and receives a higher level of attention and care than normal processing, because numerous activities are occurring simultaneously and many automatic systems are run under manual or semi-manual control. In the last ten years 8% of significant process incidents investigated by the U.S. Chemical Safety and Hazard Investigation Board (CSB) occurred during the startup of continuous process equipment. Other tragic incidents investigated by CSB occurred during the startup of batch processes and during maintenance operations that followed a power outage. While these incidents had a variety of causes, their occurrence underscores the hazards of startup even under "normal" conditions. Adhering to appropriate safety management systems can spell the difference between a safe and uneventful startup and a serious incident. It is important to follow established startup procedures and checklists and carefully perform pre-startup safety reviews. In addition, facilities have created failsafe or safety interlock systems to guard against unforeseen events and the nefarious "human error".



Failsafe or safety interlock systems are designed to ensure that particular conditions are met prior to allowing a change to the process, which may be the next step. These safety systems are often redundant, a word the systems sales people enjoy, to ensure safety in the event of a component failure. The systems often use simple logic to ensure that the next step does not proceed until all measurable elements are in the safe range. The safety system runs in parallel with the process control system and, in a sense, supervises the process control system to maintain safety for the workers and equipment.



ioSelect has provided pre-programmed logic safety systems to chemical and petrochemical plants. The LogiPro products are ideally suited to such an application since they can provide the logic control completely independent of the process control system. The LGPRO-PL101 is a micro-PLC with Modbus and Ethernet capability. Teamed with the appropriate IO from the LGPRO-16DI and LGPRO-16DO or LGPRO-4RO a LogiPro system affordably provides plant managers reliable supervision of safety interlock systems.