

# Semiconductor Manufacturer Implements Life Safety System

An advanced semiconductor fabrication plant needed to implement a life safety system on a fast track to provide continuous monitoring and control.

## Main Objective

The customer required the design and installation of a life safety system (LSS) to reliably monitor safety conditions in the facility.

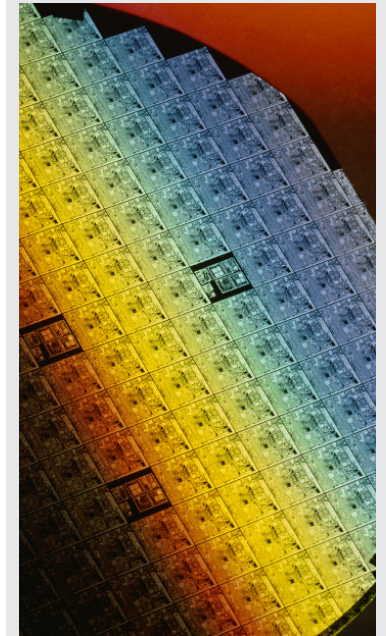
## Customer Results

The Phase 1 life safety system provides continuous, fail-safe gas detection level monitoring, gas delivery system shutdown control, chemical leak monitoring, fuel oil leak monitoring, LSS evacuation control and egress control. The LSS was designed using fail-safe condition circuitry, eliminating the need for costly supervised circuits. This theory, combined with custom-designed serial communication with the MDA gas detectors, spawned a safe, reliable, fast-track and cost-competitive project. Allen-Bradley PLC 5/80s with seamless hot backup were used to support the large amounts of serial data being used for control and transfer to the customer-designed proprietary SCADA system. The high-criticality system consists of six Allen-Bradley 5/80 PLCs and five Allen-Bradley 5/40 PLCs communicating over Allen-Bradley Data Highway+ at 230.4 Kb/s. MDA gas detectors utilize cost-effective serial communication. Other systems utilize time-proven and fail-safe hardwired input / outputs. The proprietary SCADA system was interfaced via Ethernet, and a backup critical systems alarm touch panel was supplied.

## Application Description

### ■ Processes Monitored and Controlled by the LSS

- 12 Hydrogen Detectors
- 16 Closed Circuit TV Interfaces
- 35 Fire System Interfaces
- 1 Chemical Monitoring System Serial Data Exchange
- 10 EMO Shutdowns
- 9 Tunnel Monitoring Points
- 1 Fuel Oil Leak Detection System
- 71 Hazmat Pull Stations
- 213 Blue Hazmat Strobes
- 5 Ozone Detectors
- 2 Oxygen Detectors
- 156 VMB Shutdowns
- 93 Gas Cabinet Shutdowns
- 81 Single-Point Gas Detectors
- 47 MDA Serial Inputs (Monitors Over 800 Gas Detection Points)
- 12 Safety Shower Monitors
- 4 Gas Room Entry Controls
- 12 Gas Scrubber Monitors
- 5 Carbon Monoxide Detectors
- 20 Pyrophoric Vent Controls



## System Configuration

### ■ HMI:

- 2 Ethernet Connections to Proprietary SCADA
- Backup Touch Panel

### ■ NETWORK:

- Allen-Bradley DH+ and Ethernet

### ■ PLC:

- 6 Allen-Bradley PLC 5/80s
- 5 Allen-Bradley PLC 5/40s with Hot Backup

### ■ I/O Count

AI	100	AO	49
DI	141	DO	509

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## Applications

- Serial Communication with MDA Gas Detectors
- Fail-Safe Circuitry
- Seamless Hot Backup PLCs
- Anti-Catastrophic Failure Modes
- Gas Monitoring and Shutdown
- 230 Kb/s Data Highway+ and Fiber Optic Links
- LLS Evacuation Control
- Hazardous Area Entry Control
- Fast Track Installation

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