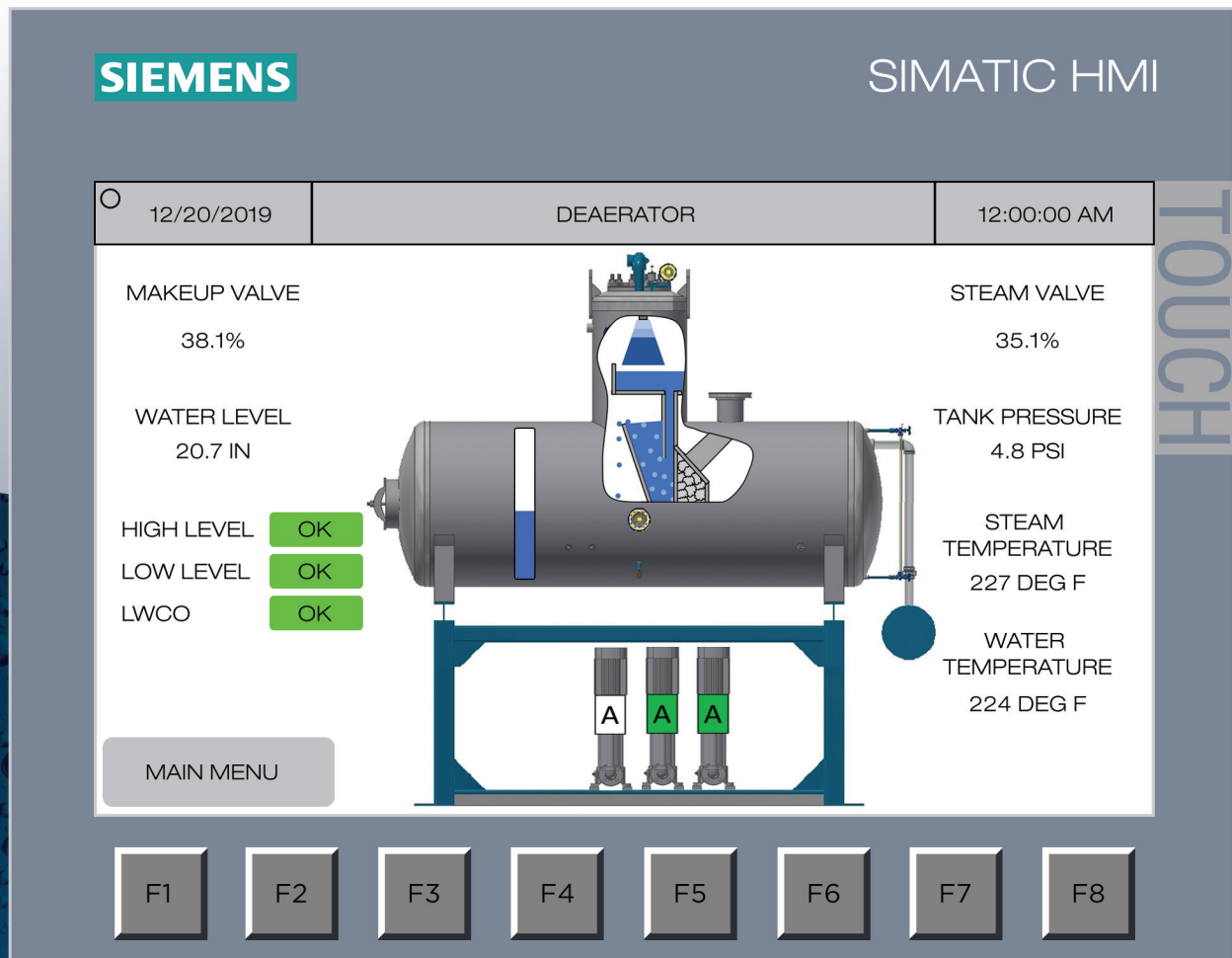


The Lockwood Alpha Control Center has been designed in-house to provide a robust PLC package at an economical price. The system provides complete control and monitoring capabilities for one, or two, tanks (deaerator, feed tank, condensate tank, or surge tank). The system can control up to 12 pumps and can be configured with up to 16 analog inputs, 12 analog outputs/PID control loops, and 4 RTD inputs. MODBUS TCP/IP output is standard for integration into a building automation system. BACnet is also available.

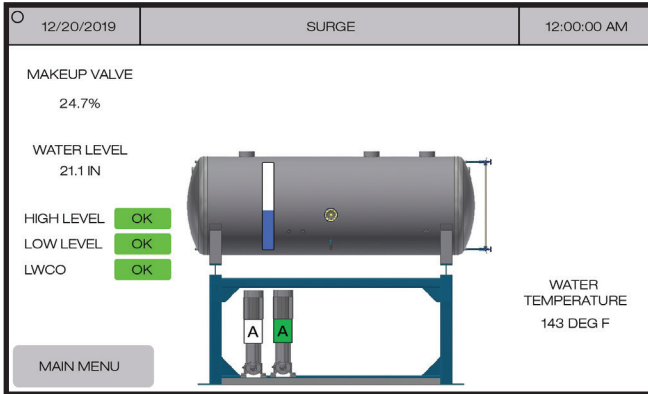
The PLC program has been specifically designed to meet all the typical control schemes we have encountered over the years. The system can provide control for intermittent on/off pumps, continuous run lead/lag pumps, or VFD controlled pumps. Changing control schemes is simple thus making it easy to add or remove pumps and functions in the future. The system can also control up to 12 PID control loops. Thus providing control for items such as water level, water temperature, tank pressure, VFD speed etc.

### PLC BENEFITS:

- *Lead/lag pump control*
- *Standby pump control*
- *Maintenance notifications*
- *Trouble shooting tips via touchscreen*
- *Alarm logging*
- *BAS Integration*

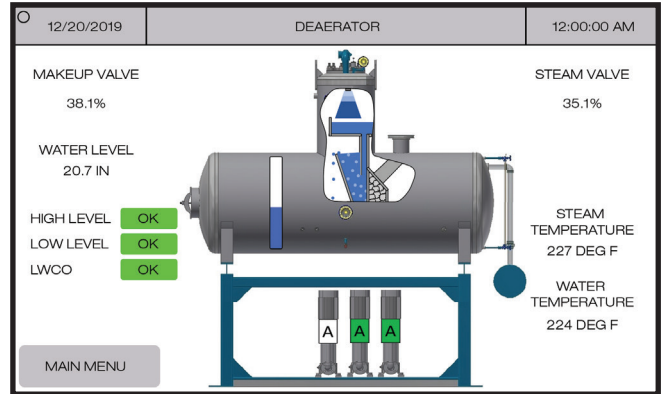


## EXAMPLE TWO-TANK CONFIGURATION



### TANK 1: Surge Tank (Example Configuration)

- Differential pressure tank level sensor
- Modulating makeup control valve
- User adjustable high-water and low-water alarms
- Low-water-cut-off
- Water temperature monitoring
- Two transfer pumps with pressure controlled lead/lag sequencing



### TANK 2: Deaerator (Example Configuration)

- Differential pressure tank level sensor
- Modulating makeup control valve
- User adjustable high-water and low-water alarms
- Low-water-cut-off
- Tank pressure sensor
- Electronic steam control valve
- Water & steam temperature monitoring
- Multiple VFD transfer pumps with speed controlled lead/lag sequencing

PUMP	MAN.	LEAD/LAG	RUNTIME HOURS	STATUS	PSI	VFD %
TP 1	1	LAG 1	497	AUTO	41.6	
TP 2	1	LEAD	485	AUTO	41.6	
BFP 1	2	LAG 2	480	AUTO	124.7	95.4
BFP 2	2	LEAD	467	AUTO	124.7	95.4
BFP 3	2	LAG 1	474	AUTO	124.7	95.4

Pump Summary page provides easy to read summary for all pumps connected to the system.

No.	Time	Date	Text
1	12:00:00 AM	12/20/2019	TANK 1 HIGH WATER ALARM

Info text

NO VOLTAGE DETECTED AT THE HIGH WATER ALARM INPUT.

TROUBLESHOOTING TIPS:  
 CHECK SIGHT GLASS, IS THE WATER LEVEL ACTUALLY HIGH?  
 YES -> DIAGNOSE WHAT IS CAUSING THE HIGH LEVEL  
 IS THE MAKEUP VALVE STUCK OPEN?  
 IS A MANUAL BYPASS VALVE OPEN?  
 NO -> THE PLO HAS LOST INPUT FROM THE SWITCH INPUT.  
 CHECK SWITCH FOR PROPER OPERATION. CHECK FOR LOOSE WIRE.

The Alarm & Notification screen provides an explanation of the Alarm/Notification in clear text and provides simple troubleshooting tips for the customer.



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