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Pride

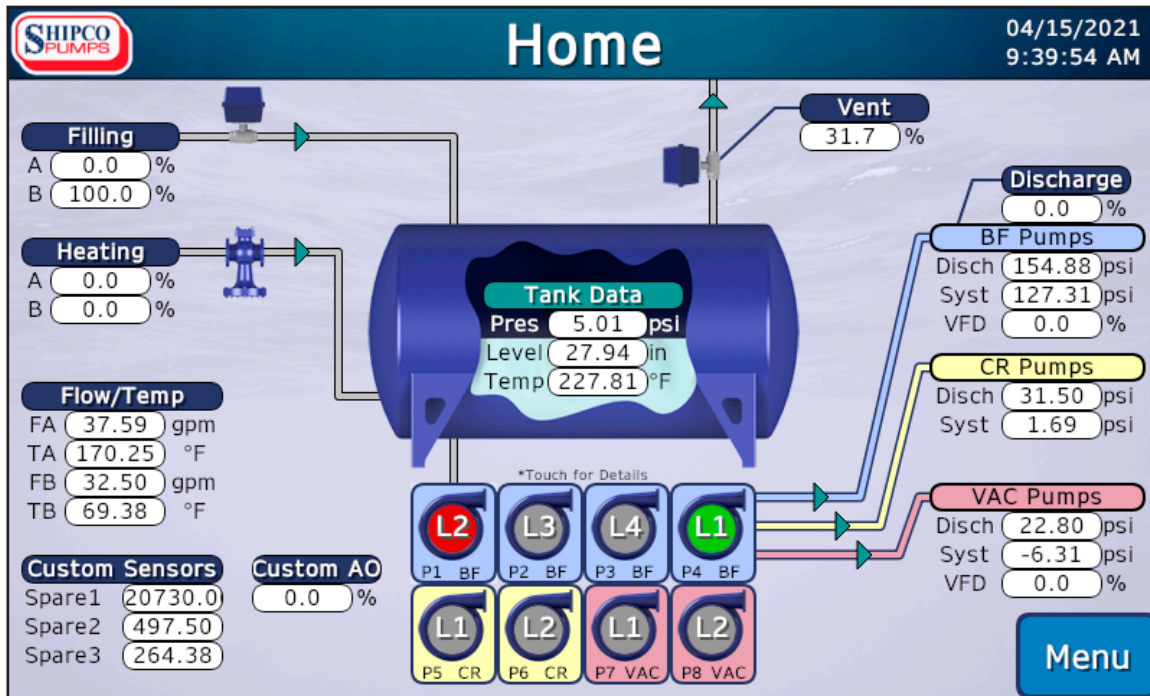
Quality

Craftsmanship

BULLETIN 189



AQUEOUS™
Automated Water Controls



Overview

SHIPCO® Aqueous™ is a sophisticated and economical method of automating functions on a **SHIPCO®** condensate, boiler feed, deaerator, vacuum condensate or vacuum boiler feed unit. Featuring a modular architecture that separates the crucial PLC component from the display HMI, Aqueous™ offers cost-effective configurations depending on end user requirements. The Aqueous™ display HMI is a NEMA 4 rated, full-color touchscreen with 3 different sizes: 4-, 7- and 15-inch. The standard PLC component is also expandable with additional I/O modules for larger applications. Pump control can be grouped into unique staging sequences along with customizable relay and analog outputs. Support for building automation protocols Modbus® TCP and BACnet™ IP are included via Ethernet.



Unit Status & Alarms

Aqueous™ has a familiar, easy to understand unit and pump status screen displaying continuous sensor readings such as tank level, tank temperature, tank pressure, pump groups and sequencing, as well as optional valves for filling, heating, flow, vent and custom sensors. Alarms for sensor set point triggers and cut-offs are promptly displayed and logged for review.

SHIPCO PUMPS Alarm Log						04/15/2021 10:28:59 AM
Alarm	Date	Started	Silenced	Cleared		Active
VFD1 Trip-FC90 Unhandled Exception	04/15/2021	09:39:36	09:39:38			<div style="background-color: #f00; color: white; text-align: center; padding: 5px;">Silence</div> <div style="background-color: #00aaff; color: white; text-align: center; padding: 5px; margin-top: 5px;">Menu</div>
Signal Lost - Custom Sensor A	04/15/2021	09:39:36	09:39:38			
Hi - Tank Level	02/15/2021	11:42:52	11:43:09			
Signal Lost - Temp Line B	02/15/2021	11:41:39	11:41:47	11:42:31		
Signal Lost - Temp Line A	02/15/2021	11:41:39	11:41:47	11:42:28		
Lo - Tank Temp	02/15/2021	11:41:39	11:41:47			

Pump Controls

As an industry first, pumps can be grouped so they alternate and stage together as a set having multiple pumps operate under different control paradigms. Various staging sequences common for different use applications. For example, pumps can stage on tank level for condensate return, stage on system pressure for vacuum pumps, differential pressure or speed percentage of VFDs for boiler feed units and deaerators, etc.

SHIPCO PUMPS Pump Controls
04/15/2021
10:28:07 AM

L2
0:00:00
P1 BF

L3
0:00:00
P2 BF

L4
0:00:00
P3 BF

L1
1:15:05
P4 BF

L2
0:00:00
P5 CR

L1
0:00:00
P6 CR

L2
0:00:00
P7 VAC

L2
0:00:00
P8 VAC

Level: 27.94	Tag: BF	No. Pumps: 4	Force Alt	Group: BF
Disch: 154.88	Alt Type: Run Time	Alt Time: 168 hr	Overlap: 10 s	CR
Syst: 127.31	Staging: Disch Pres	Delay: 5 s	Stage On: 145.00	VAC
VFD: 0.0	Run Permission: Always	Min On: 1 ul	Min RunTime: 60 s	Menu

Relay & Analog Outputs

While several relay outputs are reserved for typical functions, there are a few customizable relays which can be used for unique situations or equipment. These custom relays can be tied to open or close based on a chosen sensor input, an interval timer or special situations.

For analog outputs, Aqueous™ has built-in support for modulating make-up valves, steam heating/regulator valves, VFDs and more. There are also customizable analogs which can be configured for equipment to modulate based on a linear ratio or to maintain a PID set point.

SHIPCO PUMPS Relay Outputs
03/19/2021
10:17:44 AM

Timer: On seconds Off Hours Bypass and Chem Pump: On/Off not used. Otherwise: On/Off same units as Type If On > Off Make on Rise If Off > On Make on Fall	1	Tag: Makeup	On: 30.00	<div style="background-color: #00aaff; color: white; padding: 5px; margin-bottom: 10px;">▲</div> <div style="background-color: #00aaff; color: white; padding: 5px; margin-bottom: 10px;">Esc</div> <div style="background-color: #00aaff; color: white; padding: 5px;">▼</div>
	Type: Tank Level	Off: 36.00		
	2	Tag: Drain	On: 55.00	
	Type: Tank Level	Off: 50.00		
	3	Tag: DOC3	On: 0.00	
	Type: PGA Chem Pump	Off: 0.00		
	4	Tag: DOC4	On: 0.00	
	Type: Disabled	Off: 0.00		

SHIPCO PUMPS BF VFD
04/15/2021
9:58:52 AM

Control Type: Linear: Tank Level

Min	0.00	<div style="width: 100%; height: 5px; background: linear-gradient(to right, green, green);"></div>
Max	60.00	<div style="width: 100%; height: 5px; background: linear-gradient(to right, green, green);"></div>
PV	27.94	<div style="width: 100%; height: 5px; background: linear-gradient(to right, red, green);"></div>
CV	46.5	<div style="width: 100%; height: 5px; background: linear-gradient(to right, red, green);"></div>

Manual
FWD

%	0.00	<div style="width: 100%; height: 5px; background: linear-gradient(to right, red, green);"></div>
	OFF	<div style="width: 100%; height: 5px; background: linear-gradient(to right, red, green);"></div>

Menu

Features

Feature	Basic Package	Standard Package
Typical Use Application <i>(but not limited to)</i>	Condensate, Boiler Feed and Vacuum Producers	Vacuum Condensate, Vacuum Boiler Feed and Deaerators
Panel	Control circuit disconnect	
	Audible alarm bell	
	Auto/Off/Continuous or Auto/Off/Hand switch per pump	
HMI	4-inch Color Touchscreen HMI, NEMA 4	7-inch Color Touchscreen HMI, NEMA 4
Pump Controls	Status indication for Idle/Run/Fault	
	Totalized and cycle based run timers	
	Up to 4 pumps	Up to 8 pumps
	2 unique staging sequences	3 unique staging sequences
Relay Outputs <i>Configured per application.</i> Typically used for on/off operations based on sensor inputs (e.g., makeup, drain, steam injection, electric heaters, recirculation solenoids, blowdown timers, etc.)	Up to 3 relay outputs	Up to 7 relay outputs
Analog Inputs <i>Sensors priced separately unless otherwise noted.</i>	Tank Level, Tank Temperature, Tank Pressure, Pump Discharge Pressure(s), System Pressure(s) used for pump staging	
	1 configurable sensor	3 configurable sensors
		2 flowmeters with temperature
Analog Outputs <i>Configured per application.</i> (e.g., modulated makeup, modulated steam regulators, VFD speed, etc.)	Up to 4 analog outputs	Up to 8 analog outputs
Adders	15-inch Color Touchscreen HMI, NEMA 4	
	HMI cover for NEMA 4X and outdoor UV protection	
	Modulated vent sequence for Deaerators	