

CB LCS-250E LEVEL CONTROL SYSTEM

The Cleaver-Brooks LCS-250e Level Control System utilizes 2 level transmitters and a programmable controller to control water level and water level alarms for two separate tanks.

System includes 2 modulating make-up valves with user-selectable manual or automatic control.

FEATURES AND BENEFITS

Standard Features:

- Programmable controller with display, trending, data logging, and Modbus RTU communications
- Set points, alarm points, transmitter span, and PI controls configurable using controller keypad
- Manual or automatic control of make-up valves
- Easy-to-read level indication
- No sight glass - water is contained in a pressure-tight housing

PRODUCT OFFERING

The following are included as standard in each LCS-250E control system:

- Programmable controller
- Controller display with keypad
- I/O module
- 2 Level sensor and transmitter
- 2 Modulating feed water valves and actuators
- Alarm horn and silence button
- High-High, High, Low-Low, Low, and Low Water Cut-Off alarm lights

ENGINEERING DATA

The following are included as standard in each LCS-250E control system:

- Supply voltage 120 VAC
- Max load 3 amps
- Ambient temperature range 32 - 122 deg F
- Humidity, non condensing 5-95%
- Degree of protection
 - Display/keypad: IP65, Type 3R, Type 12R
 - Panel Nema 4/12
 - Lights and switches IP66

- Level indicator / transmitter Nema 4
- Siemens valve Nema 1; optional weather shield will change it to Nema 3

Sample Specifications

CB LCS-250E Level Control System

1.1 GENERAL

General

- A. Each LCS-250E system shall be factory equipped with controller including display and I/O, NEMA 12 cabinet and GEMS magnetic level sensor with transmitter.
- B. System shall provide the following functions:
 1. Adjustable transmitter span
 2. Adjustable water level set point
 3. Adjustable high-high water alarm point (with differential)
 4. Adjustable high water alarm point (with differential)
 5. Adjustable low water alarm point (with differential)
 6. Adjustable low-low water alarm point (with differential)
 7. Adjustable low water cutoff point (with differential)
 8. Adjustable P and I (proportional and integral gain) parameters
 9. Manual or automatic make-up valve operation
 10. On-screen alarm indication and relay outputs for high-high, high, low, low-low, low water cutoff, and general alarms
 11. Alarm Silence input
 12. On-screen trending, modbus RTU communications and data logging to an optional micro SD card.
- C. DA make-up water level control
 1. If DA tank level falls below set point, make up valve will modulate to add condensate.
 2. When level control is in manual mode, the make up valve can be opened or closed from the HMI screen. This will allow the operator to manually adjust the valve between fully open and fully closed to control the incoming flow of make up water.
 3. An optional Surge tank MUV biasing mode is available.

A bias may be enabled (user defined) to force the primary MUV feeding the DA tank to close as level falls in the surge tank. The bias factor applied to the primary MUV position increases as the level in the surge tank gets lower.

This prevents the surge tank from pumping down to low water cutout so it can continue to run while condensate is returned to it.

You would then have the secondary valve plumbed to the DA from a separate source and add water to the DA to be heated, deaerated and sent to the boilers instead of adding cold water to the surge tank.
- D. Surge tank make up water level control
 1. The controller receives a 4-20 mA signal indicating surge tank water level. Signal is compared to the operator input set point and valve modulates accordingly to control the incoming flow of make-up water.

2. When the valve is in manual mode the HMI, the operator to manually adjust the valve between fully open and fully closed

2.1 PRODUCTS

Standard System

- A. Hardware Platform
 1. Controller with backlit graphic display
 2. Power Supply 115VA/24VDC 30 Watts
 3. I/O module:
 - (12) 24VDC inputs
 - (12) relay outputs
 - (2) 4-20 mA analog output for make-up valves
 - (2) 4-20 mA input for level transmitters
- B. Level sensor and transmitter
 1. GEMS Mini Sure Site magnetic level indicator
 2. Level transmitter 4-20 mA
- C. Make-up valve
 1. Siemens modulating feed water valve - sized per application
 2. Electronic actuator 4-20 mA
- D. Alarms
 1. Panel mounted alarm horn
 2. Alarm silence switch
 3. LED alarm lights for High-High, High, Low, Low-Low and Low Water Cut- Off
 4. Customer Relay contacts for High-High, High, Low, Low-Low and Low Water Cut-Off