

Simplifying SCADA System Integration by getting it right the first time!

Electronic Valve Level Control for Flow into Reservoir with Separate Discharge Line

- Programmable Delay of Valve Opening on Lowering Level
- Secondary Control of Flow, Pressure, or Valve Position
- Hydraulic Backup Available

Accurate level control of storage tanks and reservoirs is vital. Level control valves tasked with this responsibility must also provide adequate water turnover and not upset the distribution system in the process of maintaining these levels. Hydraulic altitude valves, utilizing simple on/off control, have been performing this service since their inception in the 1940's. Moreover, they can be equipped to maintain a fixed system backpressure or flow rate for system protection when applicable. Delaying the opening of the valve to a preset reservoir low level is also an option.

The electronic equivalent of the hydraulic altitude valve is appropriate for applications that require changeable system variables such as backpressure, flow, and valve position or level. It utilizes the same main valve but has a different pilot system and method of control. The control system uses a Cla-Val 131VC-1 series controller, which supervises the main valve. The controller typically gets a remote set point from the SCADA system by way of an RTU.

Shown below is but one strategy for remote level control. This particular one does not require the hydraulic altitude pilot system, although it may be used for backup control. It also provides better accuracy and less hassle if delayed opening on lowering reservoir level is required. The level shut off and reopening points are entered into the controller using actual engineering units rather than the trial and error method required for hydraulic versions.

The 131 series control valve has two inputs available (PV1 & PV2). PV2 accepts the level transmitter signal for level control and PV1 the flow transmitter, which is used to control the flow rate into the reservoir.

The diagram below illustrates the setup of the control system. The High Level shutoff and Delayed Opening band (in feet) are programmed into the controller. Then the flow range is programmed with either a local set point or a remote set point from a SCADA RTU, such as the Cla-Val VSU-1 Valve Station RTU.

As level rises in the tank, the valve is open and under the control of the set point. When the level rises to the High Level, the valve closes. As the level falls the valve remains closed until it drops the amount of programmed Delayed Opening to the Low Level point, at which time the valve reopens with rate of flow control again.

Back Pressure or Position Control

If backpressure or valve position control is desired instead of flow control then the flow transmitter may be substituted with an upstream pressure transmitter or X117D valve position transmitter. For details on how to apply the 131VC control to your next altitude valve application, contact your nearest Cla-Val representative.

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