

# API-Cecom Group *n'fo*

## Technical & Application Note A101

Application: Monitor and control a dam bubbler system

Type of Company: Public Utility—Hydro Electric Dam

Location: Michigan

**Problem:** The customer has a crest gate that has movable panels and is controlled by an Allen Bradley Variable Speed Drive. A bubbler system is installed to prevent and move ice out of the way of the crest gate operation. Air is bubbled out of a line that is normally below the water level and the rising bubbles create an upward flow of warmer waters to maintain open water preventing ice damage. The customer has a requirement to automatically turn on the bubbler system when the outside temperature is below 25 °F. They also have a requirement to decrease the crest gate speed during its weekly test as the outside temperature decreases and not start the test without a visual check for ice if the outside temperature is below 25°F.

**Solution:** API furnished the customer application assistance and several different API units. An API 4001 GL senses the outside temperature via an RTD and provides a linearized 20-4 mA reverse acting output. (Note: As the temperature decreases the output signal increases). This signal goes to a local display, an API 1000 G and an API 4300 G M01. The API 1000 G alarm contacts are set so the Allen Bradley Variable Speed drive will not start without a “No Ice” manual switch being turned on. The API 4300 G M01 output signal is used to invert and isolate the 20-4 mA input signal to a 4-20 mA signal, which is then used as the speed reference to the Allen Bradley Variable Speed drive. This inverted signal slows down the Allen Bradley Variable Speed drive as the outside temperature decreases.



Api 4300 G M01

DC to DC Isolated Transmitter



Api 4001 G L

RTD to DC Isolated Transmitter

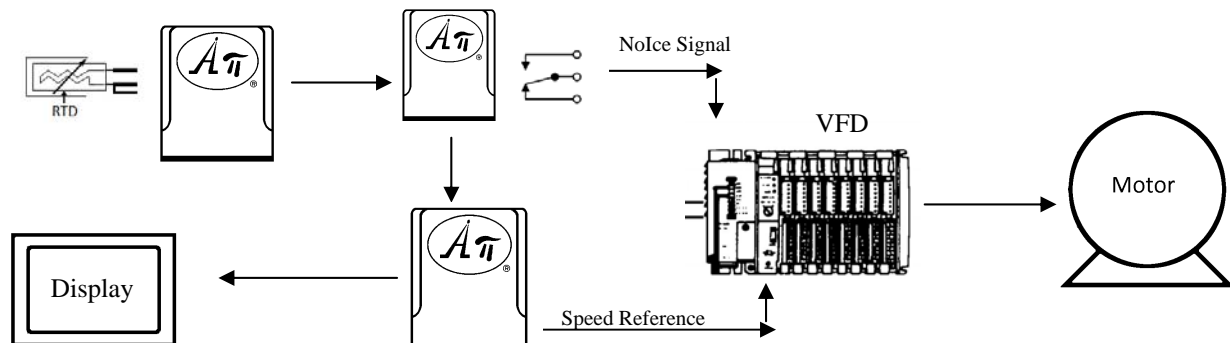


API 1000 G

DC Single Alarm Trip



Photo by Raiden32



**Contact Tom  for ordering or tech assistance**