API-Cecomp Group *n'fo*

Technical & Application Note A161

Application: Isolating signals with a hot swappable unit

Type Of company: Public Utility

Location: Florida

<u>Problem:</u> The customer is a public utility that uses unmanned pumping stations (commonly called lift stations) in its sewage collection system. This system is designed to handle raw sewage that is fed from underground gravity pipe-lines and then is fed into and stored in an underground pit. The pit (commonly called a wet well) is equipped with electrical instrumentation to detect the level of sewage present and when the sewage level rises to a predetermined point, a pump is started and lifts the sewage upward through a pressurized pipe system where the sewage is discharged into a gravity manhole. From here the cycle starts all over again until the sewage reaches the treatment plant. The customer needs a "simple swappable device" to isolate all of the instrumentation signals (pump motor, level sensors, etc) to the custom PLC input card and the main control mother board. This device not only needs to isolate the signals but eliminate large spikes that could be generated by lightning hitting utility poles during a rain storm thereby protecting the input cards of their application specific expensive custom PLC.
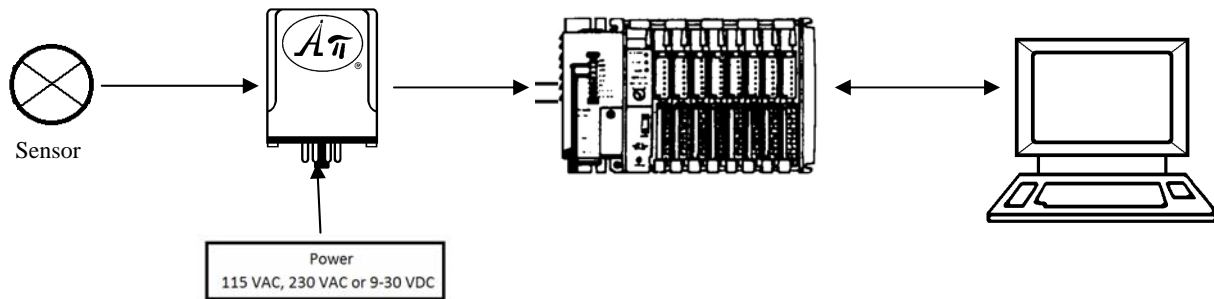
Note: for additional information on this process see http://en.wikipedia.org/wiki/Pumping_station

<u>Solution:</u> Since the customer needs "hot swap-ability" as well as scaling and isolation they chose to use an API 4380 G. This allowed the customer to use a standard off the shelf module that is field range-able for their specific range requirements. Since it is a "plug-in" module it gave the customer the "hot swap-ability" and allowed the service trucks to carry "spare ice cubes" and replace any "blown" module to minimize system down time.

API 4380 G

Field Range-able DC to DC Isolated Transmitter

Sensor

Power
115 VAC, 230 VAC or 9-30 VDC

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