

Transform your RTUs into Highly Accurate Flow Meters

Advantages of Using MAID Labs' High Precision Volumetric Flow Algorithm with our electric analyzer/datalogger or your own SCADA System

Flow algorithm(s) used in most SCADA system

Most likely, uses only one very basic algorithm with questionable accuracy.

Using pump curves:

- Using pump curves instead of real flow. When real flow rate of a pump changes, algorithm gives false data.

It is extremely rare to see pumps delivering the pump curves.

- Doubtful means were possibly used to calculate the pumps' flow to be used in the algorithm for multiple months and maybe years.
- Defective pumps cannot be discovered unless their run times are computed. In this case, is major flow events = defective pumps? It takes over a day to point out defective pumps ... if the function even exists.

Using a basic volumetric flow:

- Requires accurate volume of liquid between operating levels.
- Most likely, it simply extrapolates the last calculated inflow (with no pumps running) into the next pump run time of the cycle or its average 2 inflows from 2 cycles.
- If flow rates change rapidly (when receiving flow from other lift stations), then the flow rate is off most of the time. It assumes that all the combined errors cancel themselves. It assumes the error caused by a rapid rising inflow is equal to the error caused by a slow falling inflow.
- If the above inflow is used to calculate pump's flow rate, pump's flow rate will have a proportional error to the inflow rates used to calculate the pump's flow. The resulting pump flow cannot be used to detect important variation of the pump's flow rate and trigger a maintenance event.

No abnormal event detection and emergency prevention.

Hydraulic models are based on inaccurate data.

Might be using one of the many patented volumetric flow algo-

« The precision of a magmeter without its cost and nothing to install or maintain! »

MAID Labs' Flow Algorithm

Uses multiple algorithms.

- Requires accurate volume of liquid between operating levels.
- Requires position of influent pipe to the pumps' operating levels.
- When available, use recorded level.
- Use forward and backward extrapolated influent flow.
- Use average influent flow.
- Use influent flow trend based on quadratic equation using 4 cycles.
- Compare calculated pump flow to historical value to validate quality of inflow data.
- Readjust historical pump flow rate every time an acceptable influent flow rate is used.
- Auto compensation of algorithm for lift station with rapid change of influent flow rate (cascading lift stations) or slow change of influent flow rate.
- Algorithm parameters adjustable for each lift station, if required.
- Automatic filtering of abnormal events causing abnormal flow results. Over 120 known conditions affect flow results.
- Generate alarm when major variation occurs in pump flow rate

Calculates highly accurate influent flow and pump flow.

- Automatic selection of most accurate algorithm based on time of data requirement
 - Real time = good accuracy
 - For data analysis = accuracy above 98% for most lift stations.
- Rapid detection of abnormal pump flow rate
- Level sensor malfunctions detection
- Abnormal pump sequence detection

Inflow and Infiltration reports

When Voltage and current is supplied:

- Power consumption per pump
- Pump efficiency = pumped volume/kW per pump
- Electrical cost of operation per pump.
- Cost of wasted electricity by the least efficient pump

A thoughtful study of all existing patents was done and no infringement is possible. MAID Labs uses US patent #6,990,431.

* The SCADA system must be able to record accurately when the pumps start and stop. The volume of liquid between pumps' operating levels is constant and accurate.