



Intelligent Metering System

The Advantech Panel PC and ADAM series I/O modules were selected for incorporation in the design of a new line of products for water flow measurement.

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INTRODUCTION

Primary Flow Signal Inc (PFS), in Warwick R.I. USA, has for the past two decades been a manufacturer of high quality verifiable differential-pressure flow measuring devices. These in-line measuring devices, generally referred to as primary devices, require secondary devices to measure pressure values and water levels, as well as to calculate flow rates.

Since that, PFS is frequently asked to supply complete systems (both primary and secondary devices). To meet this need, PFS recently introduced their Flowmaster™ product, a complete flow measurement system which is essentially ready to go “right out of the box”. The Flowmaster may include flow indication/ totalization, chart recorder, datalogger, autodialer, and telemetry functions, according to the customer’s specific needs. They also frequently supply Rate of Flow Controllers (ROFC’s), which include a complete primary device and flow control valve, and may also include the secondary equipment and control devices for a complete flow control package, a special version of Flowmaster™.

SYSTEM REQUIREMENTS

Market research convinced PFS that the demand for packaged systems would increase, and that a PC-based solution would best meet future needs. They realized that they would need to develop a new product with rapidly evolving components, and that a PC-based system would allow them to add or

modify product features inexpensively, preferably using only software changes. The product would need remote modem-based communications capabilities. A key requirement was that the additional components add only minimal cost to the basic Flowmaster™ product, and that they would not become obsolete overnight. The new product would be called the Intelligent Metering System™.



SYSTEM DESCRIPTION

The basic product would be capable of:

- Flow indication, totalization, and trending
- Processing multiple flow signals from different sensors into a single flow reading
- Performing advanced flow calculations
- Controlling flow rate by modulating a valve in series with a PFS flowmeter
- The ability to restore the system from an image file stored in the hardware
- The ability to communicate with the product from off-site via modem

After reviewing the available products and manufacturers PFS selected the Advantech Panel PCTM (with touchscreen) as the most reliable and cost-effective solution for the basic version of their new product. Advantech’s history as an OEM supplier to manufacturers like PFS, coupled with their commitment to long-term support made this an easier choice. They also selected the ADAM-5000 product to provide basic I/O functions to the PC. Although less expensive alternatives were available, the ADAM-5000 series provided the greatest capability for

system expansion, as well as future incorporation of new features. PFS needed a Human-Machine Interface (HMI) software that was low cost but sufficiently powerful, as well as easy to learn and program. For this component of their new product, they chose Advantech VisiDAQ Software, running on the Windows operating system. VisiDAQ software, with its object-based programming environment, proved to be intuitive and easy to learn. PFS was impressed by the strong technical support they received from Advantech, particularly the Woburn, Massachusetts office and the Sunnyvale, California office.

The completed Intelligent Metering System (IMS) was unveiled in 1998. Part of the beauty of the system is its ability to interface directly with a plant control system via Ethernet and DDE, eliminating the need for PLC’s or other lower level networks, which lowers the cost of implementation. Also, customers can use as many or few of the features as they want - the cost of this product is low enough to be cost-effective without using all of its capabilities.

CONCLUSION

As a result of the new product’s good showing, PFS has been asked to develop additional capabilities for the Intelligent Metering System, including Filter Effluent and Backwash Flowrate Control and Sequencing, which can be retrofitted to various types of filters requiring automation. PFS plans to develop other applications for this system which add value to their primary products - flowmeters which have the highest quality and best provable accuracy in the business. ■