

Most makers of feeders for weighing and batching applications use proprietary controllers. That's a problem, according to Domenic Melfi, systems engineer and part owner of Melfi Technologies. "For five years I worked for a feeder manufacturer as a system's engineer and my biggest challenge was integrating different proprietary controllers into our customers' factories. I learned that our customers not only wanted integrated systems, but they wanted reliability. Proprietary controllers are difficult to communicate to and the mean time between failure doesn't match anything a PLC can do. I saw a cry from the market: This is not what customers' want, but it is all they are offered."

Melfi Technologies answered that cry by developing its PLC

belt/loss-in-weight/mass-flow continuous feeder controller and its PLC ADD/loss-in-weight batch feeder controller based on DeviceNet and Allen-Bradley controllers—first the SLC-5 and then ControlLogix. The benefit is that Melfi's universal controller can be used with many different feeder manufacturers' products. It also consolidates the feed system into one central controller, and enables easy integration to other PLC-based systems.

The best combination

Melfi began developing algorithms for a PLC-based feeder controller in 1995. Early attempts began with the Allen-Bradley SLC-5. "The first version of the SLC didn't have the technology we needed to make this work, and the PLC-5 was not an option due to the cost. It would

have been a major deterrent to our customers," explains Melfi. "Once the SLC firmware became such that it supported floating point instructions and some enhanced instructions that allowed us to implement an algorithm, we were able to move forward with design of the feeder controller."

At first, Melfi Technologies was only able to feed the algorithm through analog currents. It was brought through a 16-bit A to D analog input card inside of the SLC-5. An amplifier increased the load cell and sent it as a 0 to 10 volt signal or 4 to 20 milli-amp signal to the SLC-5. The signal would then have to be filtered and averaged. Doing all of conversions in the SLC-5 wasted resources, so a better solution was needed.

In the new design, the load cell

IS BETTER

On the Web

More information on the products that are in bolded type in this article can be found online at the following locations.

ControlLogix:

www.ab.com/plclogic/clogix/controllogix.html

Melfi Technologies:

www.melfitechnologies.com

RSView32:

www.software.rockwell.com/rsview32

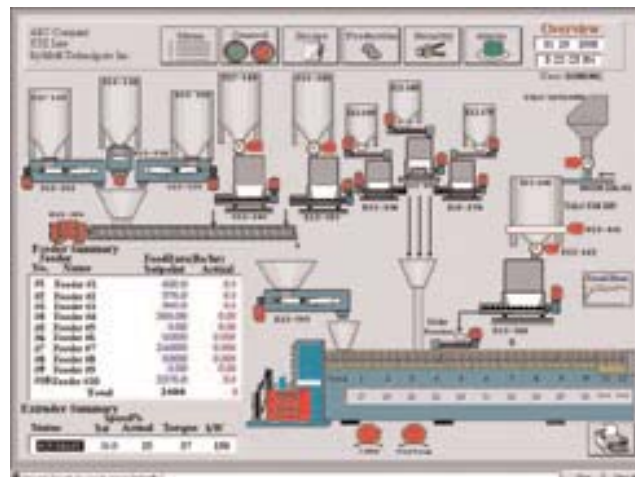
This article can also be found online with product hotlinks at www.abjournal.com.

IMPROVED MEMORY MANAGEMENT AND A VISUAL BASIC INTERFACE LEADS A FEEDER CONTROLLER SYSTEMS INTEGRATOR TO CONTROLLOGIX AND RSVIEW32.

by Dana Harder, Managing Editor, A-B Journal

amplifiers sit on the DeviceNet, so there is not an A to A and A to D amplifier. This prevents information from getting lost in the conversion. The signal now comes in analog and the amplifier converts it to digital, then transmits the signal over DeviceNet to the PLC. This amplifier gives higher resolution, and does the filtering and the averaging of weight, so Melfi can concentrate on the core algorithms that implement the feeder controls.

“Once ControlLogix came around, it had a lot of nice features that helped us put this feeder controller together,” says Melfi. “For example, one of things that was frustrating with the SLC-5 was its memory organization. It was kind of scattered memory all over the place. ControlLogix allows us to define its own type. So we can define a



Rockwell Software RSView32—with its open object model integration, database organization, macro and parameter passing features—allowed Melfi to easily create a scalable feeder controller front end.

data structure that is a feeder. And then we have an array that gives us as many feeders as we want. The possibility of overlapping memory goes away. And it allows us to build a solution that is four feeders or 16 feeders without writing any additional programming.

“The reason we chose RSView

is its ability to create a Visual Basic interface,” Melfi continues. “The Visual Basic application and RSView object model integration allows us to automatically create all our tags, screens, macros and data logging required for that project. We didn’t really see another product out there that had that kind of

capability. With RSView, we can add our feeder project to existing applications and update future projects or add additional feeders with little effort.”

PLC brings versatility

Melfi now offers two types of PLC-based controllers using the **Rockwell Automation ControlLogix™** hardware

and **Rockwell Software RSView32™** software platforms. The Melfi Feed system is designed to gravimetrically control any conventional feeder—loss and weight, belt or mass flow—using open, standard DeviceNet components. Melfi Batch, on the other hand, offers the same DeviceNet capabilities but for batch feeder applications. Both

controllers offer control, process monitoring, communications, information collection and client/server-based recipe and reporting all within one completely integrated and scalable feeding solution.

“The great thing about these feeder controllers is we can integrate one into a plant’s existing feeders or we can purchase new feeders for installation,” says Melfi. “By using open technology load cells, strain gauges, load-cell amplifiers, PLCs and operator interfaces, it’s Allen-Bradley talking to Allen-Bradley directly. There is no data translator in between that can get bogged down or fail.”

Another benefit is portability. In most of the feeder controller systems, everything is wired back to the main control panel. DeviceNet stays on that panel and the feeders are fixed in a particular location. In some cases, such as lab settings, the feeders need to be portable. In this instance the load cell amplifier and the drive—usually an Allen-Bradley Bulletin 160 or FlexLogix series with DeviceNet—is mounted on the feeder itself. Once the DeviceNet is plugged in, it is automatically recognized by the scanner because each component is addressable and has a fixed node. So it is completely portable.

So is open better on the factory floor? With systems integrators dedicated to developing processes that increase reliability and integrate an entire plant, the answer is yes. “When we make cold calls to companies that don’t know us otherwise, they will often tell us right off the bat they are not interested in another proprietary controller. They already have one or two and don’t want to introduce a third,” says Melfi. “But when we tell them what we do, they are all interested in an open controller for their feeders. So that is something that is well received.”



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