Selecting an automated control system for your batching operation will have a long-term impact on your process and operators. To choose the right control system, you need to evaluate available system options as well as the vendors who supply the systems. This article breaks this complex process down into five manageable steps.

Your batching control system is an integral part of your plant’s automation system and the heart and brain of your batching operation. Unlike many pieces of process equipment, you can expect the batching control system to last at least 5 years — and often much longer. This means that any mistake you make in selecting the control system is something you and your operators will have to live with every day for a long time.

A careful look at available system options and vendors can help you choose a control system that meets your batching needs for many years to come. It won’t be an easy process, and it will take time. But you can make this complex selection process more manageable by breaking it into the following five steps.

1. Learn about the control system’s architecture.

The control system’s architecture is the first factor to investigate. The system architecture is the arrangement of computer hardware and software that allows the operator to control the batching system’s conveyors, scales, feeders, mixers, and other machines. Many control system architectures are available, but to ensure that your system works successfully over the long term in your batching process, it’s best to choose a standard architecture. Such an architecture uses off-the-shelf hardware and software, making it easier to provide long-term technical support and parts replacement for the control system.

In most plants the standard architecture for providing machine-level control uses a programmable logic controller (PLC), as shown in Figure 1. (In some cases the standard architecture uses a distributed control system with a large computer providing centralized plantwide control of multiple processes, including the batching process.) In general, personal computers (PCs) provide the operator’s interface with the control system, displaying batching information for the operator and allowing the operator to manipulate data. A graphical information display is best because it’s easiest for the operator to interpret and use.

Another important part of the system architecture is the method of communication between the PLCs and PCs. While many methods have been used, increasingly the communication standard for batching systems is Ethernet.
Consider remote access for troubleshooting and maintenance.

When certain control system problems come up, you’ll need the vendor’s troubleshooting help. Choosing a control system that allows remote access saves both time and money by allowing the vendor to provide technical support without sending a technician to your site, quickly enabling you to get the batching process running again. Remote access lets the vendor dial into your control system to examine the PLC programming, PC software, and control system data via a modem or modem-router installed in the system. The modem allows remote access to one system device, such as a PC, and the modem-router allows access to every intelligent device connected to the system, including PLCs and PCs. Remote access can be a standard or optional feature, depending on the control system.

Demand two-way information-sharing.

Because your batching process is the point where individual ingredients are combined to become your final product, the batching control system both consumes and generates much information. This control system needs information like formulas, ingredient information, and production schedules from plantwide and other control systems. In turn, the batching control system must provide information like production logs, inventory updates, finished product data, and audit trails to other control systems and to accounting, scheduling, resource planning, and other information systems in your plant. Manually entering such data is a time-consuming and error-prone process. Demand that your batching control system be able to provide two-way information-sharing with other control and information systems in your plant. Make sure that the electronic communications format is compatible with that used by the other systems.

Select features for control flexibility.

By adding appropriate features to your batching control system, you can ensure that the system has the flexibility to handle your application. For instance, a statistical process control package will allow you to fine-tune batching control for better long-term product quality. A system

**Figure 1**

Typical batching control system architecture

- **Office**
  - Management PC (for monitoring batching process; also for backup of batching control room PCs)
  - File server PC (for data storage and access by other control and information systems)

- **Batching control room**
  - Batching PC (workstation for statistical view of batching process)
  - Main PC (workstation for graphical view of overall process; also alternate workstation)

- **Motor control room**
  - Input-output panel
  - PLCs
  - Scales

- **Network Switch**
security program will confine operator access to approved functions, preventing an operator from altering product formulas or making other unauthorized changes. A program that can enforce the batching control system’s sequencing and flushing rules helps prevent cross-contamination; it can ensure that different product batches are made in a sequence that avoids cross-contamination and, when necessary, signals the control system to flush the batching equipment and clean out residue.

Flexible formula-based controls in the system will make it easier for your operator to understand and apply process steps that are embedded in a formula — for instance, dispensing some ingredients to a scale, weighing them, and then dumping them into a mixer so the mixer can start operating before the next ingredients are added. If you frequently need to change ingredient proportions in your formulas, select formula controls that make it easy to modify the ingredient weights. Not all such features are available with every control system, so be sure that the control system you choose provides the right combination of functions.

Choose a qualified vendor.

Choosing a vendor is as important as choosing your control system because the vendor will be your business partner over the system’s life. A wise choice can improve your plant’s productivity and increase your satisfaction with the system. Expect your vendor to have a well-run company and to provide a good product, capable technical support, and thorough training.

Vendor. As you consider a potential vendor, first examine the vendor’s company: its recent business history and the number of years it’s been in business, what industries the vendor serves, and the vendor’s financial health, mission statement, and personnel. A vendor with a sound business history is more likely to be around for the life of your batching control system.

Control system. Next, qualify the vendor’s product by asking questions about the features you need in the control system — system architecture, remote access, two-way information-sharing, and other features. Expect specific answers, and ask for diagrams of the system architecture and other system drawings and specifications. Request a list of sites where the vendor has installed systems similar to the one you’re considering, then visit some of the sites. Talk with the operator at each site to find out how well the system works.

Technical support. Next, learn about the vendor’s technical support capabilities. What warranty will the control system have? After the warranty expires, is extended support provided or will the vendor offer another support contract? If the latter, how much will it cost? Does the vendor provide 24-hour-per-day, 7-day-per-week service? How much does this service cost? Does the vendor have an in-house technical support staff, or does the vendor rely on an independent technical support firm? What kind of support is available? Can you call the vendor with questions? Can the vendor dial up your system to obtain remote access? Can the vendor provide on-site support if necessary? Also talk with operators at other sites where the control system has been installed to see if they’ve been satisfied with the vendor’s technical support.

Training. Finally, ask the vendor about the training provided with the control system. The vendor should be able to train your operators, supervisors, and maintenance workers to use the batching control system and all of its features to their fullest capacity. If your staff doesn’t receive proper training, the additional control system features you’ve selected will be of no value to your batching process. Ask the vendor how much training is included in the system cost and how much any additional training will cost.