

Future Controls Trends and Technologies

By Jeff Cosiol, PE

Principal, Project Director

The use of open protocol standards, such as BACnet and LonTalk, is a given in the offerings of today's control system manufacturers. Reality is setting in that open protocols are here to stay and that integration projects that utilize open protocols bring a host of new challenges to keeping these systems working smoothly. These challenges need to be considered during the overall planning and implementation of these standards in multi-vendor integration projects to ensure success.

A basic requisite, which may be overlooked in the planning and implementation stages, is the need for continual, separate maintenance and service contracts for equipment and software, as well as the overall integration platform hardware and software for each manufacturer, i.e., Manufacturer A will not necessarily maintain the hardware or software of Manufacturers B or C. In addition, it is vital that users become familiar with multiple types of equipment, software and tools that are required to keep open protocol systems in working order.

It is also important to remember that, while users are working to create control systems that work efficiently and effectively, owners often have another agenda: trying to keep the system costs down. In many cases, owners undermine their system performance by only purchasing limited maintenance and service contracts for certain portions of the systems. This is one sure way to complicate the maintenance and service of these open protocol control projects. In addition, network issues may present support challenges, especially when open protocols are implemented over corporate networks.

This is the price of fostering competition between manufacturers to the benefit of owners and users who employ open protocol standards.

In addition to the usual challenges associated with the implementation of control system projects, the control industry is facing the commercial realities of current industry distribution channel trends and contractors engaged in these projects. Many equipment manufacturers are trying to get out of the direct marketing and installation business by using local distributors, which sometimes represent more than one manufacturer of control equipment.

Project installations may be done by local dealers who may or may not have all of the know-how and resources needed to fully complete projects with and without open protocol implementations. Because of the ever-increasing number of control systems manufacturers and the limited quantity of qualified staff to implement these projects, many of the distribution channels may be weak and less than capable of successfully completing complicated projects.

Because of the need to reduce installation problems and costs, manufacturers are developing new types of equipment, such as wireless sensors and unitary controllers. The costs for these types of equipment have decreased significantly because of the massive increase in wireless chip production, as well as research invested for the PC market. The reduction of network wiring represents an immense savings in project costs. These peer-to-peer ad hoc networks provide almost limitless implementation possibilities.

Future control equipment development includes universal I/O devices and the smaller controllers, which will reduce costs and technical implementation problems. It is simple to understand how controllers with universal I/O, which can be configured in software as analog or digital I/Os, can reduce costs for both the installation process and maintenance.

All these changes, when coupled with the trend of large control system manufacturers to purchase large HVAC equipment manufacturers, present a case for a new business model for the control manufacturers.

At this point in time, most of the major HVAC equipment manufacturers have been purchased by the control giants. HVAC equipment, when sold with integrated, factory-installed controls, presents a new challenge to the controls industry. The new, smaller control system manufacturers are faced with new business challenges; owners are being stripped of their choices in the marketplace. In theory, the integration of the controls and HVAC equipment reduces field installation costs, but it also reduces competition. The long-term results of this trend are difficult to assess at this time. This movement by the large control system manufactures is an attempt to maintain or regain market share and fight off the recent inroads by the newcomers in the business.

Changes in the industry will continue at an ever-increasing rate. How and where it will end up is yet to be seen. Who would have guessed 20 years ago that we would be where we are today? The future of the industry is bright, as a result of the advances in the computer industry. Just as the modern automobile has an ever-increasing amount of high technology, building HVAC equipment is following in a similar path. The only thing that we can be sure of is that the changes will continue, control systems technology will improve, and this technology will provide a higher quality product, with increased functionality, using the available technologies at a lower cost.