



## **Beginning of the end of the beginning. (Energy management systems annual review, includes related article)**

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### Beginning of the End of the Beginning

A close observer of the building controls industry, Asim Gul, president of Mamac Systems, Minneapolis, observed last week that 1988 is "the true beginning of the electronic building controls market."

While others attending last week's Ashrae show here concurred, some speculate that 1988 will, like 1987, mark the beginning of the end for some firms.

Both views are a result of the fact that the U.S. controls market has tightened and is likely to shrink further. While in 1987 EUN'S EMS manufacturers' list included over 80 companies--a drop from about 100 in 1986--the list has shrunk this year to the point where sources count on their fingers the number of firms still solidly in the business.

While vendors are understandably on edge, users for the most part see the situation in a positive light, citing a more stable group of suppliers from which to select equipment. Some point to a steady dropping off of controls vendors since 1980 and downplay the spurt of recent fallouts.

Most sources, however, agree there has been a shakeup this year, characterized largely by simple marketing principles: the disappearance of firms unable to track technology trends or nail down a market niche; the weak U.S. dollar's effect on an industry now ensconced in a global economy; falling fuel prices.

There are, however, some curious statistics. For example, while most sources agree that less than 25 percent of office buildings in the U.S. have direct digital control systems, EUN's most recent EMS reader survey indicated that overall user interest in purchasing EMS dropped 30 percent compared to the previous year, with small systems diving almost 50 percent and more sophisticated systems maintaining a relatively high plateau.

The potentially enormous market, then, has become sluggish, in no small part due to the drastic decline in fossil fuel prices in 1986.

In this environment, business for some larger and more established firms has leveled off, smaller firms have shown growth, and numerous companies went out of business. Significantly, three companies, including the former MCC Powers, were purchased by European firms, and a fourth, Novar Controls Corp., began supplying controls equipment from a European firm with an existing foothold in the U.S., Tour & Andersson Inc.

A primary trend in technology accounts for much of the shakeout. The industry has progressed in its movement from pneumatic to electronic control to the point of offering cost effective microprocessor-based DDC control on the unitary HVAC level. Sources agree that this has paralleled a move from the application of simple energy management systems to integrated building control systems where energy management becomes a subset of advanced electronic temperature control.

Spurred by the development of DDC zone control, HVAC firms such as the Trane Co., LaCrosse, Wisc., have begun marketing factory-applied or pre-engineered controls on their unitary VAV equipment in recent years. Some controls firms feel this trend and the lack of a standard control communication protocol has set the industry up for the next big shakeout--one with the potential of completely redefining the temperature controls market.

### The EMS Shakeout

"Energy management systems as a specific discipline is very close to gonzo," according to Peter Hefferen, president of American Auto-Matrix Inc., Export, Pa. "It has been integrated into building automation and temperature control as one of the minimum components of the control system. This has forced some companies out of the business."

Hefferen said the integration of what was once "mindless" control of temperature and energy on pneumatic systems has evolved into integrated control with the application of microprocessor technology. This approach has become cost effective in the last two to three years, he said.

Ronald Caffrey, vice president of marketing for the systems and services division of Johnson Controls Corp., Milwaukee, said that direct digital control technology, an approach considered state of the art for at least four years, completed the integration of temperature control and energy management. "It used to be EMS was an add-on to a pneumatic temperature control system. With DDC you integrate it."

"The movement toward electronics has made it difficult for all but the best companies," said John Grad, president of Landis & Gyr Powers Inc., Northbrook, Ill. However, he emphasized, as did Caffrey, that firms destined to fail in the business are those without adequately trained field support. Caffrey said successful firms will need "building system-trained people in every city," which would seem to give the larger firms an edge.

"A big factor is the survival of the big," said Grad. "Small computer houses don't have the field or branch organization to successfully install and service the product. Users find that the small firms can't come up with product that is compatible over the years."

While many small firms have gotten into trouble or gotten out of the business--Atlantic Energy Technologies, Margaux, Radix--others such as American Auto-Matrix and Enercon Data refute the "big will survive theory," citing new products on the unitary control and other levels that supplement full lines implementing DDC in both large and small facilities.

Mamac's Gul agrees that electronic control has integrated strategies, but feels the price of unitary controllers must still be brought lower. "The technology has moved from EMS to HVAC and temperature control, and this affects distribution --contractors and dealers," he said. "But we can no longer simply say electronic is better than pneumatic. We know it is better, but we must offer electronic control at the same price."

Mamac supplies sensors, transducers and other equipment used in building control installations.

Gul said that while evolution of the technology has forced some smaller firms that lacked field support and offered only simple on/off load control out of the business, another such force was a tendency to target too large a market. He said that Butler Controls Div. of Butler Manufacturing Co, Redmond, Wash.--the highest rated firm in EUN's reader survey for five straight years--is an example of a firm that spread itself too thin in bidding large projects that included both very small and large facilities. Butler's new owner, Enercon Data Corp., Minneapolis, shares this assessment of Butler's demise.

The vendors that have survived the "shakeout" have learned what they must do, have found market niches, said Gul. While others may fail in the near future, he feels the remaining firms constitute the beginning of a mature controls industry.

#### European Firms Buying into The U.S. Market

As the market tightened, two European firms with no existing building controls presence in the U.S. bought up MCC Powers; Robertshaw Controls Co., Richmond, Va.; and Barber Colman Co., Loves Park, Ill.

Most well known is the purchase of Powers by Landis & Gyr, a Swiss firm that, according to Ron Luque, president of Staefa Control System, San Diego, is the largest controls firm in the world. Staefa itself has been parented by the Swiss Staefa--Landis & Gyr's biggest European competitor--since it began in the U.S. about 10 years ago.

"The market share is spread very evenly in Europe between a limited number of players," said Luque. "It's hard to grow there." Luque, like others, sees the Landis & Gyr Powers deal as logical in that the large firm was able to enter the U.S. market by acquiring a firm with an established product line and extensive field organization. Entering the

U.S. market without these would be extremely difficult for foreign firms, especially those without building controls backgrounds, according to Luque.

Most see the acquisition as positive for Powers. "Powers has been looking for a place to live for a few years," according to American Auto-Matrix's Hefferen. "They had a good structure without the commitment to developing new technologies. Getting out from under Mark Controls is the best thing that could have happened to them."

Mark Controls Corp primarily markets hardware control components for industrial process and the oil industry.

Powers' Grad said the clear advantage is the ability to share technology. "We will be marketing their Policy Gear line of temperature controls for small buildings in the near future," he said, adding that no plans have been finalized regarding the sale of Powers equipment in Europe.

"The rumor mill in Europe expects Landis to pop something out in the U.S. by June," Hefferen said.

Like Mark Controls, Siebe PLC, the Windsor, England-based purchaser of Barber Colman and Robertshaw, manufactures industrial equipment not centered on building controls. Despite speculation that the two U.S. firms will be merged into Barber Colman, sources with both firms last week claim there has not been a transfer of personnel and the two will operate as separate divisions.

### Unitary Controllers

Smart zone control, which has driven the market, also raises uncomfortable questions even for pioneers in the technology. As users purchase a greater number of discrete controls for individual HVAC systems, a need to integrate controls from more than one vendor can easily develop. Also, sources said that with HVAC firms adopting unitary controls as a factory-built component, their systems too must be capable of linking to a building's central automation system.

The first issue, then, is the adoption of a standard EMS protocol. The industry remains split on whether open protocols will inhibit doing business or provide a key to survival.

The big question, however, was voiced at an EUN panel discussion on temperature controls last Monday by Dale Bunce, vice president at marketing of Staefa, whose Smart Controller is recognized as the first of the unitary DDC control systems: Who will finally market temperature controls?

"This is an issue changing the face of the industry," said Bunce.

While Staefa originally supplied Trane with its packaged controls system, the LaCrosse HVAC firm, a controls manufacturer in its own right, now manufactures its own electronic control modules for HVAC systems. Luque said Trane has recently managed to underbid Staefa, taking two projects.

"We have to respond [to the prepackaging trend] by forming marketing alliances with equipment manufacturers -- partnerships," said Luque.

In regard to Trane entering the field on its own, Luque said, "Trane has developed their own unitary controls, but they need to develop an infrastructure. They've been aggressive, but it's hard to tell if they've taken everything into consideration in installing turnkey systems."

Other firms, noting the trend toward prepackaged controls, have already formed partnerships with the HVAC industry. American Auto-Matrix, for example, supplies Mammoth, Minneapolis, and Copeland Corp., Sidney, Ohio.

Luque told EUN that Staefa has talked to at least two manufacturers of VAV boxes and HVAC equipment in regard to forming a partnership in which Staefa will supply controls for factor packaging. As no deals have been finalized, he declined to name the manufacturers involved.

"The traditional split of field-applied controls has changed substantially to factory applied," said Auto-Matrix's Hefferen. "If you think the market share for traditional controls firms has dropped off in 1987, it will continue in 1988."

Factory-packaged system can reduce the number of field control systems by up to 50 percent in a typical installation - with a net affect of a 10 to 12 percent drop in the share of field applied controls going to the market, he said.

"In reality, however," Hefferen said, "cost will make up for the volume."

While Staefa's Bunce speculates that Trane will take a hard look at its prepackaged business this year in terms of defining its strategy in the future, Hefferen said he would be shocked if Trane does not pursue the market aggressively with other HVAC firms close behind.

"Next year will be the big year in terms of shakeout," said Bunce, agreeing with Mamac's Gul, who predicts an influx of new products by the World Energy Engineering Congress in the fall of 1988. Hefferen, however, feels that those firms reticent about making protocols available will fall prey to the trend toward local intelligence and factory-applied HVAC controls in a new shakeout.

Craig Heusinkveld, marketing manager for building automation systems at Trane in Minneapolis, said he recognized no shakeout this year, and expects things to remain relatively status quo in the future as well. For all the firms that drop out of the controls business, he said, there are still others that enter on a national basis. An example he gave was Automated Logic Corp., Atlanta, which recently won a bid to install systems throughout the Los Angeles school district (see Sept 28 EUN, page 1).

He said, however, that while HVAC firms have supplied factory-applied controls for years, the recent shift to factory-mounted microprocessor controls will put controls firms with a strong OEM business in a stronger position.

Heusinkveld said that the preengineering issue will not have a great effect on the effort to develop a communications protocol, but lamented the fact that Ashrae's protocol standards committee has no HVAC controls firm as a voting member.

#### The User View

"I didn't have the perception of a shakeout this year," said Michael Newman, manager of facilities engineering for Cornell University, Ithaca, N.Y., "but there haven't been any new products either. Just second generation DDC stuff."

He also downplayed the effect of foreign firms entering the U.S. market in large numbers. "It's not a commodity item. It requires extensive engineering for control systems to be effective. Vendors must put time into applications engineering, not just selling hardware.

Newman also noted the "enthusiasm in the direction of localized intelligence," and, as can be expected, raised the issue of compatibility. Newman heads Ashrae's standards committee investigating common controls protocols. At Cornell, he is presently working on a link between Johnson and Honeywell systems (see Dec. 7 EUN, page 1).

Frank Santangelo, corporate energy manager for Johnson & Johnson Products, seems unaffected by current trends, despite the fact that he has about 40 systems in the field stateside, and his 1988 budget includes for four more. He is buffered, perhaps, by sticking with systems manufactured by major suppliers --Honeywell and Barber Colman--and keeping 10-year-old installations in the field.

He said the firm is currently evaluating the performance of some older Honeywell Delta and other systems, but will most likely stick with current vendors companywide. In short, the protocol issue and even the trend toward unitary controllers are not a major concern to Santangelo.

While he stands back from the drive for a protocol, Robert Pharr, energy resources manager for Dallas Community College, likes the idea of HVAC firms factory-mounting their own controls. He recently selected a total system--two high-efficiency chillers with on-board controls and an EMS--manufactured by Trane for a new building.

"We dial one phone number, all the systems speak with each other," he said. "It's very attractive to a user to purchase everything from a single company rather than go with 10 manufacturers and all the finger-pointing [involved when system problems arise]."

In describing his view of the protocol issue, Pharr said, "I don't have a dog in that fight."

Pharr also said the shakeout is a good sign for the industry. "There are always Flakey Jakes that just follow trends--black boxes and garage entrepreneurs." He said that while in the past such firms placed a great many substandard systems in the field, risk to users is now all but eliminated with their disappearance.

Pharr, who has managed energy for a number of firms for over 10 years and worked as a consultant, said, "I tell people, if you're making a sizeable investment, go with a grand old name--a firm with a multimillion dollar investment. The price may be higher, but they'll be there when you need them."

Warren G. Hahn, mechanical /electrical engineer for the Southern Division Naval Facilities Engineering Command in Charleston, S.C., on the other hand, is among the users anxious for an industry protocol--especially given the requirement of selecting the lowest qualified bidder for federal projects.

He also said the lack of the protocol creates a "scary" possibility that a limited number of large firms offering pre-engineered HVAC and controls will stunt technological advancement and limit user choices considerably.

Hahn, an ex-distributor for American Auto-Matrix, is a member of Ashrae's protocol standards committee, which met here on Jan. 31 (see story, page 10).

Photo: Robert Pharr, energy resources manager for Dallas Community College, thinks users should stick with a "grand old name" when selecting large systems.

Photo: Trane's CentraVac chiller has factory-installed controls. The trend toward factory application has some in the controls industry wondering who will ultimately provide users with control systems.

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