From Pneumatic to Automatic

The role of new digital interface products is similar to those that analog interfaces have traditionally provided.

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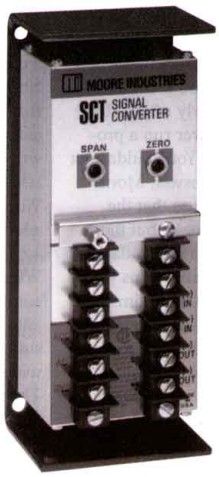
Amidst Beatlemania and the Vietnam War, engineers of the 60's wore many hats. Their resourcefulness was amplified as they realized the advantages of newer electronic instruments over pneumatics, and had to use considerable ingenuity to think of ways to make legacy and new systems communicate with one another.

Around this time, man had already set foot on the moon, we witnessed the inaugural Super Bowl (Green Bay 35, Kansas City, 10), and the first episode of Sesame Street aired to enthusiastic youngsters. Though pneumatic devices were very reliable (as they still are today), the electronic instruments replacing them offered far more features and capabilities. Factories had enormous potential for increasing efficiency by using electronic instruments, and were eager to adopt them. As demand grew, so (of course) did the number of instrumentation manufacturers stepping up to make them.

Companies soon offered a wide array of process instruments that integrated the latest techniques such as solid state relays and integrated analog circuits. With the entrance of so many different devices so fast, standardization (or more specifically the lack thereof) became a big problem. When plant engineers wanted to integrate devices from different manufacturers into their systems, they found that some instruments used 1-5 Vdc or 4-20 mA, others used 10-50 mA, and still others 0-10 Vdc. Some were input-to-output signal isolated, and others were not. Some could be mounted in the field. Others were just too fragile. And this was just in the United States. Worldwide, the scenario was even murkier.

The ISA went to battle for standardization. But that, of course, would take some time. In this same year, Moore Industries emerged. With the basic garage beginnings, company founder and CEO, Leonard W. Moore responded with their first interface products that allowed instruments using assorted electrical inputs and outputs to interface with each other, and with their customer's monitoring and control systems. "What we had was a good idea and the right time to share it," he explains. "We started out in a small garage with three people. While listening to pop music on a portable a.m. radio, we designed and built the first Moore Industries signal interface instruments."

One product quickly grew to six basic signal interfaces, and the company was soon out of the garage and into their first cramped, two-room accommodations in an industrial park. One office space in the industrial complex grew to three, plus an additional building on the same block. Moore Industries also joined the computer age by purchasing a Data Point 1600 II computer.



With the classic "basic garage beginnings", Moore Industries' product line started with six signal interfaces.

Soon, even sooner than was imagined, it was time to move again… this time into what was to become the company's world headquarters just outside of Los Angeles, California.

January 1974 was the groundbreaking. "When the building was ready, 4th of July weekend, we rented trucks, and all pitched in to move everything over. By Monday morning, we were up and running", recalls Moore. That same year, the company purchased a DEC computer.

In the 1980's, the decade of the Rubik's Cube, Cabbage Patch Dolls and E.T. the Extraterrestrial, the manufacturing industries were thinking "big", by going smaller (and not just with fashionable skinny monochrome ties). One dime-sized chip could hold hundreds of components and the introduction of digital signals to transmit process information became a reality as the distributed I/O devices using digital communication, such as Moore Industries' CCS Cable Concentrator System, were accepted in the marketplace. "The CCS was a great product for us," Moore explains. "Those expensive point-to-point wires that ran miles through facilities could be completely eliminated by using a single digital communication link. Dozens of process signals could be sent for the price of one. Today, of course, this is commonplace".

Enormous strides were being made in the control industry, and by 1984, the first PC-based control system was introduced to the market. "A user could monitor input/output, carry out a range of tasks and perform PID control on a number of loops simultaneously," explains Moore. Not long afterward, universal, programmable instruments began to replace fixed- parameter instruments. Moore Industries introduced their first microprocessor-based analog/digital hybrid transmitters that could be programmed in the field to handle dozens of input and output types. Instruments like this allowed users to standardize on just a few instruments, where dozens would have been needed in the past.

With PLCs a mainstay and functions like sophisticated graphic user interfaces and diagnostics becoming commonplace, the sky was the limit. Moore Industries took this statement literally in the early 1990s when they aided the efforts of California State University, Northridge engineering students. Moore Industries cooperated on experiment onboard a Space Shuttle mission to test the structure of Bismuth in a zero gravity environment.

January 1974 was the groundbreaking for what is still today the company's world headquarters just outside of Los Angeles, CA.

Fledgling Internet technologies resulting from the 80's, coupled with new high speed Pentium Processors, exponentially fueled the growth and power of the Internet and World Wide Web in the 90's. This was also a powerful time in the control industry. The ISA flexing its muscles, along with plain commercial practicality, drove the 4-20mA to become the de-facto standard in almost all process instrumentation. Digital protocols finally begin to make serious headway into process plants. The appearance of HART instruments initiated the move to digital communication protocols by "bridging the gap" between 4-20 mA and digital signal communication by supporting both on the same twisted wire pair. They allowed users to continue to use trusted 4-20 mA, yet begin to reap the benefits, such as enhanced diagnostics, that digital capabilities offer. All-digital instruments using protocols like Foundation Fieldbus, Profibus, and DeviceNet became viable and widespread in use, even as a promised protocol standard failed to emerge.

"The world survived the onslaught of online day traders, the Y2K bug and the "dot com bomb" of the new millennium", recalls Moore. As processes became more exacting, precision continued to become more important. Temperature, especially high-performance transmitters, is a major focus for the company. "Throughout the 90's, we developed what we believe is the finest line of temperature transmitters in the industry," Moore says proudly. "Surprisingly, one of the simplest temperature products we introduced last year is also garnering an amazing amount of attention." The product, the WORM, is the first flexible temperature sensor. It is designed to slide into tight places like a thermowell temperature assembly, without having to remove any components.

Now, as 2002 has far exceeded the half year mark, we have already realized a newfound patriotism and too much "reality TV". What's next for the control industry? And what is next for Moore Industries? The company now has offices all over the world, a first rate distribution channel, and a line of products installed in many industries including petrochemical, bio-tech, and nuclear.