Digital Transformation Helps Drive Tighter Cold Chain Integration

By John Rhodes
Group President, Cold Chain
Emerson Commercial & Residential Solutions
The prevalence of digital technologies with data mining and analytics tools is transforming nearly every facet of the modern economy. Many experts feel we are at the tipping point of an evolutionary process where businesses are realizing the true power and potential of harnessing their abundance of data — first to better serve customers, and secondly to grow market share and improve overall operational performance. It’s a concept some have termed the digital transformation.

One area where these potential benefits are particularly transformative is in addressing concerns within the cold chain, such as: ensuring the safe handling of perishable foods from farm to table; reducing, controlling and managing energy and associated resources; and maintaining the commercial infrastructures of the grocery, foodservice, processing and distribution industries.

Historically, cold chain stakeholders have made very discrete efforts to improve operations in areas like energy reduction, refrigerant management, safeguarding food and improving human comfort. These important efforts were often spearheaded by single departments or corporate entities focused on very specific outcomes based on their domain of interest or expertise.

Each discrete action represented an important stepping stone as our industry evolved in response to market pressures, such as:
• Transitioning to energy-efficient scroll compression technology in refrigerated seagoing containers
• Moving away from high-GWP HFC refrigerants toward more sustainable, environmentally friendly alternatives in commercial refrigeration
• Providing tools for convenience store operators to automate temperature monitoring and record keeping of their expanded food offerings

These all were — and still are — necessary steps toward achieving a more holistic, enterprise-wide perspective.

With the vast amounts of data available today and the computational horsepower to analyze it, business leaders have new opportunities to innovate and bring more comprehensive management to cold chain activities — and provide previously unimaginable value to consumers.

Instead of working within only a refrigeration system to improve energy consumption or merely using controls to enhance comfort, market leaders are looking horizontally across their enterprises and supply chains for broader insights, deeper intelligence and the ability to make more strategic operational decisions.

For those business leaders who have taken steps along the journey of digital transformation, their customers have rewarded their innovations with increasing loyalty — which of course translates into improved market share. These are the companies helping to drive trends and winning the hearts and minds of consumers in the modern marketplace.
The true industry leaders thriving in this brave new world are those who have made the commitment to utilizing all available enterprise data — not simply to exploit sales opportunities, but to form deeper relationships with their customers. It’s these leaders who can transform a potentially negative, possibly brand-damaging event into an opportunity to engender customer loyalty.

A very recent example of the potential power of data was the food safety concerns surrounding romaine lettuce, when consumers became ill after purchasing goods in grocery outlets. Many people demanded to know where the contamination occurred. In this case, technology was essential in tracking the instance of contamination to a specific farm, then using both public media and direct contact to notify consumers of the risks and mitigation actions.

The depth of information available represented in this “connected” scenario included the ability to trace food literally from a farm to the consumer’s table. As an example of advanced use of data, some companies were even able to notify their consumers via email or text message to help protect their safety. Doing so required an electronic trail that combined supplier traceability data, store inventory records, POS data, and customer loyalty programs to get information directly and quickly to the consumers who purchased contaminated lettuce.

Using similar data-driven approaches, retail stores are reducing their energy costs during peak demand periods by limiting or avoiding the significant “peak time surcharges” that are assessed when the greatest amounts of energy are required from the local energy provider. In these situations, building management systems (BMS) are set up to receive notices from utility companies when demand reduction opportunities arise. At these times, the BMS can send communication and control instructions automatically through a demand response program that shuts down non-essential equipment and optimizes the use of renewable resources and stored energy. This is not only good from an operational perspective, but also appeals to modern consumer preferences for businesses that are making sustainability a core value.

As the industry quickly moves to a more data-driven paradigm, it will undoubtedly discover improved methods of operation and new ways to engage and protect consumers. In recent years, Emerson has focused on expanding our capabilities across every domain within the cold chain to support this shift. Through investments, acquisitions, product development and strategic partnerships, we’ve connected the dots between these areas to create holistic solutions. We’ve also restructured our organization to provide comprehensive solutions for both discrete and complete opportunities, regardless of what role your company plays within the cold chain.

This is an extremely dynamic period in cold chain history. The abundance of data is helping to remove divisions between vertical markets and revealing the true level of interdependence needed to ensure complete cold chain integrity.

To that end, we see a digital transformation occurring before our eyes — not in grandiose, intangible, all-consuming approaches, but in the expansion of existing, proven technologies coupled with the use of emerging digital assets to create new insights and opportunities. We see digital transformation as the increasingly powerful iterative development of connected, adjacent systems accelerating and eventually revolutionizing how companies operate. And, we’re here to help you make this critical cold chain transition a reality for your business.