

When You Can't Change the Direction of the Wind – Adjust Your Sails

*Best Foods growth provided
opportunity to upgrade their
refrigeration technology.*

For some years now, the wind of change has been blowing in the refrigeration industry. With the advent of environmental awareness and responsibility, the citizens of Planet Earth have become conscious of the need to protect the planet and its resources, not only for themselves in their lifetimes, but for those in the generations to come.

Many refrigerants whose usage had become commonplace over the past decades to cool things down and keep them cool, such as CFCs (Chlorofluorocarbons) and HCFCs (Hydrochlorofluorocarbons), have proven to be both a significant source of global warming as well as agents that deplete the ozone layer protecting the earth and those on it from the sun's harmful ultraviolet rays. As a result, CFC refrigerants were banned over two decades ago. The alternative solutions to the phased-out CFCs, namely HCFCs and HFCs (hydrofluorocarbons), represented some improvement in environmental stewardship over their predecessors but still possessed characteristics damaging to the environment. HCFCs had far lower ozone depletion potential than CFCs but were always seen as an interim solution because they contained ozone-destroying chlorine. The demise of these HCFC refrigerants is already upon us while that of their HFC brethren is not far down the road.

The resulting chaos and uncertainty from these mandates has left its mark on a broad swath of businesses crossing the lines from industrial to commercial to retail. The process of making decisions on new capital equipment involving the usage of refrigeration has taken on an added complexity. Do you go with the time-tested, readily available HFC system even though its lifetime may well be limited by further regulatory actions? Or, do you protect yourself from the specter of regulatory impact and potential environmental issues and go with one of the newer, less established technologies involving hydrofluoroolefins (HFOs) or "natural" refrigerants such as CO₂? Your decision could well affect the viability of your future.

An American writer, named H. Jackson Brown Jr., was once quoted with a statement quite fitting for the moment — *"When you can't change the direction of the wind — adjust your sails."* Successful business leaders, realizing that the winds of change as a force are often

unstoppable, don't fall prey to the folly of attempting to change their direction; they adjust their sails instead to take advantage of the change and accelerate their business forward. They take the bold stance that the winds of change can be welcome, pushing you to a better place. There is no finer example of this principle in action than the story of Best Food Services, a national food service wholesaler headquartered in the Chicago area and focusing on the Chinese market with dry goods, cleaning supplies, refrigerated produce, fresh meat, frozen seafoods and frozen appetizers.



Figure 1: Best Food Services

Since the company was founded in 2002, Best Food Services (BFS) (figure 1) has grown rapidly to become one of the largest oriental food suppliers in the Midwest with 22 locations primarily serving the needs of food distributors and supermarkets. As is the case with most companies undergoing rapid expansion, BFS reached a point in 2015 where they needed to address expansion of their capabilities in order to meet their ever-growing customer demand. One key component of this expansion was upgrading the refrigeration required to serve their operation. Their expanded business scenario involved a 25,000 sq. ft freezer, 20,000 sq. ft cooler and a 15,000 sq. ft refrigerated dock as well as a sizeable dry storage area approximately twice the size of their dock. Prior to this point in time, the BFS facility's

refrigeration was supplied by a number of single-unit HFC systems which burdened the business with costly refrigerant (freon) charges and troublesome system issues.

Eric Kwok, CEO of Best Food Services (*figure 2*), is one who builds windmills and not walls, as evidenced by the stellar growth and success of his business. He saw another opportunity for a windmill with his wish to upgrade their refrigeration technology but at first was uncertain where best to turn for sage advice. Local refrigeration contractors gave him quotes on everything from single-unit HFC systems to secondary parallel rack systems. He even entertained the thought, albeit briefly, of using ammonia before he abandoned the idea outright over concerns about safety, added cost of regulatory requirements, and the need for resident, in-house engineering.



Figure 2: Eric Kwok, CEO



Figure 3: Best Food Services Staff

Then, something marvelously unexpected happened that set Eric Kwok squarely on the path to his goal. In a casual conversation one day, the banker handling the financial dealings of Best Food Services suggested to Eric that he speak with the people who they considered to be “the expert” on such matters, Zone Mechanical, a very highly-regarded refrigeration installation contractor based out of Franklin, Wisconsin (with headquarters in Alsip, Illinois). Eric contacted Frank Petrosino, CEO of Zone Mechanical, who brought a whole new meaning to the old saying, “*A single conversation with a wise man is worth a month’s study of books.*”

Frank introduced the idea of using an Advansor CO₂ transcritical booster system (*figure 4*) from Hillphoenix to accommodate Best Food Services refrigeration needs.



Figure 4: Hillphoenix Advansor CO₂ Transcritical Booster System

In that Eric was initially unaware of CO₂ as an option and looked at it as “something new”, Frank detailed the advantages and disadvantages of such a system to him and how it was a fit for his needs. Although first cost would be somewhat higher (~10%) than an HFC equivalent system, ongoing energy savings, life cost of the equipment and reduced maintenance cost would more than compensate for that. BFS also took special interest in the favorable environmental aspects of using CO₂ as a refrigerant:

- Natural refrigerant (unlike other refrigerants, they are natural substances and not synthetic chemicals)
- No ozone depletion potential (ODP = 0)
- Baseline of 1 for global warming potential (GWP)
- Non-toxic (can be safely vented)
- Achieves significant energy savings
- Regularly available

Eric still harbored one last lingering doubt. Although he knew that supermarkets were successfully using CO₂, he felt somewhat uncomfortable that Best Food Services would be one of the “early wave” of smaller end users. This doubt was quickly put to rest when he reached out to another smaller end user for validation and received glowing feedback as to their system’s performance and reliability. It bolstered Eric’s confidence when he found out that Zone Mechanical installed one of the first CO₂ transcritical systems here in the United States some eight years ago and has successfully completed an additional 20 systems since then with nothing but good results.

The decision was made—build the windmill! Hillphoenix, manufacturer of the CO₂ transcritical equipment, worked together with Zone Mechanical on the total system design based on Best Food Services specs which included provisions for future growth. Zone Mechanical worked closely with Best Food Services throughout the installation of the system which included:

- Hillphoenix parallel rack system using CO₂
- Bitzer compressors
- Luvata gas coolers
- Control systems designed and provided by Micro Thermo using their proprietary algorithms

The usage of the Micro Thermo controller quickly took on special meaning and value to Best Food Services. “With the Micro Thermo controller in place, the CO₂ system provides preemptive warnings (*figure 5*), giving us first-hand knowledge of every operating condition and allowing us to ‘get in front of it’ as far as any system problems are concerned,” stated Eric Kwok, BFS CEO. “We find this very important when a system is single-handedly feeding the majority of the facility’s refrigeration needs”, he added. Additionally, Eric has found Zone Mechanical to be very responsive and helpful at every turn making it easy to get accustomed to the new system.

Micro Thermo Alarm Monitoring Capabilities

Micro Thermo offers a comprehensive, 24x7x365 monitoring service

We provide both live calls and emails within 15 minutes of alarm notification – and provide you with information on where the alarm is, and what it alarming

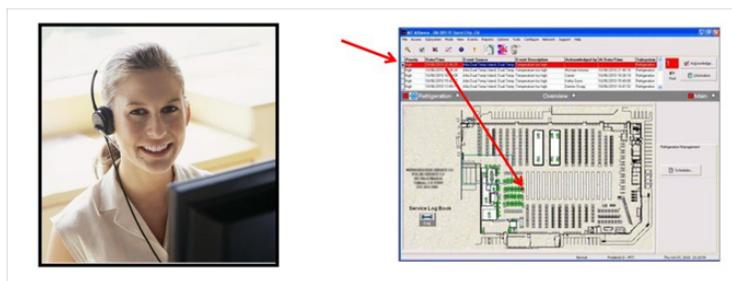


Figure 5: Micro Thermo Controller Monitoring

It hasn't taken long for BFS to realize the benefits of going with CO₂. "We're definitely saving money!" Eric happily proclaimed and added, "Although we're still working on the means to get an exact number, we're estimating at least somewhere between 15% and 30% energy savings." Frank Petrosino, Zone Mechanical CEO, is quick to point out, "Add to that the 25% reduction in annual maintenance cost and 10% savings on refrigeration charge (installation), and you have the makings of a very happy customer!"

Of course, not all benefits are quantifiable or can be demonstrated using numbers yet loom large in importance to an end user. Peace of mind is one such aspect that defies a price tag. Eric Kwok echoes this sentiment when he says, "We have had absolutely no system issues to date. We run our facility 24 hours per day with employees present at all times. I sleep easier at night knowing that CO₂ does not present any of the dangers that an alternative like ammonia would have."

Perhaps the ultimate testimony comes with a word of promise from Eric— "We have a potential new facility acquisition slated for 2019. Based on our positive experience with the first installation of the Hillphoenix Advansor CO₂ transcritical refrigeration system, we plan on outfitting the new facility in the same manner."

“When you can’t change the direction of the wind — adjust your sails.” Yes indeed, the winds of change are blowing mightily in the world of refrigeration—and it looks like the good ship, Best Food Services, is keeping their ship steady and their sails full, charting a course for a profitable future ahead!