

# ContainerLINE

**QUEST**  
**Power-Saving Mode**  
**Addressing Rising**  
**Energy Costs**



## Eco-Aware Container Shipping



### Cause and effect.

When it comes to moving goods around the world, if you use less energy, you'll reduce your impact on the environment. The level of emissions produced is directly proportionate to the energy consumed. It's that simple.

The amount of energy required to move a ton of cargo by container ship is less than any other mode of transport – *far less* when compared to air travel. It follows that the corresponding CO<sub>2</sub> emissions generated by container ship are proportionately less, too. Illustrating this principle are the graphs below from the Container Shipping Information Service, [www.shipsandboxes.com](http://www.shipsandboxes.com). They look almost identical, but show two different things – energy consumption and emissions.

Refrigerated containers, which today deliver over half of all global seaborne refrigerated cargo, are becoming more efficient too. The industry response to the launches of the PrimeLINE™ digital scroll unit, and QUEST and eAutoFresh™ energy-saving options was overwhelmingly positive, to say the least, and clearly demonstrates the shipping industry's commitment to being environmentally responsible. As we stated at Intermodal in Amsterdam, these product launches are just the beginning.

Carrier's QUEST energy-saving mode is proof of the principle that by reducing energy requirements, you can reduce emissions a proportionate amount. The benefit of consuming half the energy of a standard container refrigeration unit and reducing both fuel consumption and emissions is not lost on environmentally sensitive shippers like Maersk, as mentioned in our cover story.

Carrier's latest generator sets also offer a double benefit related to reduced emissions. As described in the pages of this issue, the changes made to their diesel engines not only make them burn cleaner, but provide more consistent electric power.

Cause and effect. Indeed, today's technology adds up to positive effect for the environment. And that's definitely a cause we can all support.

Scott A. Pallotta  
Director of Marketing

# ContainerLINE

## CSAV Adopts Ventilation System

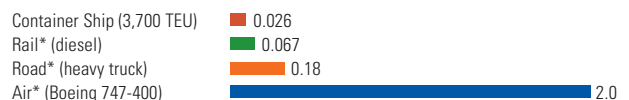
Following extensive field trials, CSAV has acquired 1,000 EliteLINE™ scroll units equipped with eAutoFresh™ on-demand ventilation systems to handle exports of select perishable products in the South America / North America trade lanes.

The purchase was part of a 3,000-unit acquisition of Carrier Transicold units that also included 1,000 EliteLINE units prepped for field installation of the eAutoFresh on-demand ventilation system and 1,000 Carrier EverFresh™ controlled-atmosphere systems, which enable CSAV to maintain product integrity over even longer duration routes to the Pacific Rim and Europe.

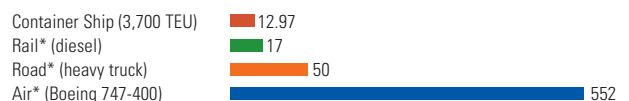
The eAutoFresh on-demand ventilation system supports CSAV's commitment to superior-quality customer service through implementation of technologies that ensure reliable transport of products to and from the principal areas of the world. Designed for produce shipping applications, the eAutoFresh on-demand ventilation system provides an energy-efficient alternative to the common practice of continuously ventilating refrigerated containers to address cargo respiration.

As an economical system that can maintain freshness of some perishable products beyond what is possible with standard equipment, the eAutoFresh system can be used by CSAV with certain products, such as snow peas, asparagus and avocados, with transit times of no more than 22 days.

### ENERGY USED (kilowatts) to carry 1 ton of cargo 1 km



### CO<sub>2</sub> EMISSIONS (grams) to carry 1 ton of cargo 1 km



\*Source: The Network for Transport and the Environment

“Through the field trials, the system achieved all performance goals for CSAV,” said James Taeckens, senior product manager. “The size of the order is testament to their confidence in the eAutoFresh system and its ability to help them meet their business objectives. We’re delighted.”

CSAV also plans to take advantage of another unique feature of the eAutoFresh on-demand ventilation system: the added flexibility in equipment utilization that comes from being able to easily transfer the eAutoFresh system hardware between container units that have the appropriate controller software drivers installed.

Based in Chile, CSAV is the largest shipping company in Latin America, with 33,000 refrigerated containers and 300,000 boxes operating in a fleet close to 100 vessels owned and chartered.



*LEFT: The eAutoFresh™ on-demand ventilation system installs in place of the manual vent on the front face of Carrier refrigeration units.*

*RIGHT: After extensive field testing, CSAV acquired 1,000 EliteLINE™ refrigeration units equipped with the eAutoFresh™ on-demand ventilation system.*



# Implementing Environmental Solutions

## The Bold QUEST for Energy-Savings

A quest has always signified a long and important search for something of profound importance.

One of industry's current quests is for energy-saving solutions that reduce costs while diminishing the carbon footprint of operations. And the new QUEST power-saving mode from Carrier just may be the solution that many shipping lines have been seeking.

QUEST stands for Quality and energy Efficiency in Storage and Transport, and it achieves what its creators set out to accomplish: up to 50 percent less energy spent for the refrigeration of perishables in ocean transport while maintaining the same cargo quality.

With energy requirements reduced up to 50 percent, the cost savings are considerable. Depending on the size of the fleet, the economic impact of the QUEST power-saving mode can be enormous.

At today's bunker fuel prices, the annual cost of powering a single refrigeration unit is approximately \$1,600, so for a fleet with 10,000 refrigerated containers, the yearly energy cost is \$16 million. Assuming that those containers are a 50/50 mix of fresh and frozen, with QUEST mode engaged the cost of powering the entire fleet's refrigeration units will be reduced by 25 percent or \$4 million.

But there is another significant savings: lower power requirements mean less fuel burned to generate electricity to run the refrigerated units. The same fleet using the QUEST power-saving mode, under typical conditions, could be expected to reduce its annual carbon dioxide emissions by 2.5 metric tons per reefer or 25,000 tons for the fleet.

In fact, Maersk Line, the first in the shipping industry to adopt the QUEST power-saving mode, estimates that when it is fully implemented throughout the fleet, it will be able to reduce its emissions by 325,000 tons each year.

### An "Out of the Container Box" Idea

How QUEST power-saving mode achieves such results is a story involving several years of development on the part of visionary thinkers from government, shipping, academia and the container refrigeration industry.

A collaborative venture, the development of the QUEST power-saving mode started at Agrotechnology and Food Sciences Group (A&F) of Wageningen University and Research Centre, in Wageningen, the Netherlands, with backing from the Dutch government. The world's largest shipping line, Maersk, along with Carrier, the global leader in container refrigeration, joined as partners for testing and development of control algorithms.

The breakthrough that led to the QUEST power-saving mode is a simple, yet revolutionary idea: that a refrigeration system need not run continuously to provide necessary protection of perishables in transit.

The resulting system is the only one of its kind backed by research from leading specialists in post-harvest food quality, preservation and transport, and it delivers significant power savings. The QUEST power-saving mode produces energy savings by intermittently shutting down the refrigeration compressor and by running the evaporator fans at low speed for significant intervals of time, based on thorough new studies about perishables in transit.

"For the past 30 years, the standard has been to maintain the supply air temperature to within plus or minus a quarter of one degree centigrade of the set point," said Dave Smith, senior product manager, Container Products. "To achieve this, the compressor needs to run all the time. Yet a refrigeration system has far more cooling capacity than what is required once set point is reached, so we have to start modulating, either by restricting refrigerant flow to the compressor or by bypassing flow around the coils, all of which significantly lessens the efficiency of the system."

"What A&F concluded was that not many loads really require such tight air temperature tolerances," Smith continued, "so rather than run the compressor all the time with modulation, QUEST allows us to run the compressor intermittently – either running at high efficiency, or not at all. To the fruit, it's indistinguishable."

*Leading Wageningen UR researchers study the effect of atmosphere composition and temperature of the quality of perishables and their shelf life. Numerous product quality studies were done to test the protective power of QUEST temperatures compared to ordinary transport.*



*A containership such as the Elly Maersk will reap savings when the QUEST power-saving mode is fully implemented throughout Maersk Line's fleet. Instead of putting all of a refrigeration system's energy into maintaining precise air temperatures, QUEST power-saving mode concentrates on maintaining proper cargo temperatures.*

## Protecting Precious Cargo

To develop profiles, A&F studied a range of sensitive perishables. In controlled settings, program researchers carefully studied numerous perishables under varying temperature conditions over time periods that simulated typical voyages. Scientists monitored the effect of container atmosphere on the temperatures of the air surrounding the fruit, on the peel, under the peel, and the pulp itself. Products were monitored for appearance and quality as well as shelf life beyond the "transit" time. The results were validated in real life shipments, where the product quality and the temperatures were monitored throughout each container.

Researchers established that while air temperature is important, what really matters is maintaining temperatures within certain boundaries. Also important were the intervals over which the refrigeration could be stopped and then run again. They determined how high and low the air temperature could fluctuate and for how long. Then they established temperature curves that would fit those fruits and vegetables.

Once those boundaries and intervals were established for the perishables under study, Carrier created the software code that would run the refrigeration system according to the A&F profiles.

QUEST power-saving mode readily lends itself to temperature sensitive applications such as bananas, pineapples, pears, apples, grapes, kiwifruit, avocados and many more. But because it is based on conservative parameters dictated by the most temperature-sensitive perishables, it can be used for most fresh fruits and vegetables where the setpoint would typically be within a range of -1°C (30°F) and 15°C (59°F). It is not active for dairy or chilled meat and frozen cargoes with set points below -1°C (30°F).

New Carrier units can be equipped with the QUEST power-saving mode, and the software can be field installed on Carrier units with ML2i or ML3 controllers. This encompasses all PrimeLINE™ and EliteLINE™ units, and most ThinLINE™ units on the seas today.

Users may opt to have QUEST mode work automatically by default or only when invoked by the user. When QUEST mode is active, users need only pick a temperature set point, and the software will automatically select the profile that suits the temperature and the cargo. It's that simple.

The quest for the QUEST power-saving mode was a long journey, but shipping lines such as Maersk can all agree that the path that reduces carbon footprints left behind is the right one to follow.

# A Green Year for Gen Sets

There has been a considerable greening of Carrier's container product line within the last year as demonstrated by Carrier's PrimeLINE™ container refrigeration unit, QUEST power-saving mode and eAutoFresh™ on-demand ventilation system.

Not to be overlooked, Carrier's generator sets are also a shade greener these days, thanks to a new diesel engine that conforms to the latest U.S. Environmental Protection Agency (EPA) emissions requirements. And for customer fleets and facilities that need to comply with even stricter environmental regulations in California, Carrier provides options that will help them meet their retrofit needs.

On these pages, we provide an overview of Carrier's 2008 gen set developments.

## New Tier 4i Engine Generates Steady Power

The power inside PowerLINE™ undermount and clip-on generator sets starts with a 32-horsepower direct-injection diesel engine. These rugged units reliably drive the generator that powers the electric refrigeration system once a container is off-loaded from a ship and attached to a truck chassis or rail car for ground transit.

Starting in February, PowerLINE™ units have a new engine that not only reduces emissions, but also improves performance for more reliable power generation.

In keeping with U.S. federal regulations, model-year 2008 diesel engines used in gen sets must comply with the EPA's interim Tier 4 standard (Tier 4i). Compared to EPA Tier 2 (model-year 2004 through 2007), the Tier 4i standard reduces permissible particulate emissions by half, to 0.3 grams per kilowatt-hour (g/kwh). The new V2203L,

direct-injection engine on PowerLINE gen sets goes nearly 30 percent beyond what's required, driving emissions down to 0.214 g/kwh.

Moreover, particulate emissions from Carrier Tier 4i units are 20 percent lower than particulate emissions from some competitive units with Tier 4i compliant engines.

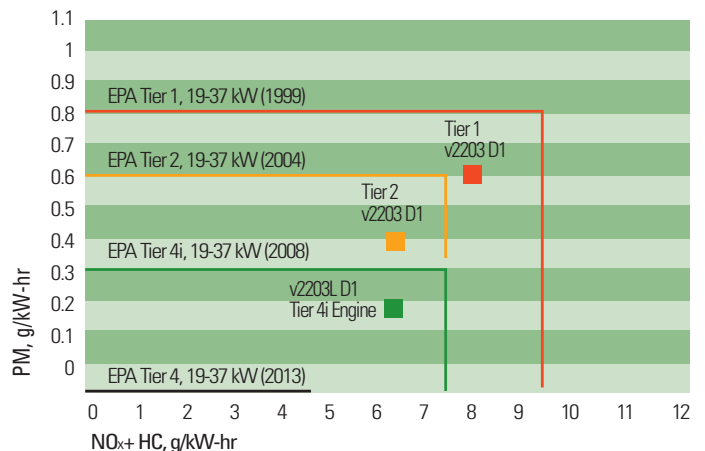
Put into perspective, a fleet that purchases 250 gen sets with Carrier's Tier 4i engine will emit 1,575 kg fewer particulates over the typical life of the gen sets than an identical fleet using competitive Tier 4i units.

"An environmentally conscious fleet that not only wants to meet the EPA minimum but also achieve the best overall particulate matter reduction will choose the Carrier solution," said Charu Mahajan, product manager, Generator Sets.

To achieve Tier 4i compliance, the engine manufacturer added an air intake heater in place of glow plugs and increased the compression ratio with a smaller diameter piston and longer stroke, along with a larger starter and flywheel combination.

Another key change was the addition of an integrated engine speed sensor and electronic control module for improved regulation of engine speed. The constant engine speed results in more constant voltage and power output by the generator. The need to adjust the unit speed is eliminated, and

## A Decade of Emissions Reductions



\*PM is particulate matter, NOx is nitrogen oxide and HC is hydrocarbon.

start-up is improved in high ambient conditions.

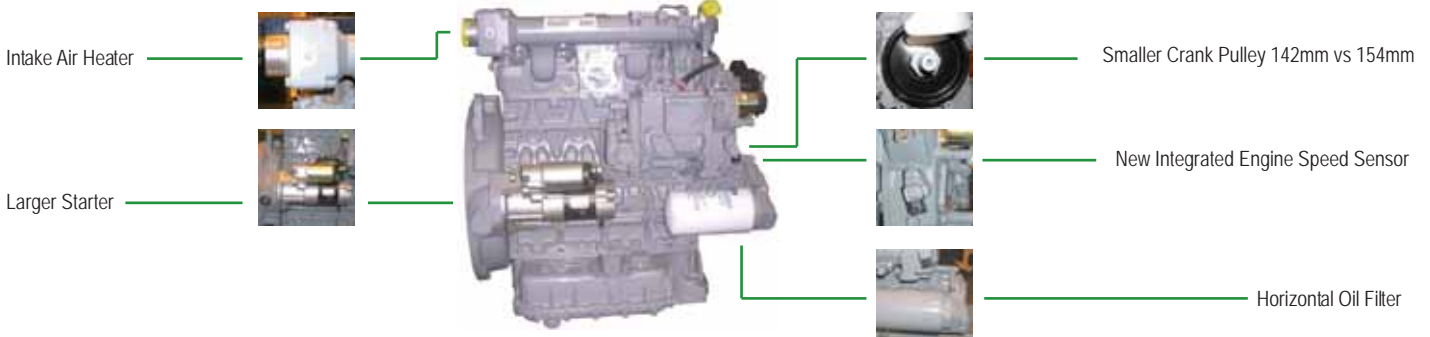
"Carrier generator sets with the new Tier 4i engine offer environmental compliance, while providing near constant voltage with no drop off or fluctuations," said Mahajan. "That's a nice double benefit."



## California Compliance

This year, for the first time, the California Air Resources Board (CARB) Airborne Toxic Control Measure (ATCM) imposes changes on certain diesel-fueled transport refrigeration unit (TRU) generator sets. The ATCM, which is more stringent than U.S. Environmental Protection Agency emission regulations for TRUs, impacts California-based equipment, as well as equipment that enters the state via rail or truck.

By Dec. 31, gen sets with model-year 2001 and older engines must be upgraded to reduce diesel particulate emissions to a



# Small Modifications Make a Bunch of Difference for Chiquita

level defined as CARB's low-emissions TRU standard. That's a 50 percent reduction over previous permissible levels. In 2009, the cycle repeats for units with 2002 engines. (An ultra-low-emissions standard calling for an 85 percent reduction comes into play starting in 2010.)

"Presently, Carrier's offering for the compliance path for PowerLINE™ generator sets with model-year 2001 and older engines is to swap out the older engine for either a new Tier 2 or Tier 4i engine," said David Whyte, regional service manager – Americas. "For fleets ready to resolve their compliance issues, Carrier service centers are equipped with the needed engines and ready to handle fleet upgrades."

As an alternative to engine replacement, Carrier is pursuing development of an add-on exhaust device – a diesel particulate filter (DPF) – that will satisfy CARB as a verified diesel-emission control strategy (VDECS). Engineers have been working diligently on the DPF, an advanced design using patented media with long-term benefits and fewer limitations than VDECS offered for competitive gen sets.

Watch for further announcements from Carrier later in 2008.

## Tapping Cleaner Fuels

Cleaner burning fuels such as ultra-low sulfur diesel (ULSD) and biofuels are viable options for use in Carrier generator sets for fleets that want to "run greener."

Engines used on PowerLINE™ generator sets are now approved by the engine manufacturer for use with ULSD fuel that meets the ASTM D975 standard. Regarding biofuel, the engines are approved to run on grades up to B5, which is a blend of 95 percent petroleum diesel and 5 percent biodiesel meeting the ASTM D6751-06 specification.

"The flexibility to run on any of a number of fuel types is an advantage for fleets planning to use a more environmentally sound fuel choice or that simply want to standardize on one type of fuel or another," explained Charu Mahajan.

As the saying goes, "little things mean a lot!"

Such was the case in a recent project with long-standing customer Chiquita Brands International, which approached Carrier about making a few refinements to the PowerLINE™ undermount generator. The goal was improved serviceability of the unit while on chassis.

A tweak here, and a few adjustments there, and pretty soon Carrier was looking at a new gen set.

PowerLINE undermount generators are designed for temporary attachment to a truck chassis, and the hood on top makes them highly serviceable when unmounted. However, Chiquita rarely removes them from the chassis of the North American long-haul rigs used to deliver bananas and other imported fruits out of the ports of Wilmington, Del., Gulfport, Miss., Freeport, Texas, and Port Hueneme, Calif.

"Every time you mount and unmount it, that's money and labor for Chiquita," according to Charu Mahajan, product manager for Generator Sets. So when it comes to maintenance, Chiquita's technicians service them in place.

## How did Carrier improve it?

For better internal access, the main side opening was made 50 percent larger, a feature now standard on the base model, too. The control box was moved to the outside of the unit, and in its place a new hinged door panel provides unobstructed access to previously hidden parts, such as the fuel solenoid, oil pressure safety switch, oil pressure sender, oil filter and V-belt. With the control panel no longer in that space, the coolant bottle was mounted to the inside of the door panel, making it easy to inspect and fill as needed. The fuel filter was also repositioned for easier access. Also, a new corrosion-resistant aluminum fuel tank shaved 80 pounds off the weight of the unit.

Maintenance intervals for oil and air cleaner changes were extended, and idler pulley adjustments were eliminated thanks to the new self-tensioning poly-V belt, a change that is standard on *all* undermounts.

Working in close partnership with Chiquita, Carrier's development included production and field-testing of demo units in 2007, with delivery of final production models continuing into the first quarter of 2008. For the large order, Carrier made provisions in its production line to expedite the job, with tightly choreographed delivery to Chiquita's chassis production. In all, Carrier delivered 864 of the banana edition PowerLINE gen sets, ordered for Chiquita by Seacastle Container Leasing (formerly Carlisle Leasing International).

"I must acknowledge that when Carrier makes a promise, it really delivers," said Richard Moore, operations manager of Freeport Terminal who oversaw the project as it came to fruition. "I am impressed."

Considering interest shown in the new model, it may just become the "top banana" of gen sets.



# China's Agricultural Exports Leap Forward

China takes center stage this summer as host to the 2008 Olympic summer games in Beijing. It's an opportunity for the proud nation to showcase incredible progress made toward modernization in just the last 20 years.

In that short time span, the Chinese economy has achieved a growth rate averaging nearly 10 percent a year – a quintupling of output per person. The agricultural industry is no exception to this trend. China has emerged as a world agricultural force, feeding not just its own 1.3 billion consumers, but those of its neighbors as well.

China's agricultural exports more than doubled over the past 15 years. Total refrigerated exports, including perishables, meat, fish and poultry, have seen double-digit growth rates in seven of the last ten. Although processed produce, including frozen, accounts for the majority of China's total produce exports, the nation's fastest growing export segments are fresh fruits and vegetables. China's refrigerated fruit and vegetable exports, at 5.3 million

tons in 2007, have more than tripled from a decade ago. It's been estimated that fresh vegetable exports from China account for as much as 5 percent of global trade.

Leading fresh vegetable exports include garlic (75 percent of the world supply), mushrooms, onions, carrots and radishes. China grows 47 percent of the world's apples, which are also China's primary fresh fruit export, accounting for more than half the annual fruit exports by value, followed by pears and tangerines.

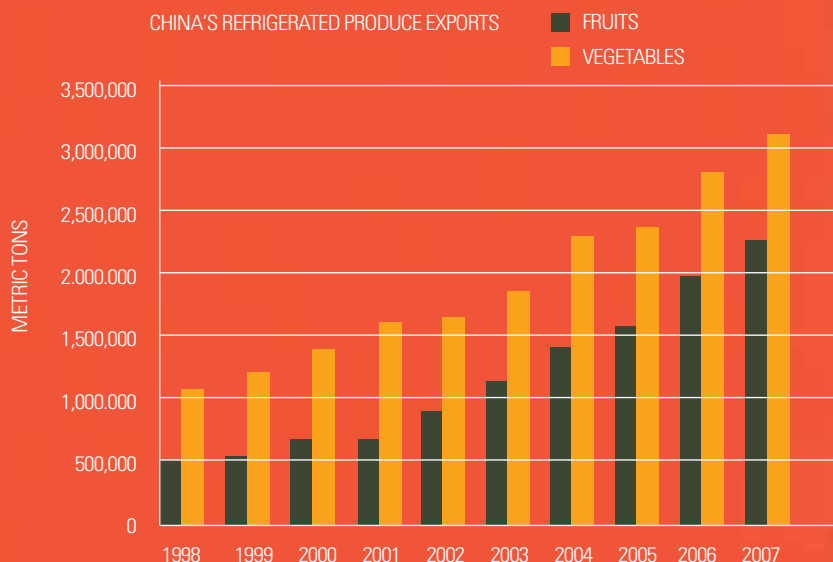
China today is a leading food provider in markets where its presence was negligible 10 years ago. Primary importers of Chinese produce are nearby Asian markets, such as Japan, Korea, Brunei, Cambodia, Indonesia, Malaysia, the Philippines, Thailand and Vietnam. China is Japan's number-one supplier of fresh vegetables. South Korea's appetite for fresh vegetables from China has also grown. There, China's market share went from 36 percent in 1994 to 75 percent in 2004.

## Sowing the Seeds

China's market-based economic reforms, which included farm privatization in 1978, have contributed to the country's steady upward climb in agricultural productivity. Dramatic changes in domestic policies on agriculture and trade reduced government intervention and simultaneously increased the role of market forces. For example, with grain production no longer under heavy government protection, many farmers switched to more profitable commodities, such as vegetables.

With more than 300 million engaged in farming, Chinese agriculture is evolving from a communal system, and infrastructure is still lacking. Controlled-atmosphere technology, hydrocoolers and refrigerated transport were considered uncommon as recently as 2003.

What China lacks in agricultural productivity per farmer – low compared to Europe and United States – it makes up in volume. China's overall output has been steadily growing.







Improved domestic seed production, availability of better agricultural chemicals and equipment and advances in greenhouse technology are helping China become a major producer of export-quality fruits and vegetables.

From an economic perspective, produce exports, which were valued at \$5.7 billion in 2007, are a significant side dish on China's expanding food export menu. Meat and seafood exports are also on the rise. Today, China is the world's largest producer and exporter of seafood. Including farm-raised eel and catfish, seafood exports surged to nearly \$9 billion in 2006.

### Reaping the Harvest

"Before the 1980s, China exported limited kinds of frozen, simply processed seafood and agricultural products, like taro and green beans, by bulk reefer vessel," said Steven Leng, Carrier Transcold's service engineer for northern China based in Qingdao. "Containers did not come into wide use until the 1990s, following further government and trading policy reforms."

Zhu Li Hua, Leng's counterpart in southern China echoed that food exports have increased "almost 10 percent annually in the past few years, mainly from Qingdao and southern China. Exports from northern China are mainly vegetables and seafood, while southern China is more fruits and seafood."

"Now, thousands of 40-foot reefer containers of garlic, fruit, ginger and onions leave China's ports for destinations in the Middle East, Southeast Asia, North America and the EU," Leng added. "A lot of raw seafood is imported to China for processing and then exported to North America, Japan and the E.U."

The fact that Carrier has committed two service engineers to the Chinese market is reflective of Carrier's response to the growth. Only 10 years ago, China was home to nine Carrier service centers. Today that number is 17.

"We have set up our service network to support the shipping lines for their reefer business," said Leng. "Every year, our container reefer unit training schools are welcomed by our service centers and shipping lines. Sometimes we deliver customized

training requested by shipping lines to their major shippers."

### Enjoying the Bounty

Analysts agree that as buying power increases for China's consumers, their tastes are becoming more discriminating. They are spending more on food, buying not only greater quantities but better quality food and more variety. These patterns suggest that in spite of China's agricultural boom, food imports will remain important.

As Leng notes, China's food business is a two-way street. "Since China joined the World Trade Organization, refrigerated imports have steadily increased. Now Chinese shoppers can easily get oranges and grapes from the U.S., and plums, bananas and avocados from South America in the supermarket."

Just as China's farm output and consumer affluence have grown, so too have its agricultural export and imports, with Carrier Transcold container refrigeration units doing their part to deliver the harvest.

## Performance Parts Expands Line-up to Include Consumables

Carrier has built a reputation for quality with a full line of genuine Performance Parts™ and Select Line™ parts, as well as critical OEM replacement components and accessories. However, today, customers are increasingly calling on Carrier for another line of parts: “consumables.”

Consumables are high-turnover, often single-use items that serve specialized needs for routine maintenance or product protection. To meet growing customer demand, Carrier has worked with its suppliers worldwide to assemble a selection of products for the shipping industry.

“We’ve really branched out in the scope of our consumable product offerings over the last couple of years,” said Shari O’Shea, marketing manager, Performance Parts Group, “A lot of shipping lines were buying these items as needed in various local markets from different suppliers.”

“We’ve partnered with suppliers that meet our qualifications and we can meet the global needs of our customers – we’re everywhere they need us to be. Carrier has the buying power to procure consumable items in volume quantities, resulting in a better value for our customers.”

With contract pricing agreements for consumables, Carrier provides customers the benefit of global cost control and maintains ample inventories in ports where customers need them. Shipping lines interested in contract pricing agreements for consumables should contact their regional Performance Parts representatives (see box).

Whether you are a regional shipping line or a worldwide carrier, wherever in the world your refrigerated containers are, you can count on Carrier to be there with parts and service you need to keep your equipment in top working order.

### Performance Parts Representatives

Asia Pacific/Australi/NZ, Terry Sau, +65-6213-6278  
Europe/Middle East/Africa, Boudewijn Ligterink, +31-10-2380250  
Americas, Jeff Neuss, +1-315-432-7115

### The Consumable Shopping Cart

Carrier maintains a wide assortment of consumables, ranging from the expected to the unexpected. Here’s a sampling:

#### Mechanical

Refrigerants  
Antifreeze  
Oils (compressor & engine)

#### Product Quality and Safety

Ryan EZT strip-chart recorders  
USDA temperature probes  
Ethylene filters  
Cargo security locks

#### Electrical

Power plugs  
460-volt cable  
Splicing kits  
Cold-shrink tube

#### Miscellaneous

Duct Tape



# Turn to the Expert

## Dave Smith

### Product Management



To an exhibitor, the thought of trade shows likely conjures images of long days on your feet and lots of social interaction. For some individuals, that can be exhausting duty; but not to Dave Smith, Carrier's senior product manager for containers.

"Take Intermodal," he says. "I'll get there early. I'm ready to go the whole day. It *gives* me energy." And from the enthusiasm that effuses, it's clear he means it. "I love to talk to customers to find out what they're really looking for and solve problems — even problems they don't know they have."

Smith has been something of a problem solver throughout his 19-year career, dating back to his first job upon graduation with an engineering degree from Case Western Reserve University. At that time, he was developing complex software code to model fluid dynamics for jet engines at NASA's Lewis Research Center. His next career steps led to engineering jobs with nuclear-power plant

developer Babcock and Wilcox (now Framatome Technologies International), and designing earthmoving equipment for Caterpillar, Inc.

In 1999, Smith landed an engineering position within Carrier Transcold, followed by a promotion within Carrier's Commercial products division as a product manager for air-cooled chillers.

Each step along his career path has taught him valuable lessons that serve him well in his present position, which he has held since 2006.

"NASA and my schooling taught me that the best way to solve problems is to fully understand the physics behind everything," he said "At Caterpillar, I learned how to take a problem that's very complex and simplify it, so that whatever audience I'm presenting to can understand."

In Carrier's Commercial products group, he said he learned to work in a more consultative capacity rather than as an equipment vendor, teachings that

certainly apply for the container business. "We're more than just a manufacturer of container machinery," he said. "We're helping customers solve issues like how to maximize their container fleet, how to get more trips per year, optimal cargoes to carry and how best to handle them.

"In engineering, I typically saw one part; I just saw the technical side," Smith said. "In product management, I get to deal with the whole issue.

"My focus now is to listen to the customers and to understand what they really want; to listen to the account managers and field service engineers, because they know the customers the best; and then to prioritize all the issues and make sure that we are doing all that we can to make the customer as happy as possible from a quality, cost and delivery standpoint."

That interaction is, after all, what he most enjoys about his position.

## Top Performers for Asia-Pacific Region Announced



Willie Goh (left) is recognized by Chiou Fun Sin, vice president of Carrier's Container Products Group.

Singapore-based service center **Eastern** (1961) Pte. Ltd., entered an elite circle of two-time top achievers when it was recognized with Carrier's 2007 Top Performer Award for the Asia-Pacific region. Eastern also received the prestigious award in 2000.

"Eastern has demonstrated high levels of achievement in all the areas of business planning, customer satisfaction, market knowledge, employee development and replacement components," said Hai Kuan Lee, Carrier's regional service manager for Asia-Pacific Operations.

Eastern, established in 1961, entered

the refrigeration service business in 1983 when Willie Goh, son of Eastern's founder, joined the company following six years as a reefer mechanic with the Port of Singapore Authority. Starting with only two technicians — Goh and a brother,— the business gradually grew, and today Eastern thrives as the largest reefer maintenance and repair service provider in Singapore, with a current pool of more than 50 qualified mechanics and a well-stocked inventory of reefer parts.

"Eastern has grown its market presence through a philosophy of honesty, integrity, placing the customer first, and providing the best service possible," Lee explained. "The company recognizes its employees as an important asset, and as such, has invested in on-site staff training facilities as well as large attendance at all Carrier training schools in the region."

Longevity of relationships is important to Eastern's success. More than 50 percent of its customers have been with Eastern for

more than 10 years. Still at the helm, Goh is recognized as a leader in the industry and has extended Eastern's business to Hong Kong, Malaysia, Myanmar, Philippines, Thailand and Vietnam. Services have been expanded to include ship kit management for shipping lines.

Also recognized by Carrier in the Asia Pacific region were **Ho Chang Machinery & Electricity Co.** of Kaohsiung, Taiwan, and **Reefer Services Co. Ltd.**, Yokohama, Japan, both for customer satisfaction; **Dolphin Marine Enterprises Pvt. Ltd.**, Mumbai, India, and **Yong Moon Co. Ltd.**, Busan, Korea, both for replacement components; and **Dalian ETDZ Yongyu Container Services Co., Ltd.** of Dalian, China, and **S&T Contemp Co. Ltd.** of Bangkok, Thailand, both for employee development. Recognition for most improved service center went to **Xiamen Greating-Fortune Refrigeration Eng. Co. Ltd.**, Xiamen, China.

# Personnel Updates

## New Appointments

### Strengthen Global, Asia Operations



**Renze Elzinga** recently joined the Container Products Group as director, Global Sales Support, providing leadership and support to the global sales team as well as strategic direction for the sales operation. Additionally, he is responsible for sales accounts in South and Southeast Asia, Oceania, Japan and Far East Russia. Elzinga has more than 15 years of experience in the container and refrigeration industries, including management positions with TAL International in Europe and Asia. He succeeds Stephen Elford, who has taken a general management position with Carrier Transicold Australia.

#### **Renze Elzinga**

Carrier Transicold Pte. Ltd.  
251 Jalan Ahmad Ibrahim  
Singapore 629146  
Tel: +65-6213-6222  
Fax: +65-6862-5309  
renze.elzinga@carrier.utc.com



**Tomoaki Kakino** has been named general manager, Container Products for Japan. He is responsible for providing overall leadership and direction for the Japanese operation, as well as business development, customer relations and service center development. Previously Kakino held management positions in Japan with major shipping lines. He succeeds Hirofumi Kamada and Yukio Watanabe, who are retiring.

#### **Tomoaki Kakino**

Carrier Transicold Container Products Ltd.  
3F Mitsui-Bussan Building  
14 Nihon Odori, Naka-ku,  
Yokohama  
231-0021 Japan  
Tel: +81-45-6646272  
Fax: +81-45-6647806  
tomoaki.kakino@carrier.utc.com



**Hai Kuan Lee** has been named regional service manager, Asia-Pacific Operations. Based in Singapore, he is responsible for developing and implementing service strategies and overseeing the service engineers in the region. He has been with Carrier in Singapore for 14 years – nearly 10 in Quality Assurance and followed by his most recent assignment in Service Engineering, where he held responsibilities for the Southeast Asia region.

#### **Hai Kuan Lee**

Carrier Transicold Pte. Ltd.  
251 Jalan Ahmad Ibrahim  
Singapore 629146  
Tel: +65-6213-6211  
Fax: +65-6862-5309  
hai.kuan.lee@carrier.utc.com



**Yu Chen** has been promoted to manager, Container Engineering, with responsibility for leading the engineering teams based in Syracuse and Singapore. She has been with Carrier for 17 years, most recently serving as a project manager in the container refrigeration engineering group, where she consistently demonstrated technical and management capabilities on key projects. She succeeds Paul Chen, who has taken a position as engineering manager for the Carrier Transicold Global Truck and Trailer operation.

#### **Yu Chen**

Carrier Transicold  
Container Engineering  
P.O. Box 4805 TR-20  
Syracuse, NY 13221 U.S.A.  
Tel: +1-315-433-4462  
Fax: +1-315-432-6195  
yu.chen@carrier.utc.com

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+95 95171840 (24 hours)

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Containers Investment Manufacturer Automotion Transport S.A.(CIMAT)  
Contact: Mr. Jaume Vilardebo Plazas  
[jaume@cimat.es](mailto:jaume@cimat.es)  
+34 (93) 3704856 (24 hours)

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Please send your comments and story ideas to:

ContainerLINE  
Carrier Transicold  
Communications Department  
P.O. Box 4805  
Syracuse, New York 13221 U.S.A.

Editors: Anthony D'Angelo, Melanie Heaphy

Telephone: +1-315-433-4750  
FAX: +1-315-432-7683  
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