

New reefer factory lends a hand to Latin American exports

By Soren Leth Johannsen, Chief Commercial Officer

The 11th November 2011 – or better, ‘11.11.11’ – is not only a memorable day for many newly-weds around the world, but also for MCI. This is because of the announcement of our forthcoming reefer production in San Antonio, Chile. The city is ideally located in the largest reefer exporting region in Chile, in close proximity to the container terminals in Valparaiso and Puerto San Antonio. The new reefer factory will also be an obvious option for sourcing reefers for getting Ecuador’s bananas and Peru’s asparagus to market, for example.

The plant is expected to be operating by the end of 2013 and should reach total planned output of 40,000 reefer containers and Star Cool machines within three years. The response to our announcement has been overwhelming and we are today even more convinced about the rationality of our major investment in world trade.

Why is Star Cool called the ‘Tic Tac’ by US truckers?

In this year-end issue of MCI Integrated Reefer News you will, among others, read a rather peculiar article that explains why US truckers on the West Coast have given the Star Cool unit the nickname ‘Tic Tac’.

This year, MCI will again be present at the Intermodal Show that takes place in Hamburg from 29th November to 1st December. At this year’s exhibition, we particularly look forward to presenting the Star Cool controlled atmosphere (CA) system (patented). The Star Cool CA system has proven to be highly effective for commodities like bananas and avocados.

We naturally hope that our CA system will create interest from container lines and fruit companies wishing to offer new and distant destinations to their shippers and customers in an easy and cost-efficient way.

Looking back at 2011, the year has been busy for the whole reefer industry and total reefer production volume will end at a record high. From our perspective at MCI, we are especially happy about the rapid market acceptance of our Integrated reefer concept. New customers have been joining the program all the time, with US-based Crowley Marine Corporation our latest member.

While the first sale is always important, we really measure Star Cool’s success in the ‘repeat order’ ratio: the proportion of new Star Cool customers who come back with their next order. Since the product was introduced in 2006, we have achieved an almost 100% ‘repeat order’ ratio. This is really thanks to our focus on Total Cost of Ownership, service network and energy efficiency with Star Cool, and the evidence is impressive. This year, Star Cool will reach a market share of more than 25%.

I very much hope that you enjoy reading this latest edition of ‘Integrated Reefer News’!





Santiago Rosales prefers carrying Star Cool because it saves fuel.

Star Cool containers reduce fuel expenses

US truckers prefer Star Cool containers because of reduced fuel expenses and less noise

Santiago Rosales, an independent trucker in California, has to pay for all diesel used for his truck and generator up front. That means he has a strong incentive to keep diesel consumption costs as low as possible, but it is not an easy job in a country where the retail price of a gallon of diesel, according to US Energy Information Administration, went from \$2.10 to \$4.71 between February 2007 and September 2011.

That is why Mr. Rosales, like other long haul truckers, has come to like carrying a Star Cool container refrigeration unit powered by an economy generator set, because it makes it possible to drive long distances without refueling at all. The economy generator sets are the newest offerings that have the ability to lower the supply frequency from 60 hz to 50 hz once the cargo is in temperature range.

MCI heard about Mr. Rosales and the other truckers on a routine visit to Three Harbors, an off-dock depot in Oakland, California –

and decided to investigate the claim further to get some numbers and facts to validate the perceived benefits. So, over a three-month period, MCI interviewed some of the long haul truckers who stopped by Three Harbors and had them deliver data on time and date of pick up & delivery, initial and final fuel levels in gallons, pickup and delivery locations noting the actual miles driven and trip time in hours as well as cargo type, initial temperature and set point.

The data collected confirmed the truckers' story. Based on the gallons/hour metric findings, MCI noted that carrying a Star Cool refrigeration unit powered by either type of generator set delivers the most savings. Notably, there was even a 21.98% saving powering a Star Cool refrigeration unit via a single frequency generator set when compared to an other cooling unit powered by a dual frequency generator set.



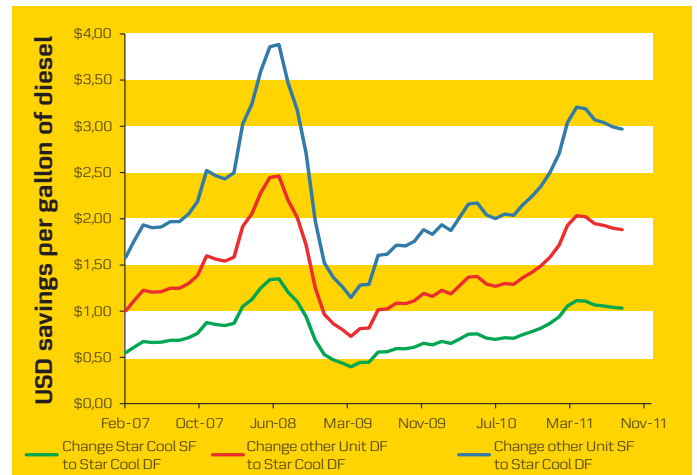
Cooling Unit OEM	Generator Set Type	Miles (average)	Hours (average)	Diesel Gallons Used (average)	Miles/Gallons	Gallons/Hour
Star Cool (SC)	Dual Frequency (DF)	1,614	49	31	52.28	0.63
Star Cool (SC)	Single Frequency (SF)	1,418	47	40	35.24	0.86
Other brand	Dual Frequency (DF)	1,362	38	40	33.93	1.05
Other brand	Single Frequency (SF)	1,372	40	51	26.70	1.29

◀ Data provided by truckers shows e.g. that there is a 22% saving powering a Star Cool refrigeration unit via a single frequency generator set when compared to other cooling units powered by a dual frequency generator set.

▼ The graph shows savings by using Star Cool dual frequency compared to other units. Savings are influenced by diesel prices.

In retrospect, looking at the recorded dates, when powering a Star Cool refrigeration unit via a dual frequency generator set, customers could expect to save up to \$2.28 per gallon of diesel consumed over other units set with a single frequency generator.

In the course of the interviews, the truckers also pointed out other benefits from using the Star Cool refrigeration unit. The Star Cool units are the quietest when holding the cargo at set point. In fact, when measured 1.5 meters in front of the unit and 1.2 meters above the ground with the unit operating at 50 hz, the noise level is less than 75 dB at 250 hz band. This makes it the quietest unit in the industry when the unit is holding temperature. In fact, some of the truckers refer to our units as the "Tic Tac" simply because this is all they hear when the unit is at set point. Truckers welcome this noise reduction as it helps them sleep better at night, take telephone calls in proximity to a running unit, etc.

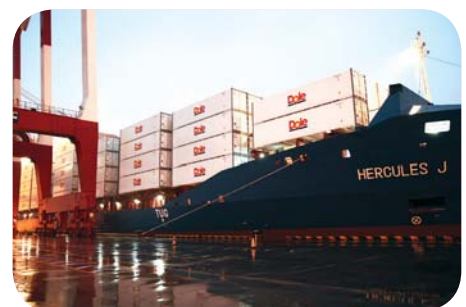
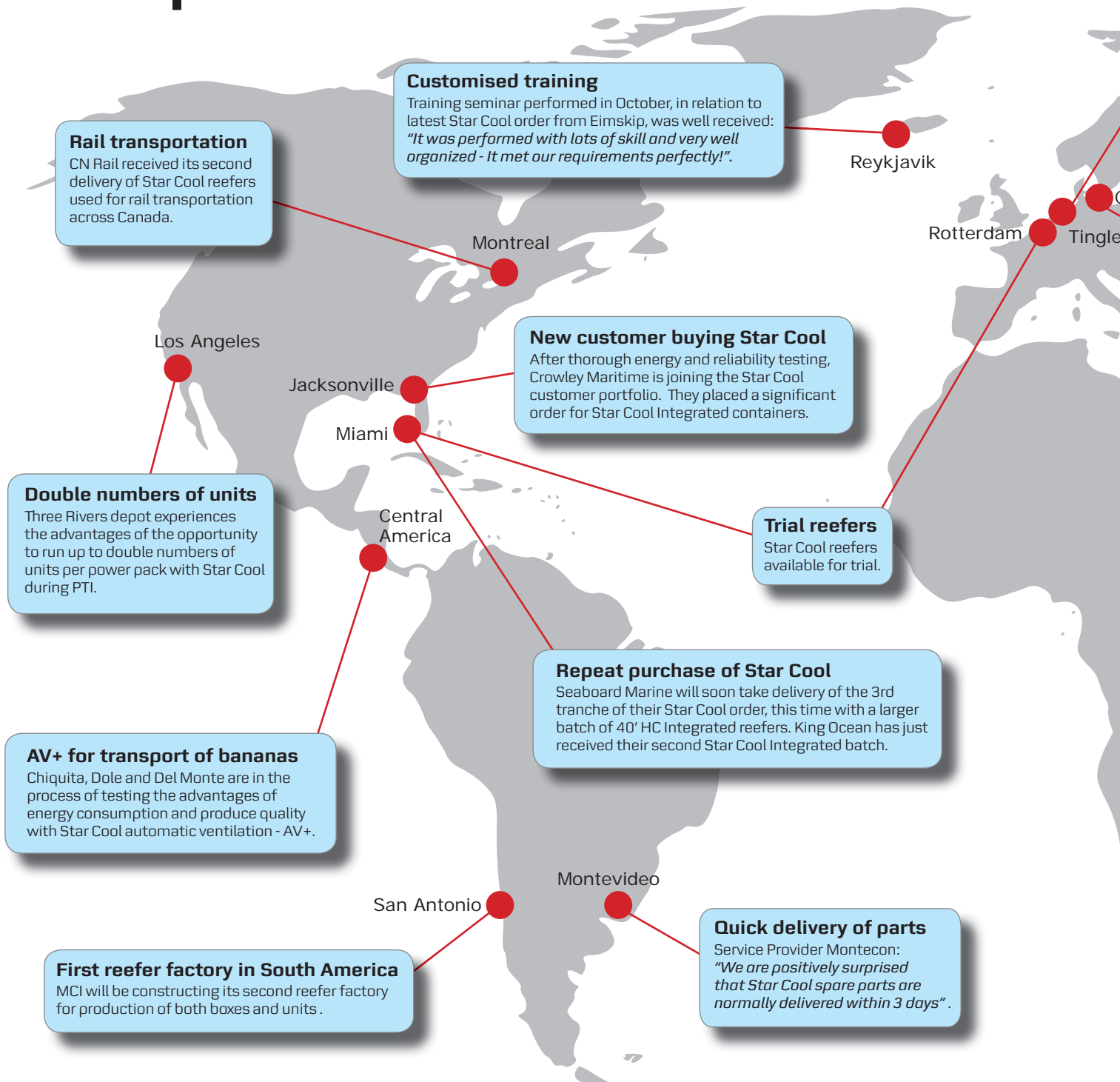


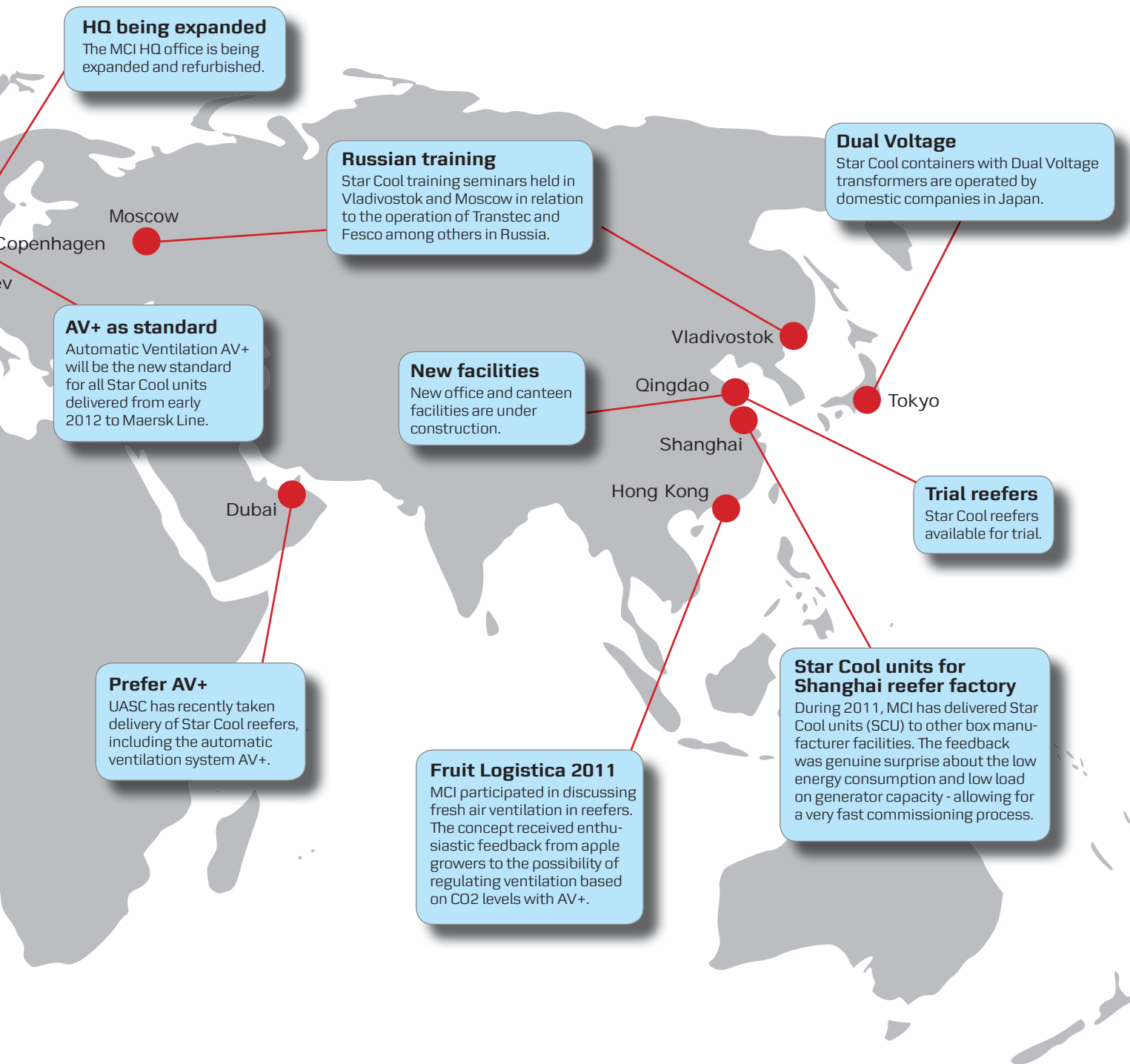
Furthermore, thanks to the largest display in the industry, the Star Cool unit displays the supply and return temperature sensors as well as the discharge & suction pressure readings on the main screen. Because of this, there is no need for additional keystrokes to check these parameters. The unit also offers the ability to display a fatal alarm should the air exchange be open when carrying a frozen cargo.



Star Cool is also the quietest reefer machine. Rosales only hears the "Tic Tac" when the unit is at set point.

A snapshot of MCI worldwide







▲ Topcoat paint on containers understructure

Hand in Hand on quality improvements

At MCI, we work closely with our customers to improve the container understructure's quality, both in terms of durability and environmental impact.

The understructure of a container is particularly subject to the harsh elements of shipping – both during handling and when sitting on the ground. It can be placed in water or on uneven ground and this handling will, over time, degrade the protective coating and expose the container base to the harsh elements.

Bituminous undercoating has traditionally been used in the dry van container industry to act as a protective layer for the wooden base, and the Corten or mild steel under structure X-members, which otherwise lie exposed to the elements. It is a relatively low-cost solution, which requires no particular facilities during production. The undercoat itself is never fully cured, giving it the benefit of being "self recovering" for small scratches, but to its detriment it is easily damaged when touched during handling. Even in the dry van industry, some users suggest that it is better to leave the wooden under-structure of a dry van container uncoated as there is a risk of trapping water underneath the bituminous coat. The use of bituminous coating is therefore still a much debated subject. Nonetheless, the system has been generally transferred to refrigerated container production.

For reefer containers, the issue of protecting the under-structure is slightly different. Because a reefer transports food, a clean appearance is important. Unfortunately, bituminous material contaminates other containers constantly because this material is

never completely cured. That creates a poor cosmetic appearance on a piece of equipment meant for food transport.

Since 2000, many customers have, therefore, gradually switched to using topcoat paint for their understructure, because paint protects better against damage. With the creation of the Mark Q container with raised base design, base damage and repair frequency were reduced considerably. Fortunately, most MCI customers recognize this and have fully switched to topcoating base panels.

Undercoat rust protection contains solvents - harmful Volatile Organic Compounds (VOCs). The same can be said for normal paint, but paint is completely cured after the paint process unlike undercoating - hence there are no discomforts for the factory workers working on the line after understructure paint application. Undercoat itself further contains harmful materials like tar. MCI has successfully removed most VOCs from production in the past years through changes of e.g. bond material and/or by enclosing the areas of application.

The cooperation between MCI and our customers has been a success. Exchange of views, know-how and experience lead to superior design and improved containers in terms of quality, environment and worker safety. ■



▶ A reefer transports foodstuffs so it is like your refrigerator at home. It needs to look nice and white and provide you with a feeling of cleanliness.



Star Cool means **operational efficiency**

Energy efficiency, low current draw and a high power factor combine to allow Star Cool equipment operators to enjoy unique benefits.

Star Cool's Service Manager for the Americas, Ben Hernandez, often visits our customers' depots and terminals in his region. During one of these routine visits, Ben was reminded of the unique benefits of the Star Cool system as he was informed of the additional throughput of Pre Trip Inspections (PTI) that was achieved at Three Harbors in Wilmington, CA, near the port of Long Beach.

Three Harbors carries out from 150 to 200 PTIs per week during the low season and up to 300 per week during peak season. Each unit requires up to 3.5 hrs to complete. To ensure the throughput for their main reefer customer MOL, Three Harbors utilizes two large diesel power packs to keep up with demand. The power packs are fitted with 24 and 12 reefer plugs respectively. This usually limits the number of units that can be connected at the same time, but an additional limit is often reached when fewer units are connected that can overload generating capacity.

Three Harbors discovered that when connecting the Star Cool units to their power packs, they never hit the power pack operating limits. In addition, they are able to connect even more Star Cool units through the use of "splitters", or double adaptors.

The Star Cool unit is designed to use a 16 amp main circuit breaker, and unlike other machines with fixed speed compressors, it has a very low starting current and always maintains a very high power factor, allowing two units to run on a single 32amp reefer power outlet. So far, Three Harbors have been able to run up to 35 Star Cool PTIs concurrently on the 24 plug, 275 kVA power pack. This limit is only due to the number of splitters that they have available, so with



▲ The final stage in manufacturing a reefer box is to commission the machine. This involves running the machines through a full PTI and operational test while connected to mains power.

the addition of more splitters, they expect to further expand their capabilities for higher PTI throughput.

Star Cool's Service Manager for China, Michael Xu, has also recently observed similar benefits while in Shanghai during the commissioning of Star Cool units at a non-MCI reefer box factory. The final stage in manufacturing a reefer box is to commission the machine. This involves running the machines through a full PTI and operational test while connected to mains power. There was concern from the factory regarding the number of reefer units that could run the commissioning tests at the same time, as their experience showed that more than 120 would trip the main circuit breaker. They were amazed to find that more and more Star Cool reefers were able to be started without tripping the breaker and the only limitation was the yard space to place more units. Consequently, the commissioning was completed ahead of schedule, freeing up yard space and contributing to greater efficiencies for the box factory. ■

Is it possible **to save Star Cool** from a damaged integrated box?

This question was raised by Mitsui O.S.K Line (MOL) who had a "total-loss" leased Star Cool Integrated container on their hands. Many lines prohibit "swaps" of old reefer units into new containers, but MOL and owners TAL agreed on such a swap with the help of MCI in order to have a new integrated container built and the undamaged parts of the Star Cool Integrated unit transferred into the new container.



During April, the container was brought to MCI and it was determined that almost all of the Star Cool machine parts were functional. Star Cool Integrated is a modular design, which also makes removal and re-fitting somewhat easier.

MCI completed the job of building a new integrated reefer container and re-fitting the Star Cool components during May and has now developed a standard operating procedure (SOP) for this job. The SOP will be available on the Star Cool E-Sales system.

MCI is grateful to TAL and MOL for this opportunity to demonstrate that the very rare occurrence of a "unit swap" is also possible for the Star Cool Integrated design – and with a superior result; a new Star Cool Integrated is a better solution than a new box and an old "picture frame". ■

◀ Star Cool Integrated is a modular design, which also makes removal and re-fitting somewhat easier.

Star Cool Service Meeting

Many independent companies combine to form Star Cool's service provider network. As part of the continuing development of this network, Star Cool recently invited our service providers in Asia to a business meeting in Qingdao, China.



The Star Cool Service group is in constant contact with our service providers through email, phone, on-site training and visits. However, there were unique benefits to be gained when we decided to gather together the senior management of these diverse companies in one place. The key objectives of this meeting were for the attendees to gain an understanding of our company, our products and to appreciate what makes us different from our colleagues in the industry. The Star Cool service staff from Denmark, China and Singapore also received valuable feedback during the various discussions relating to performance, procedures, business interactions and general industry practices.

The one-day meeting in Qingdao city was complemented with a further full day visit to the MCI Qingdao facility where participants were able to see the world's most impressive reefer container and machinery factory.

Star Cool's service provider network now includes over 300 company locations around the globe, and their contact details can be found at the website www.starcool.dk under the "Service" tab.

The next regional meeting for Star Cool service providers will be held in conjunction with the European Intermodal Exhibition in Hamburg.



◀ The service meeting for Star Cool was well attended by 60 people from 14 different countries across Asia.

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