



# Chile gets ready

By Soren Leth Johannsen, Chief Commercial Officer

By now, everything has been brought 'under one roof' at our new MCI reefer factory in San Antonio (MCIS) in Chile. Production is expected to commence in less than just 3 months' time.

When authorisation approval from the Chilean authorities to commence construction of MCIS was granted back in February 2013, a real industrial revolution happened in central Chile. 14 months later, machinery installation is ongoing under the completed roof and the first group of 120 production workers has already joined the MCIS organisation. Between now and the end of this year, the gradual arrival of a further 900 blue-collar colleagues will enable us to ramp up capacity.

While all this is happening, tailored training programs are being run for around 750 people under the management of the National Training and Employment Service (SENCE in Spanish). During this training period, people from different areas of San Antonio province will be attending classes in industrial welding, painting and robotic operations, as well as quality control and lean concepts. These are all highly important skills, not just for MCI but also for the future career opportunities of the individual people involved.

MCIS is currently a hive of multicultural activity, with a mix of workers from local subcontracting companies working on the buildings, while foreign workers from China, Poland, France, Italy, Spain, Denmark and Germany install the machinery. For sure, San Antonio has never before played host to such a diverse mix of nationalities! We will continue to keep you updated about progress in Chile.

## Fully responsible

This latest issue of Integrated Reefer News features some great real-world stories about the operation of our products. Among other things, we revisit some past stories concerning positive experiences of repairing damaged integrated reefers at depots, this time with detailed coverage of a damaged corner post replacement.

Integrated reefers offer many benefits, but one of the most important is when they are used in combination with CA shipments, where air-tightness is a prerequisite. An air leakage during the CA shipment makes it impossible to control the correct CO<sub>2</sub> and O<sub>2</sub> levels, with the risk that the cargo will be ruined. With the Star Cool CA system, responsibility for air-tightness is always clear. Not only is the MCI Integrated design subsequently more air-tight than a normal box and unit bolted together, but MCI is also solely responsible for both the box and the machine.

This issue also includes a fascinating insight into rail transport in Russia, with its vast distances and extreme weather conditions. The newly developed genset ProGressor has proved its ability to perform 40-day non-stop trips to the remotest regions of this huge country. The specially designed gensets each run two Star Cool reefers simultaneously, providing increased performance and a much larger transportation window. I hope you will find our latest newsletter interesting!





Hot-melt glue distributes the stress over a larger area. This can be seen as small threads when trying to separate the panel from the foam.

# Minimising Delamination

## Hot-melt glue - up to 5 times stronger than traditional adhesives

One of the most frequent and costly repairs on reefers is delamination. A delaminated reefer does not comply with ISO standards and must immediately be removed from operation for repair. Delamination decreases the insulation value too and means that more energy is consumed in maintaining the internal temperature of the reefer box. The stiffness of the side-wall is also reduced by delamination, making it prone to even more delamination and damage. Delamination is a vicious spiral.

That is why we have introduced a new type of foam adhesion to improve resistance to delamination of reefers side-walls.

### Tested more than 100 different alternatives

Improving product quality involves testing many alternative materials and production processes to ensure that the quality of the final reefers is not compromised. This was certainly the case when MCI began looking into foam adhesion as part of our constant search for even better product quality and production methods.

Tests were also performed in cooperation with our polyurethane foam supplier Bayer. "The tests were very impressive - I have never seen such strong foam adhesion before", said Erik Larsen, R&D Manager from Bayer Material Science A/S in Denmark.



In the course of this process, MCI tested more than 100 different alternatives to be 100% sure that a new primer offered at least the same level of adhesion under any given conditions. During our research, we came across a type of glue used to bond fabrics to the roof inside car cabins. Working together with the supplier of this glue, we developed and improved its capabilities to suit the requirements of reefers.

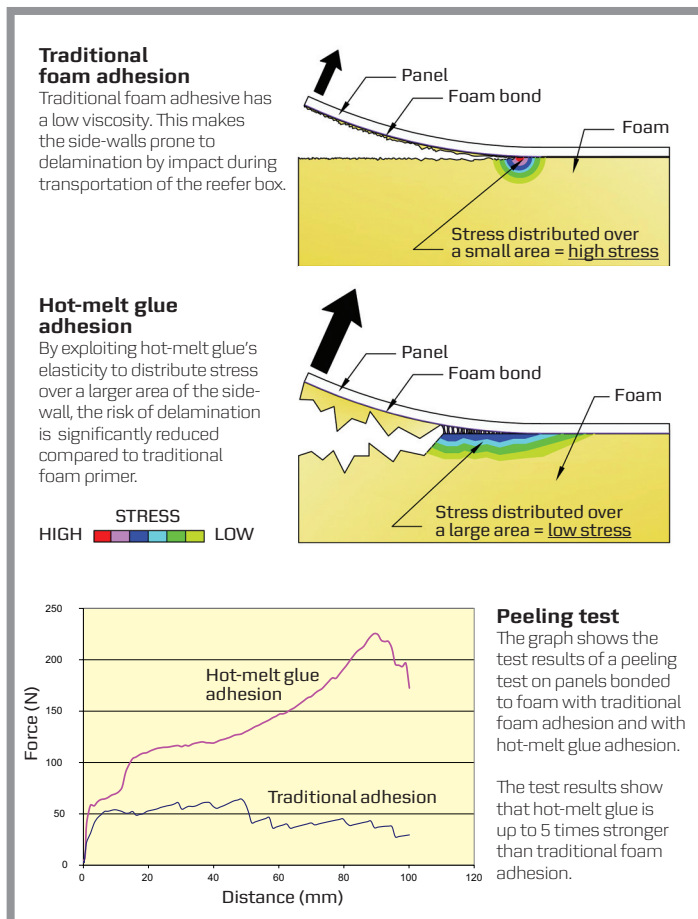
The special feature of this glue is that it has very high elasticity at low temperatures. However, it also needs to be heated to more than 150°C to achieve the viscosity necessary to apply it in the optimum way. That is why we call it "hot-melt glue".

### Up to 5 times stronger

Handling hot-melt glue is more complex than traditional foam primers. It requires precision and accurate machinery to apply the correct amount of hot-melt glue to the panels at the correct temperature and in the right pattern. However, once you succeed in mastering the technicalities of this process, the result is highly elastic and strong foam adhesion. During tests, we found that hot-melt glue was up to 5 times stronger than traditional foam adhesion.

The improved strength is achieved by using the glue's elasticity to distribute stress over a larger area than traditional foam primer. This significantly reduces the risk of side-wall delamination.

Since 2010, all MCI Mark Q reefer containers have been manufactured using hot-melt glue for foam adhesion in side-walls. No volatile organic compounds are released during application, which helps to maintain a healthy and safe working environment on the production line.





# One genset Two reefers



Two Star Cool units can be electrified using a single 32 amp power outlet.

Russia covers a vast land mass. With remote regions and extreme weather conditions, railways are sometimes the only way to transport goods in the winter. This creates an ongoing need to deliver goods in reefers by railways to smaller cities throughout Russia and the CIS countries.

Dmitry Kelarev from Transtec Ltd. explains: "Traditional clip-on gensets are not a suitable solution because of the climate conditions and vast distances in Russia. For example, a fuel tank on a clip-on genset is only sufficient for six days of non-stop working, whereas the distance between, for example, Moscow and Berkakit in South Yakutia is 7,500 km: a journey that takes 20 days, even at a high speed."

To meet this need, a new special genset has been developed by the company PROCONTAINER, a member of the TRANSTEC Group. Named ADGU-ProGressor-01 (ProGressor), the new genset meets the requirements of all-year-round and extra-long-distance railway transport in Russia and the CIS countries.

ProGressor has been approved by the Russian Railways (RZD) and is already being used for transportation of sensitive goods in Russia. It features a large fuel tank with a capacity of 2,000 litres. This allows it to work for 40 days non-stop and has enabled the new genset to prove its high reliability on the Moscow-Vladivostok-Moscow run without any additional stops in between.

From the outset of the project, the ProGressor development team has been using the Star Cool reefer unit because it is designed never to exceed 16 amp current draw. That means that Star Cool is the only unit on the market able to operate 2 units on a single 32 amp reefer power outlet. Thanks to the super-efficient Star Cool unit, the ProGressor is able to electrify two reefer containers at once without any additional auxiliary generator.

"Thanks to the collaboration between the ProGressor genset and the Star Cool unit, it is now even possible to deliver a single reefer container loaded with the most sensitive cargo to the smallest Russian railway station while still making a profit", Dmitry Kelarev concludes.



# Replacing a corner post

## - easiest on integrated reefers

It rarely happens, but a reefer can be damaged so severely that one of the corner posts is broken. Unfortunately, this happened to a Star Cool Integrated Reefer. Due to IICL regulations and the shipping line's maintenance policy, repairing the broken section of the post was not acceptable in this case. The entire corner post had to be replaced.

### Integrated reefers require less work

Mr Ki Wi Lee from G.I.E Container Service Co, Ltd ([www.gieservice.net](http://www.gieservice.net)) was responsible for this repair. He has been working on repairs of heavily damaged reefer containers since 2000, both in China and Korea. He believes that this type of repair requires less work on an integrated reefer than on a picture-frame type. As he explained: "If this was a picture-frame type, both the box and the reefer machine would need repairing. That requires a lot of work on both disassembly and reassembly of the internal parts and the picture-frame reefer machine. On integrated reefers, by comparison, the need for disassembly is limited thanks to the small number of parts involved."



The damaged reefer



During repair. Very few machine parts need to be dismantled before the repair.



After repair

Moreover, the frame on the picture-frame unit is made of aluminium. During repair, it requires totally different handling when it comes to welding and painting. This makes repairs more complicated when both the box and the picture-frame unit are damaged.

In this case, it was only necessary to dismantle a cover plate, the fresh air module and the unit back cover inside the reefer before the repair could begin. This is a real eye-opener for people who expect repairs on integrated reefers to be more complicated and expensive. This is clearly not the case. The actual man-hours used on this repair were maximum 55.

### ISO structural strength test passed

Although more than 100,000 Star Cool integrated reefers are currently in operation, MCI has little experience with repairs of this kind. For this reason, once the repair was complete, MCI organised for the reefer to be sent to the MCIQ reefer factory in Qingdao for an ISO structural strength test. The result of the stacking test according to ISO standard 1496/1 was 0 mm deformation after 102 tons stacking load: exactly the same as for a brand new reefer.

## Star Cool service training

*Dates and locations are subject to change, depending on circumstances.*

Join one of our service training programmes and learn how to correctly and efficiently repair Star Cool reefers.

Enrolment is free and anyone wishing to attend a training session should go the website:

<http://training.starcool.com>

When	Where	What
May	Dominican Republic	Santo Domingo
May	USA	Puerto Rico
May	South Africa	Cape Town
May	Paraguay	Asunción
May	India	Mumbai
May	Korea	Busan
May	Mexico	Altamira
May	Mexico	Veracruz
May	USA	JAX
May	USA	Miami
May	Holland/Belgium	ROT/ANT
May	Belgium	Antwerp
June	Japan	Fukuoka
June	Japan	Tokyo
June	Japan	Kobe
Jun	Canada	Vancouver
Jun	Italy	Livorno

When	Where	What
Jun	China	Dalian
Jun	USA	Houston
Jul	Chile	San Antonio
Jul	Thailand	Bangkok
Jul	USA	Chicago
Aug	Spain	Algeciras
Aug	Spain	Valencia
Aug	Spain	Barcelona
Aug	Spain	Bilbao
Aug	China	Qingdao
Aug	Costa Rica	Limon
Aug	Mexico	Lazaro Cardenas
Aug	Mexico	Manzanillo
Aug	Panama	Colon
Sep	Korea	Incheon
Sep	Guatemala	Puerto Barrios
Sep	Honduras	San Pedro Sula
Sep	Belgium	ANT/ZEE

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