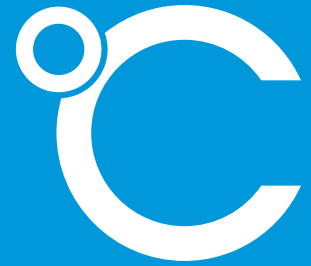


DAIKIN



DEGREE CELSIUS

Winter 2010

THE NEWSLETTER FROM DAIKIN REEFER

150,000 units sold
134 customers

The LXE10E
reefer unit
goes from
strength to
strength



LXE10E

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Welcome

President's review of the year: recovering but still challenging

Welcome to the eighth edition of our Newsletter °C. This year, we are very proud to celebrate the tenth anniversary of the LXE10E scroll compressor container refrigeration unit. I invite you to join us in charting the progress of the LXE10E and seeing what continues to make this the top-selling scroll compressor machine in a competitive market.

As 2010 draws to a close, we look at how the industry has performed this year in the wake of the global downturn. The market has relied on finance from leasing companies during the year and Europe, still restricted by financial constraints, has not recovered as fast as predicted.

However, there are signs that global business is recovering. The Asian market has been the most bullish this year, with growth running higher than the rest of the world.

Daikin has made considerable sales to nine of the major Asian container carriers and lessors in 2010, including Florens, Hanjin, Heung-A, Jiangsu Sky, OOCL, PIL, Pyeonghwa, WHL and YML. We also enjoyed good sales in Europe with more LXE10Es going to Hamburg Sud and CMA CGM. From January to October, Daikin's sales in Asia represented a 37% market share. Worldwide, our 2010 annual sales as of this October represent a 21% market share.

requirements. It's estimated that global container fleets need to increase by 5-7% as a result of slow steaming and indications show this trend is here to stay.

Prospects for next year have improved, but will depend on freight rates stabilizing or increasing. Freight rates would have to increase by 20% before slow steaming is abolished.

While the reefer trades have remained strong through the global downturn, ocean carriers continue to face a challenging situation. Greater focus

Growth is higher in the Asian market than the rest of the world

is being placed on operational efficiencies, cost containment and optimal asset utilisation. Daikin remains committed to continued technology developments to provide the best machine for our customers.

This year at the Intermodal Europe trade fair in Amsterdam, we will be introducing our concepts for future technology. We look forward to your visit and feedback.

2010 has also seen a growth in Daikin's sales to the domestic market. In this issue, we look at how we are supporting this and focus on one of our partners in this area. We hope you enjoy this issue and value your comments – you can contact us at info@daikinreefer.com



This issue's welcome letter comes from Daikin Reefer's President, Katsuyuki Sawai.

The year started well thanks to strong sales to leasing companies, with Daikin ranked the number one manufacturer, based on commissioning figures. These figures are calculated using the date that units are commissioned and officially enter service, which is regarded as most precise way of measuring units entering the world fleet.

A lot of the growth this year has been a result of slow steaming. With containers spending longer at sea, larger fleets are needed to cater for operational



10 years at the top

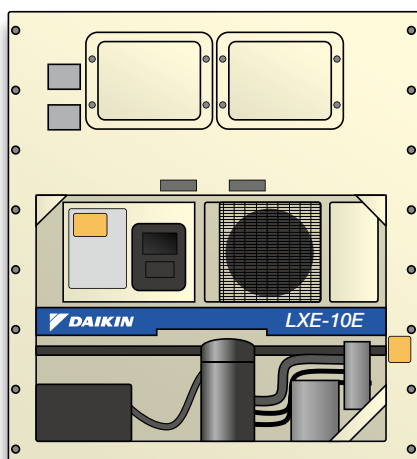
Celebrating the tenth anniversary of the LXE10E reefer unit

Embodying Daikin's core philosophy of quality, performance and reliability, the LXE10E scroll compressor reefer machine has gained rapid market acceptance by shipping lines, and subsequently leasing companies, since its introduction in 2001.

By 2004 Daikin had already become the number two supplier of reefer machinery to the container industry and the global leader in production

There are more than 150,000 LXE10E units in the market

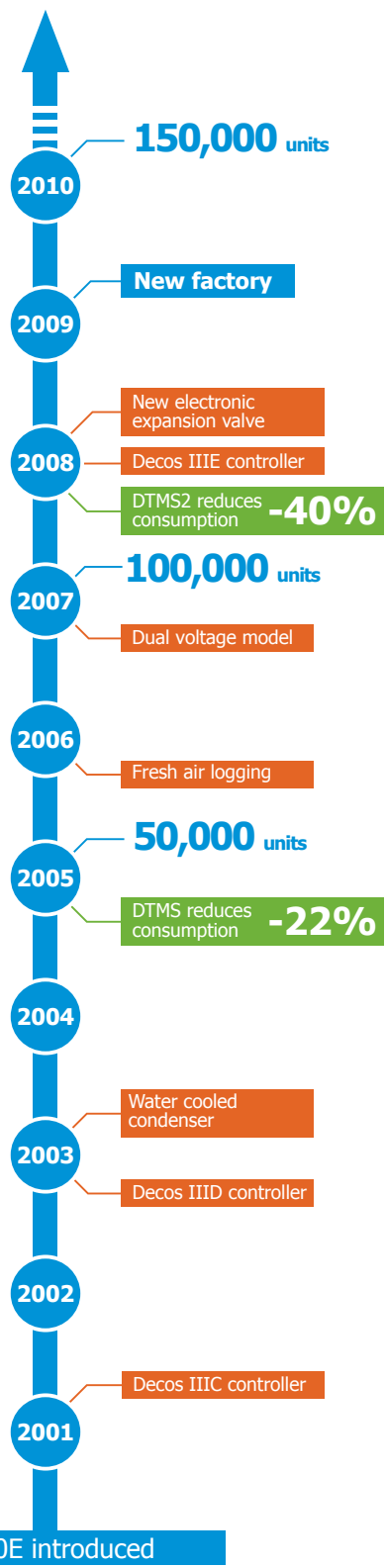
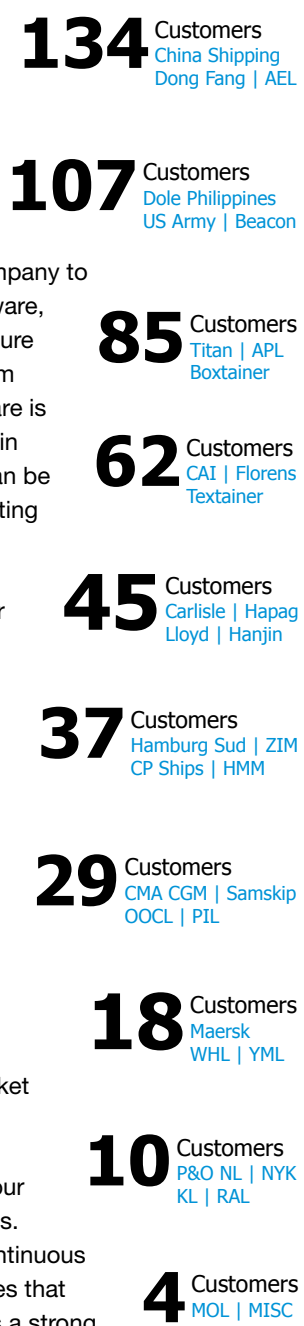
and sales of scroll units. Now nearing the end of 2010, we have over 130 customers worldwide for the LXE10E, with over 150,000 units in the market. This represents almost 20% of the world's refrigerated container fleet.

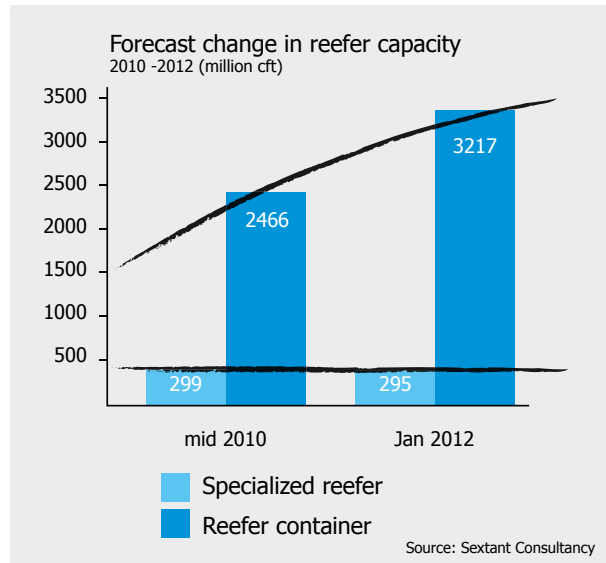
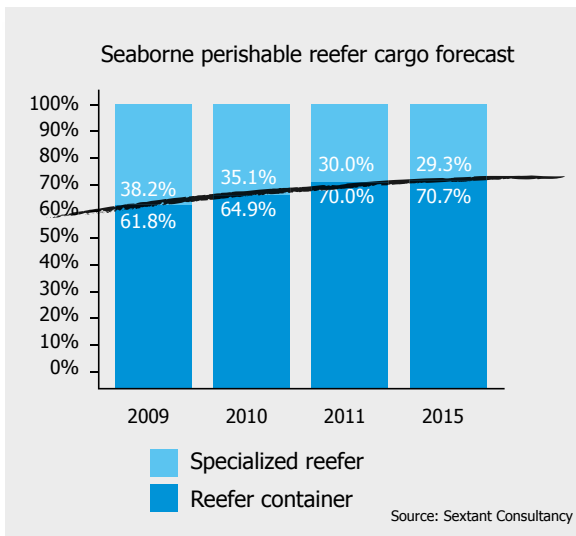


The LXE10E has proven itself in the field and continues to do so.

Daikin was the first in the container industry to produce power-reducing software for reefer container machines. We are still the only company to make our own software, the Daikin Temperature Management System (DTMS). This software is standard on all Daikin LXE-10 units and can be retrofitted to all existing units, enabling our customers to enjoy the benefits of lower power consumption across their entire fleet, not just on new machines. Latest versions of the DTMS software come as standard on new machines, keeping our unit one of the leaders in reducing power consumption.

The increase in market share demonstrates the confidence that customers have in our product and services. A programme of continuous improvement ensures that the LXE10E remains a strong contender both in power consumption and accurate temperature control.





The bar charts above show how reefer container use is on the increase, whilst specialised reefer vessels are in decline.

Market focus

Containership fleet set to increase reefer capacity

Demand for specialised reefer vessels is going down, as container vessels take an ever bigger share of chilled and frozen cargo.

Industry forecasts from Drewry Shipping Consultants and other respected analysts concur that the specialised reefer vessel fleet will continue to shrink over the coming years, with container vessels taking a larger percentage of the total seaborne trade in chilled and frozen cargoes. The latest container vessels coming on stream and on order also have a higher number of reefer slots than in previous generations.

As of June 2010, the specialized reefer fleet is 727 vessels, providing 248 million cubic feet of capacity. The average vessel age is 25 years, but with a limited order book for new tonnage, the fleet continues to grow older.

Drewry forecasts that the current reefer vessel fleet will reduce to 613 vessels by January 2015, based on a scrapping age of 35 years. However, the average age of

scrapped reefer vessels over the past two years is actually only 30 years. If vessels continue to be scrapped at this lower age, the fleet will have reduced significantly to 474

The current new building order book comprises 735 container vessels, with a higher average reefer capacity

vessels by January 2015. A reduction of 16-35% in vessel numbers seems probable over the next four to five years.

By contrast, the containership fleet continues to grow, although the global downturn has impacted the trend over the past two years. The current new building order book comprises 735 vessels, with a higher average reefer capacity than the existing containership fleet.

Customer focus

How Daikin is working with Orient Overseas Container Line

OOCL, one of the best-known brands in international reefer container transport, has awarded Daikin with the largest share of its new equipment orders for 2010.

Orient Overseas Container Line (OOCL) is one of the best-known names in the world of containerised logistics and transport for perishable cargoes. Active in Asia, Europe, North America and Australasia, the Hong Kong-based company has built a strong reputation as a specialist in reefer logistics, including ocean carriage and intermodal transport services. OOCL has pioneered the movement of reefer containers by rail in China.

Ranked by AXS Alphaliner as the 14th largest container carrier in the world, OOCL currently operates 80 vessels with total slot capacity of 359,319 TEU (as of 29 October 2010). Its fleet is one of the youngest in the world and six new 8,600 TEU vessels are currently on order for 2011 and 2013 delivery.

OOCL also invests substantially in container technology, operating a fleet of over 12,000 reefer boxes including 20ft, 40ft and 40ft-high cube units. Daikin is very proud to have been highly evaluated by the company and to have secured the largest share of OOCL's new reefer purchases for 2010.

According to OOCL, "Daikin's professionalism in precise temperature control combined with energy saving is a very important factor in our evaluation. Daikin does not

focus purely on energy savings, but also pays very close attention to temperature control as the most important factor in a reefer unit."

Daikin's philosophy matches that of OOCL's, which ranks precise temperature control as its most important requirement, ahead of energy saving. Our technologies for ongoing enhancement and development in functional

"Daikin's professionalism in precise temperature control combined with energy saving is very important to us"

capabilities with the same product line LXE10E are unique and attractive to reefer owners from both operational and asset management point of views.

OOCL also cited the reliability of the Daikin unit, with the industry's lowest machine failure ratio, as a key factor. "The lowest failure ratio leads to the lowest risk on commercial loss and cargo claims. As a professional reefer handler, this is the one of the most important aspects to ensure the satisfaction of our shipper customers."



Orient Overseas Container Line (OOCL) is a specialist in reefer logistics.

A blurred high-speed train with a maroon and white livery is moving through a stone tunnel. The train is captured in motion, creating a sense of speed. The tunnel's interior is dark, with a small light source visible in the distance. The stone arch of the tunnel is visible at the top left.

Market focus

Russia is proving to be a new growth market

As fresh fruit and vegetable consumption rises in Russia, our robust, high-quality reefer units are really proving their worth.

The Trans Siberian Railway (photo left, and route below) is 9,259km long and a key part of Russian cargo transport. To travel the whole line takes eight days.



Following the downturn of 2009, Russian ports have started to recover. This year, the country's main port, St Petersburg – which handles 55% of Russia's container traffic – has grown by more than 20% compared with 2009, when it handled 1.34m TEU.

Reefer cargoes through St Petersburg typically include fresh fruit and vegetables, especially bananas. Recent times have also seen a growing role for the Port of Novorossiysk, with more reefer imports routed via the

The Daikin unit is perfectly designed to withstand the harsh Russian climate and great transit distances

Black Sea port to avoid congestion at St Petersburg. Novorossiysk is becoming increasingly popular for lines operating in the Mediterranean as a gateway into the Russian market.

The current Russian perishables market is focused strongly on fresh fruit imports, particularly bananas, with the majority coming from Ecuador. Traditionally, the fruit import trade has been dominated by specialist reefer vessels, but reefer containers are increasingly being used to move the cargo to Russia.

For instance, JFC, which commands 25% of Russia's banana import market, has been steadily increasing its reefer container fleet for imports through St Petersburg. Cargo in reefer containers

The principal reefer cargo to St Petersburg is fresh fruit and vegetables, especially bananas.



is forecast to increase year on year to all Russian ports and the range of products shipped also continues to increase as Russian consumers enjoy the growing choice of newly available fruits. The majority of reefer cargoes entering Russia are unstuffed at St Petersburg and Novorossiysk, then moved by rail or truck to Moscow. Imports through Vladivostok are moved via the Trans Siberian Railway (TSR).

Russia is a vast territory and the TSR is a major artery for cargo movements across the country. At 9,259 kilometres (5,753 miles), it is the third longest single service rail route in the world, spanning seven time zones. On average, it takes eight days to complete a journey from Vladivostok to Moscow. In the first six months of this year, 426,000 TEU is reported to have moved on the TSR, up 20% compared to the same period last year. Some 163,00 TEU of this was international traffic, up an impressive 32% on last year.

The high quality and robust construction of Daikin's reefer units ensures that they can withstand both the harsh Russian climate and the great transit distances often involved. With the diverse temperature ranges experienced in Russia, the Daikin unit is perfectly designed to operate with its hot gas operating system (see p14).

During operation, this also benefits the carriage of cargo, as defrost cycles are quicker and the unit therefore manages cargo set temperatures for longer periods of time compared to competitor units.

All this has led to a growing market in Russia for Daikin, not only with shipping lines and transport companies,



but also towards eventual sale to the second-hand and domestic storage markets. Daikin have been engaging with many companies based in St Petersburg and Moscow, introducing them to the benefits and cost savings that they could enjoy by owning and operating Daikin units.

These introductions, known as Touch and Feel (T&F) seminars (see p9), support Daikin's existing training programme for more specialised technical personnel. For dates and information on T&F seminars and training, visit Daikin's website, www.daikinservice.com

Domestic storage in Russia

Historically, the Russian market has used second-hand shipping line reefer containers for domestic storage.

With the reduced availability of second-hand units, there is more demand for new equipment

However, a significant slowdown in reefer box disposal by shipping lines has dramatically reduced availability of second-hand units. As a result, the market is now starting to use new equipment as well.

Daikin users in the domestic market gain from the same benefits that our shipping line and leasing company customers enjoy. This includes access to future releases of Daikin's DTMS software which, once uploaded, will allow older units to operate in the most economical and power-efficient way, unlike competitors' older models, which will remain power hungry for the rest of their working life.

Daikin network in Russia

Daikin has substantially increased its presence in Russia, with 14 service points now supporting customers operating Daikin units. For further information, please contact:

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T&F seminars

Your chance to touch and feel a Daikin unit

Riding on the success of our Touch & Feel (T&F) seminar outreach programme, we're now offering bespoke sessions, tailored to your needs.

Daikin started the T&F trail back in 2008, taking our units on the road to give industry people a chance to familiarise themselves with our technology. At every T&F seminar, members of our highly trained service team are on hand to walk and talk you through the features of the machine and answer your questions. From next year, we are planning to open up the availability of these seminars to give your company or team better access to understanding our machine.

What does our T&F training offer?

- General overview of how the unit operates
- Walkthrough of features
- Introduction to main components and software
- Differences between our unit and our competitors'

Benefits to your team

- Hands-on opportunity to understand Daikin technology
- Learning first-hand how to use the unit
- Opportunity to speak directly to our service team
- Building relationships with the Daikin team

To find out more...

If you'd like to arrange a bespoke T&F in your area, contact info@daikinreefer.com.

For details of T&Fs, visit www.daikinreefer.com. Seminars are planned for Korea, Taiwan, China, New Zealand, Costa Rica, Chile, Brazil and the USA.

We look forward to seeing you there!



Conference review

This year's Cool Logistics took place in Hamburg, Germany

President Katsuyuki Sawai introduced Daikin's plans for saving energy and improving temperature management and humidity control in future reefer design.

The third Cool Logistics conference was held in Hamburg, Germany, 20-22 September. It was attended by 160 members of the global perishable transport and logistics community, with 24 countries represented.

This year, the theme for Cool Logistics 2010 was "Ethics, Environment & Efficiencies". Daikin supported the

Inverter technology holds out the promise of larger power savings

event as a sponsor and also attended as part of a discussion board at the technical workshop. Katsuyuki Sawai, Daikin's President, was a panellist

on the discussion board, alongside representatives from the three major reefer unit manufacturers. More than 80 guests attended this technical session to hear the discussion board address topics relevant to today's reefer market.

The two main themes covered were:

1. New technologies coming to the fore that will reduce energy requirements.
2. Improvements in temperature management and humidity control.

1. New technologies that will reduce energy requirements

Sawai introduced Daikin's plans to incorporate inverter technology into its future reefer design. Already well established in the domestic air conditioning market, inverter

technology holds out the promise of achieving larger power savings in reefer container applications.

Manufacturers are already using the inverter for the AC Motor Compressor, said Sawai, but he suggested that the

High fuel costs have forced us to rethink traditional standards

inverter for a Reluctance DC Motor Compressor will provide improved power saving. This is Daikin's idea and a unique technology. Daikin has great expertise in inverter technology, having manufactured over three million DC Inverter compressors in the air conditioning market.



The use of a Reluctance DC Motor Compressor in combination with inverter technology will provide high efficiency throughout the complete operation of a refrigeration unit, noted Sawai, in particular achieving a 30% power reduction at a low revolution range.

2. Improvements in temperature management and humidity control

As part of the second topic, Sawai presented Daikin's intent to achieve optimised temperature control. Stabilising cargo temperature, he noted, reduces unnecessary energy consumption for the control of the compressor and fan. For example,

Humidifier use carries a risk of contamination through the water tank

wireless IC tags have some capability to give stable cargo temperature control and minimize energy use.

It is generally accepted that reefer containers provide the most accurate temperature control in the cold chain. However, high fuel costs in recent years have forced people to rethink traditional standards based on large safety margins.

Modern machines using advanced technology are far more accurate and reliable for temperature management than those used 20 years ago. Daikin are therefore confident that our technology can reduce these historic safety margins to enable significant

reduction in power consumption. This idea can be applied to both chilled and frozen cargo operations.

Dehumidification is generally classified as a subsequent factor of temperature control. Many operators do not realize

We need universal standards, as with the air conditioning industry

the relation between humidity and fresh-air intake. This function uses higher power consumption during dehumidification control. In order to save energy, the dehumidification control should be used only when absolutely necessary.

Humidifiers are rarely required, as most operators now realize that a 90% relative humidity (RH) setting can be maintained with normal cooling operation. It's also widely

known that humidifier use comes with a risk of contamination through the water tank and makes the system considerably more complicated.

Industry performance standards

In response to a question from the audience, Sawai also presented the need for common industry reefer unit performance standards. He made the comparison with the air conditioning industry, where there are agreed universal standards to evaluate the performance of air conditioning units. In order to make an objective evaluation of the performance of each reefer unit, a similar approach would benefit the industry.



Distribution focus

Parts supply and technical support for our customers

Good customer service is a vital part of our business and we are constantly developing our parts supply network and technical assistance.

Daikin's Reefer Parts Distribution System (RPD) is made up of our Regional Parts Centres (RPC) and Satellite Parts Centres (SPC). All of the RPCs are owned by Daikin and they stock large numbers of spare parts. SPCs are locally owned parts centres close to the important ports – these are well stocked with the main parts and hold a smaller amount of other parts.

A strong supply chain

Between the two types of centre, we can ensure that there are always enough parts to supply customers wherever and whenever they need them.

Distribution is continuously monitored and improved, courtesy of our online parts ordering system (RPD

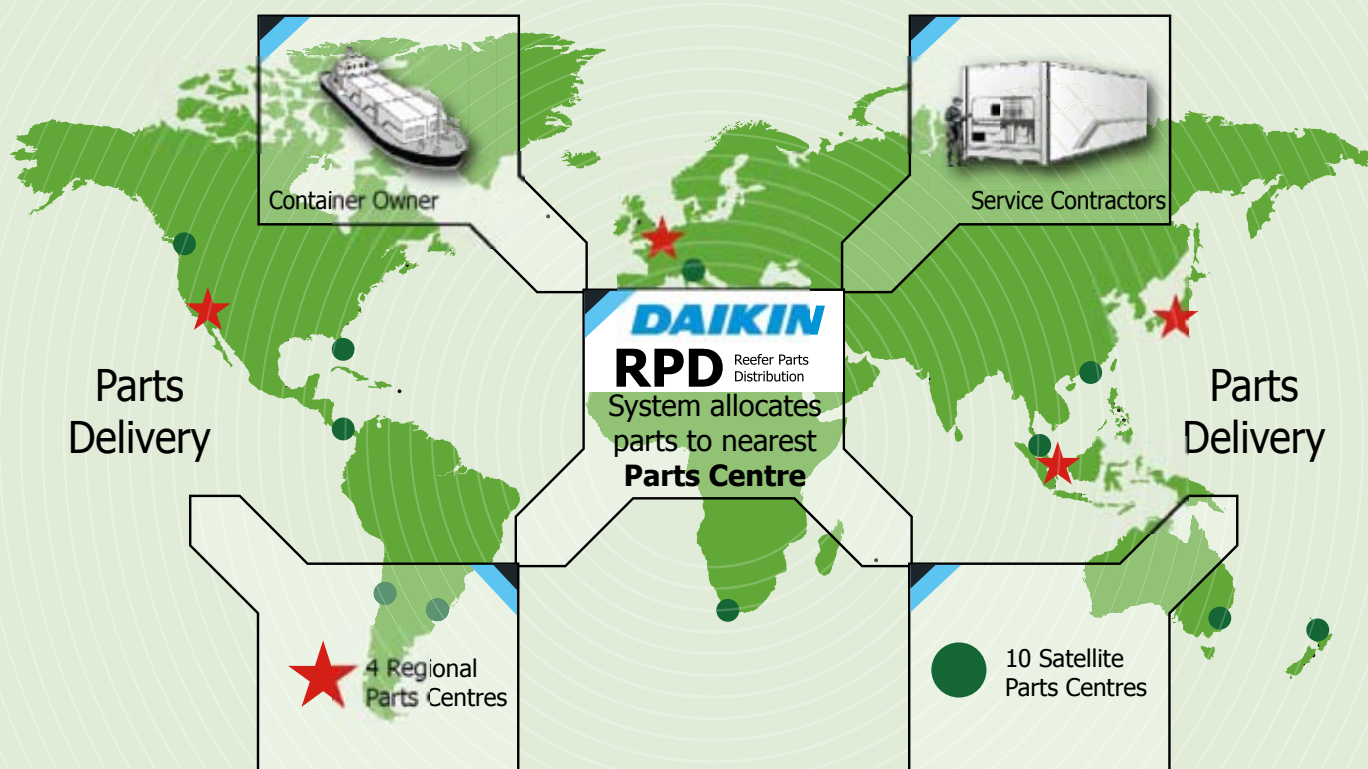
system). The RPD system is extremely easy to use and instantly shows the availability of parts in the nearest centre. The centre receives the order within seconds and

Distribution is continuously monitored and improved, so that we can ensure there are always enough parts to supply customers

immediately activates the delivery process. Customer service is extremely important to us, and we continuously evaluate and monitor parts supply performance at each centre, in order to provide the best possible coverage.



Thanks to our well-stocked parts centres, we can supply spare parts wherever and whenever customers need them.



Our service network covers the principal ports worldwide and important inland locations, mainly in the USA and Russia. Distribution is continuously monitored and improved using our easy online parts ordering system.

Network authorized repairers

We have developed our service network at all of the main ports in the world and at important inland locations – principally in the USA and Russia, but also South America and some European locations. We are committed to improving our service network wherever our customers should request it.

As of 2010, we have up to 300 repairers worldwide. This year, we have principally focused on developing our service network in North America. We plan to further develop it in Fiji, Vanuatu, Myanmar, Africa, Russia and South America.

Sales and technical support

We have employed local regional managers in all of the main locations. This means that there are staff located in the same time zones as our customers, who are able to offer a prompt service.

Thanks to our strategically positioned staff and centres, we can ensure rapid assistance and technical support for our

We continue to roll out training seminars for our customers, providing in-depth instruction, as well as Touch & Feel seminars

customers, and receive good feedback. We also provide 24-hour technical support by phone.

We will continue to roll out training seminars for customers, providing in-depth instruction on the operation of the unit. We are also further developing our Touch & Feel seminars (see p9), which offer customers a briefer introduction to the machine features.

Technology focus

Hot gas dehumidification

Prevent mould and condensation with our unique hot gas dehumidification system.

For delicate reefer cargos, such as flower bulbs and printed circuit boards, temperature control is not the only concern. Humidity management is also of vital importance. Daikin's Hot Gas Dehumidification System is a proven solution to protect your important cargoes from mould and condensation on even the longest trips.

What is hot gas dehumidification?

Daikin uses hot gas dehumidification instead of an electric heater. Hot and high-pressured refrigerant from the compressor flows into the reheater, where it heats up the cooled air. The

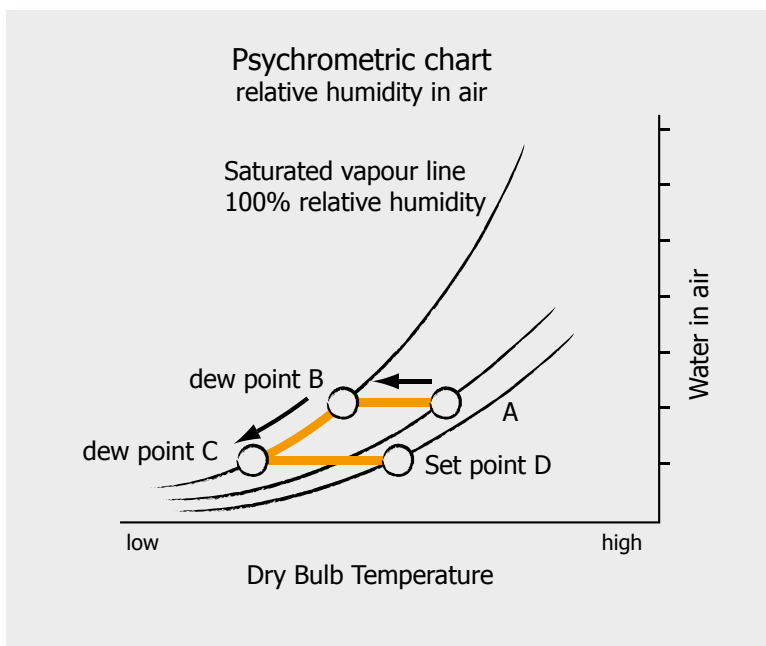
hot gas circuit uses exhaust heat energy from a condenser that would normally escape into the atmosphere.

The hot gas circuit uses exhaust heat energy from a condenser that would normally escape into the atmosphere

The system creates greater reheating capacity than an electric heater and, since there is no electric heater, no power is consumed for

reheating. With no need for periodical replacement of an electric heater, parts and maintenance costs are also reduced. Most importantly for cargo condition management, the hot gas dehumidification system can adjust capacity depending on the humidity level inside the container, providing more accurate humidity control.

In user trials for potted flower transport with a setting of 70% relative humidity (RH), Daikin's Hot Gas Dehumidification System achieved an average of 74% RH, compared with over 85% RH for refrigeration units fitted with an electric heater.



The logic behind hot gas dehumidification

1. Cooling operation: as air passes over the evaporator, temperature A is cooled to dew point B, as shown in the diagram. When the air temperature reaches dew point, moisture in the air starts to condense on the evaporator coil. The temperature reduces still further along the saturated vapour line C.

2. Dehumidification operation: once the air is cooled to dew point C (so that as much moisture as possible is removed), the air is reheated up to set point D. As a result, the relative humidity is decreased. To achieve lower relative humidity, the evaporator temperature must be further reduced.



Behind the scenes

A look at Daikin's factory in Suzhou, China

Our Suzhou, China factory opened in 2008. Since then, we have welcomed over 35 companies on factory visits and inspections so that they can see first-hand the quality of our work and production lines.

As one of Japan's leading temperature control manufacturers, Daikin is committed to workers' training and strict product quality control in order to provide high quality and safe products to customers.

Meet our staff

Mr Taguchi

Production Line Manager of DRS

"At the Daikin Suzhou factory we have what we call a 'Monozukuri Dojo' – a manufacturing training hall. This is where all workers learn health and safety and basic operational training.

"We have different areas of training, for example for specialist processes such as brazing and welding, where we provide high level training. Only

staff who pass this high standard – which is based on quality, accuracy and speed – can be involved in the Daikin manufacturing process. Daikin is the only manufacturer to build semi-manufactured products (such as condenser, casing and controller), supported by this high-level training.

"You are very welcome to visit DRS and experience Daikin's manufacturing technology."

Mr Hagiwara

Quality Control Manager of DRS

"About 30% of the Suzhou factory workers are assigned solely to quality control. Quality control workers, who are specially trained in Monozukuri Dojo, undertake quality checks in over 40 manufacturing processes, such as sheet-metal processing, welding and painting processes. All parts

are thoroughly inspected by quality control staff before use.

"We welcome you any time to see the level of quality control applied to all aspects of our operation."



Mr Hagiwara (above), Quality Control Manager of DRS.



Mr Taguchi, Production Line Manager of DRS.



Daikin's factory in Suzhou, China.

DAIKIN people



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Throughout 2010, Daikin has continued to strengthen the sales and service network. Nora Beckjord joined the Daikin team in June 2010 as Sales Promotion Director for the Refrigeration Division. In her new role, she will be responsible for sales in the US South East Coast and Central America regions.

"I officially started on 1 June 2010 and have a background of 14 years in the transport refrigeration field, with the last ten years in sales. I attended the Daikin global meeting in Tokyo in June and it was so nice to be able to meet all of my new co-workers right when I started. We have a very dynamic group. I look forward to meeting you soon and would be very pleased to hear from you."

service updates

New sales group for Latin & North America

To further expand Daikin's global network, a new sales group has been created for Latin and North America. In total, we now have four major groups worldwide:

- Japan
- Asia
- Europe
- Latin/North America

The Service Head Office is moved to Tokyo

To maintain a rapid and efficient service, Daikin's Service Head Office has been moved from Osaka to Tokyo. The Service and Sales Head Offices are now in the same location.