

DEGREE CELSIUS

Autumn 2016

THE NEWSLETTER FROM DAIKIN REEFER



The promise
of quality.

Welcome

From Katsuhiro Tetsuya,
Director of Daikin Reefer
Container Sales Division

Welcome to the Autumn 2016 edition of the Daikin Reefer newsletter, issued as usual to coincide with the annual Intermodal Europe show, which this year takes place in Rotterdam from 15-17 November. Daikin will once again exhibit and we look forward to welcoming customers, suppliers and industry partners to Stand D20.

Recent events have highlighted the extremely difficult financial conditions still facing the global container shipping industry. Refrigerated container trade volumes continue to grow, providing a bright spark in an otherwise largely depressed market. But of course, reefer cargoes only form part of the bigger picture of container trade. In these tough times, container shipping lines are working hard to drive down their costs and improve operating efficiencies on all fronts.

Daikin is committed to play its part with robust container refrigeration solutions to minimize power consumption, energy bills and M&R costs, added-value CA technology to enable new markets to be captured, and global service support to keep valuable reefer container assets on the move earning revenue.

Providing the best service and utmost reliability for our customers are things Daikin values greatly and we are proud to introduce our latest service activities in depth on pages 12-13. This includes Daikin's recent investment in a dedicated Satellite Parts Center (SPC) in Dubai's Jebel Ali Free Zone, on the doorstep of the Middle East's largest hub port and the 10th largest container terminal in the world, plus extension of our service and parts capabilities in Brazil.



The strategic development in Dubai reflects the continued strong growth of reefer trade in the UAE, GCC countries and wider Middle East, Red Sea and Eastern Mediterranean area and will improve service for all of our clients doing business in these important markets.

Not least, the Dubai SPC will support growth in Iran's international reefer trade as the country emerges from sanctions. You can read about our recent research and training visit to Iranian capital city Tehran and Bandar Abbas on page 13 in this edition. China's One Belt One Road (OBOR) investment strategy and other regional initiatives to revive ancient Silk Road trading routes are expected to open up many new opportunities across the Middle East and Eastern Mediterranean regions in the coming years. Daikin's new Dubai SPC ensures we are positioned to ensure best service for domestic, regional and international reefer operators doing business in these markets.

Also in this newsletter, we report on developments by Daikin clients in Indonesia, Russia and Italy. This includes investment by Indonesian company TKSolusindo in Daikin LXE10E reefer equipment to serve the country's growing demand for integrated cold chain logistics services; a successful test programme for the ZeSTIA unit in Russia by leading reefer operator Fesco; and how Italian domestic

specialist Sogese is deploying ZeSTIA units. We are also delighted to announce our recent order for 750 ZeSTIA units from global container carrier Hapag-Lloyd. You can read more on our customer focus from page 7.

On page 14 in the newsletter, you will find updates on Daikin's R&D focus for new refrigerant and on page 5, our Active CA. Containerization continues to open up global and regional markets for all types of fresh fruits and vegetables, including exotic produce. We believe that controlled atmosphere will become an increasingly vital technology to safeguard these valuable fresh cargoes as they move through the container cold chain, especially at this time of continued volatility and complexity in ocean transport.

Last, but by no means least, in this edition we celebrate the 15th anniversary of Daikin's Rotterdam reefer office. Many people have contributed to the growth and development of Daikin's presence in Europe and our great thanks go to Rotterdam office team members past and present.

If you have a story to share, or a topic that you would like us to discuss in future editions, please do not hesitate to contact us. We look forward to meeting many of you in person at Intermodal Europe.

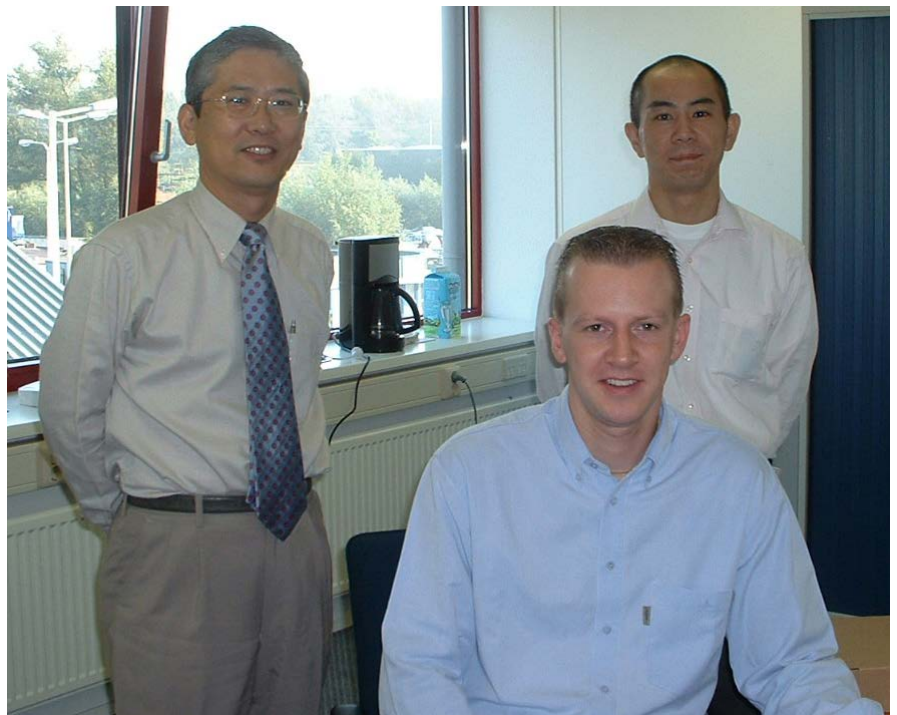
Katsuhiro Tetsuya
Director
Daikin Reefer

Rotterdam office celebrates 15 years

The 15th anniversary of Daikin's first European office

Fifteen years ago, Daikin established its Reefer Service & Engineering Office in Rotterdam, the Netherlands. Daikin first entered the refrigerated container market back in 1968 and became the leading supplier of container refrigeration equipment throughout the 1980s and early 90s. In 1997, Daikin introduced the LXE10D, its first machine running on R134a. This was followed in 2001 by the launch of the ground-breaking LXE10E, a scroll compressor refrigeration unit also running on R134a.

To strengthen its presence in Europe, the Rotterdam office first opened its doors in September 2001. The team was headed up by manager Toshiyuki Shimizu, Takahiro Takeuchi from the Engineering team at Daikin's Japan head office and Eiji Nonaka from the Sales team at Itochu Metals. In 2002,



Daikin Rotterdam team members in 2002. Pictured left to right are Toshiyuki Shimizu, Arjan Bezemer and Takahiro Takeuchi

they were joined by Arjan Bezemer from the Service team.

Royal Arctic Line (RAL), Greenland's national carrier, became Daikin's first European customer in 2002, followed by what was then P&O Nedlloyd, cementing the need for Daikin's new regional office.

With the Rotterdam office firmly established, the EMEA service and parts distribution networks grew quickly. Daikin increased its EMEA dealers from 20 in 2001 to over 100 in 2016, taking the total number of dealers worldwide to 400 with 16 parts centres across the globe. In 2008, the Reefer Service & Engineering Office moved to a new building, joining the newly established Daikin Air-Conditioning department. At this point, the office was renamed "Daikin Refrigeration Office", as Reefer is part of Daikin's global Refrigeration Division.

Daikin has increased its EMEA dealers from 20 in 2001 to over 100 in 2016, taking the total number of dealers worldwide to 400, with 14 parts centres across the globe

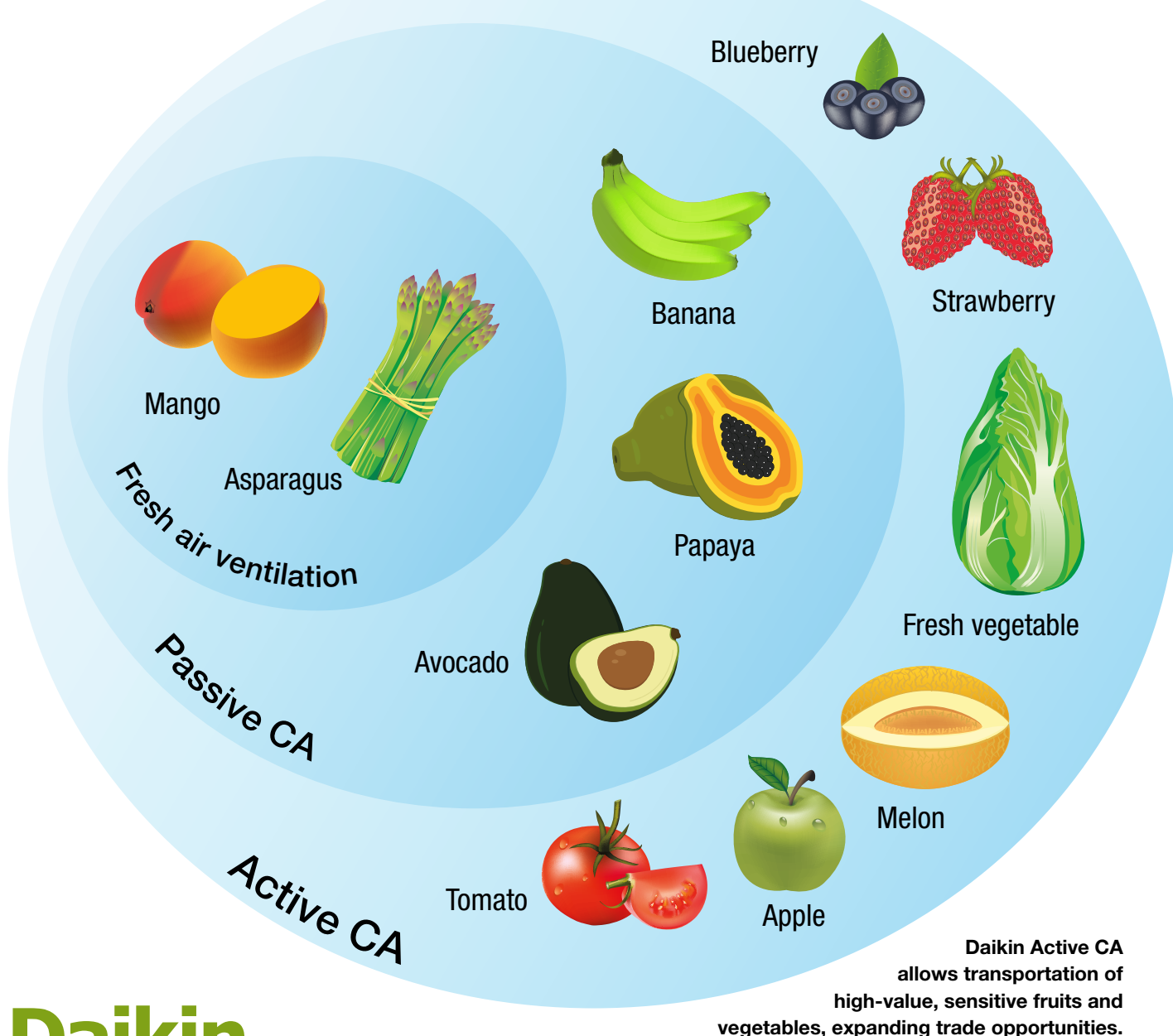
The service department expanded, with Richard Boshuijter joining in 2005 and Ronald van Andel in 2007, resulting in even closer communication with customers and dealers, as well as a 24/7 quick service support function. In recent years, Daikin has continued to add to the team. The focus and support for European customers is now also taken care of by Harm Louwen (Technical Sales/Engineering), Henrik S Hansen (European Sales Agent) and Daisy Lewis Mikoën (Office Support and Conference Organizing).

In September 2016, the 15th anniversary was celebrated together with Daikin's first European customer Royal Arctic Line, represented by Jens Nielsen, as well as former and current Daikin employees. All of them have contributed to the success of the Rotterdam Daikin Refrigeration Office, making it what it is today. Daikin appreciates the growing number of European- and Middle East-based customers who choose Daikin reefer units. The units, like the Daikin reefer team, stand for Quality, Performance and Reliability, providing quick and continuous support of customers and cargo. We are here for the long run!

Daikin Refrigeration Office
Fascinatio Boulevard 562,
2909 VA Capelle aan den IJssel,
The Netherlands
Tel: +31 10 2862090
www.daikinreefer.com



From left to right: Eiji Nonaka, Toshiyuki Shimizu, Daisy Lewis-Mikoën, Nobuko Fukuda, David Marjoram, Arjan Bezemer, Harm Louwen, Jens Nielsen, Richard Boshuijter and Ronald van Andel



Daikin technologies

What a difference controlled atmosphere makes

Temperature control remains the number one transportation requirement for maximizing the quality, safety and shelf life of fresh produce. But controlled atmosphere (CA), which effectively puts fresh commodities to sleep in-transit, will also play an increasingly important role over the coming years to support expanding container trade in high-value, sensitive fruits and vegetables, both for global and regional markets.

As reported in the previous edition of our newsletter, Daikin Active CA has been developed to provide industry-leading protection for a wide range of fresh commodities. Daikin's Active CA slows down the ripening process that food and

other sensitive perishable products undergo during transit, which allows them to be transported in better condition for longer periods of time and extend their shelf life. The system uses vacuum pressure swing adsorption (VPSA),

Daikin Active CA reduces O₂ levels to 5% in 36 hours – half the time required for other systems on the market

an active atmosphere separation technology that is able to create the optimal controlled atmosphere very quickly. VPSA uses the mineral adsorbent zeolite to capture a large quantity of nitrogen from the air and transfer it into



the reefer container, allowing oxygen levels to be quickly reduced by dilution, without the need for additional gas. This CA system is different from conventional passive CA, which relies on respiration. Daikin's Active CA removes the

Fresh fruit and vegetables are responsible for 70% of the growth in intra-Asia perishables trade over the last five years

need to wait for the cargo respiration to adjust the level of oxygen. This achieves the CA set point in half of the time of conventional passive CA, meaning that it is now also viable for shorter voyages such as intra-Asia and other regional trades.

Leafy greens and other sensitive commodities also benefit from CA technology for shorter distance transport on regional trades, which are growing in importance every year. For example, fresh fruits and vegetables are responsible for 70% of the substantial growth in intra-Asia perishables trade over the past 5 years, according to Seabury Maritime Consultants.

Another factor impacting the need for CA is the shift in global container shipping operations, including increased vessel sizes, slow steaming and transshipment-based networks. These developments help the shipping industry to maintain its service and open up markets for fresh produce exporters worldwide, but also lengthen supply chains. Protecting and extending the life of perishable cargoes with technologies such as CA therefore becomes increasingly important.

During transit, the Active CA system continuously controls the air composition, inside a reefer container. The technology uses cargo respiration to maintain the container's carbon dioxide level, alongside an automatic ventilation control, making the unit simple and economical to run.

Daikin's Active CA effectively puts fresh commodities to sleep during transit, slowing down the ripening process and ensuring that sensitive green leafy vegetables such as spinach are still fresh after 30 days.

Customer focus



Hapag-Lloyd

With a fleet of over 170 vessels and more than 1.5 million TEU of standard, special and refrigerated containers, Germany's Hapag-Lloyd is among the top 10 global container shipping companies and a leader in reefer cargo operations. Transporting 7.4 million TEU of goods annually on 128 trade lanes worldwide, Hapag-Lloyd is committed to taking care – locally and globally – with a strong responsibility to employees, customers, the community at large and the environment.

Daikin's focus across all businesses is to create new value by anticipating the future needs of customers with world-leading and environmentally friendly technologies, providing the highest quality products, materials and services. These efforts have been recognised by Hapag-Lloyd with an order for 750 Daikin ZESTIA units as part of its recently announced acquisition of 5,750 state-of-the-art reefer containers, for delivery starting October. The container investment accompanies the delivery of five new 10,500 TEU 'Valparaíso Express' class vessels with high reefer capacity of over 2,100 units, scheduled for incremental deployment between South America and Europe beginning late 2016.

Launched in 2011, the ZeSTIA machine combines industry-leading energy efficiency and cargo care. It has been under trial with Hapag-Lloyd for over two years. "Our technical team has been evaluating the performance for a while," explains Niklas Ohling, Head of Container Steering and Technical at Hapag-Lloyd. "With its patented DC inverter drive and low energy consumption, it fits in our efficient reefer portfolio strategy with the focus of taking care of the cargo."

Ohling adds, "We decided to introduce the ZeSTIA initially in the 20ft reefers we procured this time, as Daikin made a good case for their service coverage in Oceania where the 750 x 20ft units will initially mainly be deployed". The units will be fitted with self-diagnostic software, aimed at improving reliability and reducing running costs. "We have to take care when introducing a unit new to our organisation," notes Mr Ohling. "No matter how reliable it is, it is no small task."

Although some of Hapag-Lloyd's vessels already have the ZeSTIA spare parts on board to cater for emergency repairs, it is "easier to kit out all vessels in a dedicated area," says Janine Meiser, who handles Spare Parts within Hapag-Lloyd. "It represents a big investment and commitment by both parties."

Daikin is delighted to receive this vote of confidence and looks forward to working with Hapag-Lloyd in the years ahead. All new Daikin units come CA provisioned for the potential later retrofitting of Daikin Active Controlled Atmosphere (CA).



One of the 750 ZeSTIA units ordered by Hapag-Lloyd



ZeSTIA "fits in our efficient reefer portfolio strategy", says Niklas Ohling, Head of Container Steering and Technical at Hapag-Lloyd

Customer focus

SOGESE



The Sogese team with Richard Boshuijer, Regional Service Manager for Daikin during technical training in Livorno

Sogese Srl was established in the Italian city of Livorno in 1980 by Ercole Monti. Initially, the company focused on container maintenance and repairs, but soon moved into the second-hand container trade, both in Italy and worldwide. In the early 1990s, the company diversified further into dry and refrigerated container leasing for domestic operations. Today, Sogese is active in the sale and rental of new and used containers on a global basis through a network of partners. They supply containers for use as houses, offices and storage units, among other domestic applications.

Sogese's reefer container sale and leasing business operates under the brand 'Idea Freddo' – literally,

remotely. Idea Freddo containerized cold stores offer a competitive alternative to building-dedicated refrigerated warehousing, eliminating the technical and bureaucratic

“We like the relationship with Daikin. They do a lot to provide the features and solutions that we need.”

challenges of cold store construction and reducing upfront investment. Once reefer containers are on-site, users only need to plug into electricity to get up and running.

Sogese has been using Daikin ZeSTIA units since 2014, helping the company to deliver the reliable

and cost-efficient service that its customers expect. Energy costs are borne by the reefer leasing customer while equipment is on-site, and Sogese is committed to providing units with the lowest possible power consumption to help clients control their electricity bills.

The Daikin ZeSTIA uses a patented DC inverter system, which allows for the speed of the compressor (motor) to vary according to the refrigeration need inside the container. This means that cargo care is maintained while power draw and costs can be reduced. An additional benefit of the variable speed compressor is reduced noise level compared to fixed-speed compressors. This is an important consideration for reefers situated in urban areas.

“We like the relationship with Daikin who do a lot to provide the features and solutions that we need. At the same time, we think that Sogese has helped Daikin to better understand the domestic cold storage business,” comments Andrea Monti, CFO of Sogese.

Daikin is delighted to be part of Sogese's range of winning products for its domestic lease operations.

www.sogeseitalia.it

A successful 18 month trial in Russia confirmed Daikin's ZeSTIA unit is appropriate for the Russian railway network, even during the severe winter period.



Customer focus

Fesco

Successful trial for ZeSTIA in Russia



An 18-month trial of Daikin's ZeSTIA unit by FESCO, Russia's largest container transport and intermodal logistics operator, came to a successful conclusion earlier this year. The trial began in November 2014 and concluded in April 2016, running across two winter seasons. Daikin provided technical support throughout the trial period, including several seminars. The FESCO technical team shared actual trial data on a constant basis during the trial and operated the ZeSTIA units as much as possible across the company's demanding shipping, ports and intermodal transport network.

Both FESCO and Daikin are satisfied with the results of the trial. The FESCO team has reported a positive experience of ZeSTIA operations and is now fully informed of the unit's capabilities. Daikin's engineers received valuable technical information directly from the field and the trial confirmed that the ZeSTIA unit is appropriate for deployment on the Russian railway network, even during the severe winter period.

Although FESCO has no immediate plans to procure reefer containers in 2016, the two teams will continue their cooperation. This successful trial has opened the door for future successful deployments of Daikin's ZeSTIA units in the Russian market.

www.fesco.ru



Customer focus



TKSolusindo

Trans Kontainer Solusindo boosts Daikin LXE fleet for Indonesian cold chain logistics

Trans Kontainer Solusindo (TKSolusindo), a cold chain logistics, transport and storage specialist serving the huge Indonesian market. Over the past year, our relationship with TKSolusindo has gone from strength to strength, supporting the company with rapid development of its domestic reefer container services as part of integrated, customized and end-to-end solutions for cold chain logistics and supply chain operations across Indonesia.

Indonesia is now home to more than 250 million people – the 4th largest population in the world – and is undergoing rapid economic development. This is creating new

business prospects for everyone involved in the country's food industry, especially for perishable goods. A growing middle class, with

“Since first starting operations with Daikin two years ago, the company has had zero cargo damage.”

more disposable income, is looking for more fresh, healthy and high quality food, and more variety of choice, creating new big demands for cold chain services.

The geography of Indonesia, as an archipelago nation with 6,000

inhabited islands (out of more than 17,000 in total), stretching more than 5,000km from east to west and 1700km from north to south, also creates particular challenges for safe and efficient food supply chain operations. Maritime logistics and transport expertise are of extreme importance in the cold chain.

As one of Indonesia's fastest growing cold chain logistics providers, TKSolusindo, a member of the KACS group, is seeking the best technology for its varied activities in reefer trucking, cold storage and maritime NVOCC operations. Reefer containers are a very important part of the mix, and today TKSolusindo operates 70 Daikin LXE10E units, running over 100 successful trips per month around the Indonesian archipelago.

Since first starting operations with Daikin two years ago, the company has had zero cargo damage. Daikin has also provided TKSolusindo with a private training seminar covering basic operation and troubleshooting to ensure the best performance and good knowledge.

Looking ahead to 2017, TKSolusindo plans to increase its fleet up to 200 units, combining used units under 10 years old and brand new equipment.



Resale market

Daikin hosts T&F seminars in South-East Asia

In July and September, Daikin held three of its Touch & Feel (T&F) seminars for current and potential clients using new and second-hand Daikin refrigeration units for domestic container cold storage and transport operations.

T&F seminars offer a practical introduction to Daikin machines and chance for users to engage with Daikin technical experts to have their questions answered.

The latest seminars were very well-received, with 11 companies attending our T&F in Jakarta, Indonesia and nine companies taking part in our Bangkok, Thailand T&F, both on 21 July. A third T&F seminar took place in Ho Chi Minh City, Vietnam on 15 September, with attendees from 11 companies.

Clockwise from top: Touch & Feel seminar attendees in Bangkok, Jakarta and Ho Chi Minh.



Service update

New satellite parts center for Dubai

Located in Jebel Ali Free Zone, Daikin's new Satellite Parts Center in Dubai will improve service levels for clients in the growing domestic and international reefer markets across the Middle East, Red Sea and Eastern Mediterranean.

Daikin is pleased to announce the establishment of a wholly-owned Satellite Parts Center (SPC) in the Jebel Ali Free Zone. The new facility lies close to Jebel Ali Port, the ninth largest container port in the world, which acts as a major trade hub for the UAE and surrounding economies. Operator DP World plans to increase container handling capacity at Jebel Ali to 22.1 million TEU in 2018, reflecting continued growth in the Middle East's regional and international trade volumes.

The new SPC will improve service to reefer shipping lines, repair companies and domestic clients across the Middle East, Red Sea and Eastern Mediterranean. All of these regions are forecast to see more demand for containerized cold chain and reefer transport services over the coming few years, to meet the needs of growing trade in chilled and frozen foodstuffs and other temperature-controlled goods. Among other factors, the opening up of Iran and India's growing trade and relations with the Middle East are expected to spur new growth.



Daikin already has over 20 authorized repairers located in 15 of the main ports in the 12 countries along the Red Sea, including Egypt and Djibouti, in the Eastern Mediterranean, Jordan and Syria, and, within the six Gulf Cooperation Council (GCC) countries, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.

However, apart from the largest repair operators in Dubai, most of these service companies do not maintain a permanent stock of parts and instead order on-demand. This is quite an expensive option and can be a lengthy process, due to time required for shipping parts from overseas and also the possibility of delays in customs clearance.

Responding to demand from international container carriers and repair companies across the region,

Daikin has therefore invested in the new SPC to improve parts availability, speed of supply and cost. We hope that our new Dubai operation can also act as a hub for dialogue, learning and information exchange with clients and vendors across the region.

Delta Containers to supply Daikin parts in Brazil

Daikin signed a contract with Delta containers in September, marking the establishment of our first spare parts center in Brazil.

Headquartered in Curitiba, 400km south of the Port of Santos, Delta Containers is a diversified company offering container storage, rental, sale and modification for domestic use as houses, offices and storage units.

Delta previously purchased 100 used LXE10E units for its domestic business, and plans to acquire another 100 to serve growing Brazilian demand for cold storage units. Now Delta will also stock and supply Daikin spare parts to our network of authorized repairers across Brazil, as well as direct to shipping line. This move will further strengthen Daikin's service capabilities in Brazil and ensure more speedy supply of parts.

www.deltacontainers.com.br/



The colourful Delta Containers sales office made from a modified container





Opening up Iran

Earlier this year, Daikin's Field Service Manager Richard Boshuijer visited the Iranian capital city of Tehran and its principal container seaport, the Shaheed Rajaee Port Complex in Bandar Abbas. His purpose was to meet with local shipping representatives of international and regional shipping lines, reefer service companies, and other members of the reefer supply chain, to learn more about current market conditions, discuss support needs for Daikin equipment in Iran, and provide technical training.

The Islamic Republic of Iran is the second largest economy in the Middle East and North Africa (MENA) region after Saudi Arabia, with an estimated Gross Domestic Product (GDP) in 2015 of US\$393.7 billion, reports The World Bank. It also has the second largest population of the region after Egypt, with an estimated 78.8 million people in 2015. The lifting of international nuclear-related sanctions this January after a landmark global deal was struck is expected to provide a significant boost to the Iranian economy, allowing it to trade more freely overseas in goods and services, including refrigerated commodities.

More foreign shipping lines have started to call in Iran following the lifting of the sanctions, and

the country's national carrier, Islamic Republic of Iran Shipping Lines (IRISL) has also announced ambitious plans to increase its services to overseas markets. These developments have already spurred an increase in reefer container traffic, we heard during our visit, and this is only expected to grow in the coming months and years.

Richard received a warm welcome and Daikin had very useful feedback from the companies visited during his trip, including shipping lines and agents, port operators and repair and service companies. We learnt that few reefer containers move beyond the port, with most cargo cross-docked into reefer trucks and trailers for inland transport. Transport distances in Iran are long and there are few gensets in the country to power reefer containers. So most storage, repair, maintenance, inspection and servicing work for reefer containers is concentrated in and around the ports.

We also heard that sanctions made it difficult to source reefer parts in Iran and that the situation is still quite difficult. Although sanctions have eased, there are still many barriers to trade, especially with US companies. We were also advised that there is a need for more technical training and knowledge transfer to support growth in reefer trade.

The opening of the new Daikin Satellite Parts Center (SPC) in Dubai was seen as a positive move to improve spare parts availability for

service dealers in Iran and to provide a base for communication and information exchange. Going forward, we'll be providing additional technical training and support for repair and service companies in Iran, ensuring they have the latest knowledge to ensure the quality of Daikin reefer equipment for our shipping clients.

Port&Sea (P&S), authorized Daikin Service Dealers since 2011, provides the reefer service and monitoring at Bandar Abbas Terminal 1, equipped with 1,750 reefer power points, and is a daughter company of terminal operator Tidewater Middle East. A full-day technical training session was conducted for 22 P&S engineers and technicians, covering general aspects of container refrigeration technology and specific training related to Daikin's machines

Seadulf is a private owned company, offering off-dock container storage, cold storage and reefer facilities. The company mainly provides reefer monitoring and minor repairs. A full day training session was provided for 12 staff members, including engineers and technicians

Daikin focuses on energy efficiency

This article on Daikin's approach to new container refrigerants was originally published in the August 2016 edition of World Cargo News and is reproduced here with kind permission of the publishers.

Japan-based Daikin is facing the challenge of finding low GWP (global warming potential) refrigerants across a wide range of markets and industries. In reefer containers, the company believes that "to find a solution with a further low GWP, Daikin thinks that the safe usage of mildly flammable refrigerants is essential." Daikin is now proceeding with a risk assessment of mildly flammable refrigerants in reefer operation, and R&D work on the development of practical protection devices has also begun. "At the same time, Daikin is applying alternative refrigerant candidates to the platform, based on the current machine and evaluating the COP [coefficient of performance] and cooling capacity under each condition," the company added.

Daikin makes it very clear that in pursuing mildly flammable refrigerants it is not rejecting CO₂ as a refrigerant for reefers – something it has never done and does not intend to do in the future. The company has experience with CO₂ through its air conditioning business. "However, when we think of it as an alternative refrigerant for reefers, it would be difficult for it to maintain the ease of handling and same performance as the current machine. This is because CO₂ has high pressure, and therefore specific tools will be needed for handling and maintenance in the field," Daikin explained.

The company is also concerned about the performance of CO₂ at high ambient temperatures. "The specific feature of CO₂ is not being energy efficient at a high ambient temperature (above 30 °C), which is highly disadvantageous towards reefers because often their routes involve going through areas of high ambient temperature, such as crossing the equator. Furthermore, it is essential to look in to energy efficiency when considering the impact it has on global warming, which means that, ultimately, CO₂ refrigerants will not give a positive impact to the environment, when used on reefer equipment," the company added.

Reefer requirements

Daikin serves many different markets, and it notes that CO₂ is gaining traction in supermarket refrigeration in some countries, though not yet on a global scale. There are other applications where it considers CO₂ may be the most appropriate refrigerant, including permanent facilities where the system can be designed for the expected heat load, and service personnel can be appropriately trained. The company cautions, however, that "just because a CO₂ refrigerant is gaining traction in one market does not mean that it can be applied to reefers as well". Different factors have to be considered when evaluating the best alternative refrigerant for stationary use, compared to a mobile application such as

a reefer. "For example, since reefers travel all over the world, maintenance needs to be available anywhere and anytime, even on board," said Daikin.

A unified approach

Daikin has heard the call from reefer owners and operators for the industry to find a unified alternative refrigerant, which it says is something the company supports. However, in reality, there can be no 'one size fits all' refrigerant, as the different operators do not have common requirements regarding safety, energy efficiency or cooling capacity. There being no single requirement, a supplier like Daikin has to find the best balance, considering the different weighting that reefer owners give to the four core factors: safety, environment, energy efficiency and cost.

"The requirement of reducing environmental load is seen as important, not only from shipping lines, and Daikin agrees to put it as its first priority," the company stated. "However, Daikin believes that it is not only GWP that gives an impact on environmental load, but the refrigerants which have the best balance of energy efficiency, cost effectiveness and safety contribute to the environment the most, and are also the ones to correspond to the customer's need. Therefore, Daikin considers R1234yf, R513A/B and R32 as the most ideal candidates for reefers at the moment."

As has been noted previously, Daikin considers R32, which has a GWP of 675, and HFO gases to offer one of the best answers to the container refrigerant dilemma, following the development work the company has already carried out in the air-conditioning field. Daikin has air conditioners with R32 available in over 48 countries, as of March 2016. The first product was launched in 2012, and it believes HFO single/blend (R1234yf, R513A/B) and R32 would produce a refrigerant better suited to reefer box operation, where internal temperatures may vary between -30 °C to +30 °C and ambient temperatures range from -30 °C to +50 °C. R1234yf is particularly promising on the GWP front, with a GWP of 4. With R513A/B or R32, it would be possible to achieve a 70% reduction in the GWP of R134a while being more energy efficient.

Energy efficiency, Daikin stresses, should not be overlooked in favour of finding a lower GWP. Power consumption of a reefer unit has a greater impact on the environment than other refrigeration applications because reefers are powered by vessel generators while they are at sea. "Electric supply is provided by combusting fossil fuels, and, therefore, energy conservation links directly to the reduction of CO₂ emission. This is why Daikin thinks having an energy efficient unit on board of the vessel will be important," the company concluded.

www.worldcargonews.com

Events report

Intermodal Asia 2016

This March, Daikin conducted a tour of our DRS reefer container production plant in Suzhou, China, to coincide with the annual Intermodal Asia show in Shanghai.

The tour was a great success and we welcomed over 60 attendees from 22-25 March. Both our LXE10E and ZeSTIA units were on display, with CA installed in the LXE unit. We were also able to introduce clients to our new test chambers which were recently installed at the factory.

Representatives from Beacon Intermodal Leasing with team members from ITOCHU Metals, DRS and Daikin during their visit to our China manufacturing plant.



Intermodal South America 2016

Daikin exhibited for the tenth time at the 21st Intermodal South America show, 5-7 April in São Paulo, Brazil. This year the President of Daikin's Reefer Division, Mr Shin Furuta, attended the show together with ten other Daikin staff members.

We welcomed more than 150 visitors to our booth and many of them – including shipping lines, leasing companies and resale dealers - joined the reception and lunch held at the Transamerica Hotel, where we gave presentations and updates on Daikin's product and service developments.



We also took the opportunity to hand over a mini container to our customer Hamburg Süd, a major player in the Latin reefer trades, in recognition of its latest order for 3,000 Daikin ZeSTIA reefer units. We look forward to attending the next Intermodal South America, 4-6 April 2017.

From left: Arjan Bezemer (GM Europe, Middle East and Africa) and Shin Furuta (President, Daikin Reefer) present a mini container to José Roberto Salgado (Executive Director, South America East Coast) and Oscar Calderon (Logistics Equipment Manager, South America East Coast) of Hamburg Süd in recognition of its latest order for 3,000 ZeSTIA units.

NPSA Annual Conference 2016

We were pleased to join NPSA's Annual Conference, which was held in Dallas, Texas, on 17-19 April. Daikin Industries joined the National Portable Storage Association (NPSA) in 2014 so that we could better familiarize the US container

resale market with Daikin's suite of products and to extend our reach into the portable storage market in the Americas.

Upcoming: Intermodal Europe 2016



Daikin will exhibit again at Intermodal Europe, which this year takes place at the Ahoy Rotterdam convention center from Tuesday 15 – Thursday 17 November. We are looking forward to seeing many of our customers and business partners at Daikin's stand D20.

www.intermodal-events.com

Cool Logistics Global 2016

Daikin sponsored and joined the 8th Cool Logistics Global conference on 27-28 September in Bremen, Germany. The two-day event addressed the outlook for global reefer trade and perishable supply chain operations at a time of great financial stress for the world container shipping industry. A major focus this year was the critical role of smart technologies to reduce waste, manage risks and improve the efficiency of international containerized food logistics, as well as to open up new ocean freight and intermodal container supply chains for pharmaceuticals, flowers and other temperature-controlled cargoes.

Various debates explored the fast-rising trends towards digitization and connectivity, using machine-to-machine and Internet of Things technology to give real-time visibility and control over reefer supply chain operations. The key role of container refrigeration and controlled atmosphere technology to improve cargo care and reduce energy costs over increasingly long distance transport was also highlighted in the conference and at the outside container display area.

Daikin showed one of its ZeSTIA refrigeration units fitted with Active CA system and was pleased to have the chance to demonstrate the latest technology to participants at the conference. Read more about CA on page 5.

The Daikin team at Cool Logistics Global 2016, from left to right: Henrik Steen Hansen, European Sales Representation, ITOCHU Metals Corp, Arjan Bezemer, GM Europe, Middle East and Africa and Harm Louwen, Technical Sales Engineer, Region Europe, Middle East & Africa



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Daikin has officially launched its twitter account! We will be tweeting daily about our activities and market news. Be sure to check us out at <https://twitter.com/DaikinReefer>. Feel free to follow us, DM us or send us a tweet. We would love to hear from you! #DaikinReeferTeam

