

# SteamExpress

EXPERTISE | SOLUTIONS | SUSTAINABILITY



## We build Heat Exchange Packages too!

Your one stop solution provider for Heat Exchange Applications

In this issue of Steam Express, We are bringing to you Spirax Heat Exchangers. We have long realized that our customers need assistance with complex steam applications which do not form part of their core business. Spirax can assess your steam requirement, provide pre-engineering services, supply and advise on the installation of Spirax Heat Exchangers, and assist in start-up and commissioning.

### Why steam as a heating medium?

There are many ways to transfer heat, but steam is the most energy efficient, reliable, clean and in sterile form. Steam is a very efficient carrier of heat energy. It is easily generated, distributed and simple to handle and control. It supplies heat quickly and instantly at constant temperature over the heat transfer area. One of the most versatile applications for steam as the primary medium for indirect heating by using heat exchangers. Most fluids

can be heated in large volumes using this safe sterile method for both domestic and industrial processes.

### The importance of a correctly sized, selected and matched heat exchange system

Optimum Heat exchange package performance requires correctly sized and matched heat exchanger, controls, condensate removal and ancillaries. The control valve must pass the required amount of steam under maximum & minimum load conditions whilst maintaining a stable secondary temperature. Oversizing results in bigger valve, higher cost and can result in a larger temperature control band. The consequences of undersizing can be worse, resulting in undesired secondary temperature which fails to meet the end-users' requirements. The heat exchanger sizing and selection depends on the pressure before and after the control valve.

## LET'S TALK ABOUT SAFETY!

**The SOLAS Container Weight Verification Requirement (SOLAS Regulation VI/2) - A New Regulation for a Safer Supply Chain.**

by Martin Beh, Warehouse & Logistics Manager

27 June 2013 - The container ship MOL Comfort sank today off Yemen after the vessel hull broke into two off the Mumbai coast. The ship was loaded with 4,500 containers was bound from Singapore to Jeddah.

We've all seen the pictures: container ships leaning to one side with stacks of containers ready to topple into the ocean. One reason for this harrowing situation could be that the container weights were incorrectly reported to the vessel operator loading the ship.

[Continue to read on Page 2](#)

Condensate formed in the heat exchanger after steam gives up its heat to the secondary fluid can be discharged through the steam trap only if there is a positive differential pressure across it. This again is dependent on the steam pressure in the heat exchanger.

Condensate that is backed up into the heat exchanger can result in fluctuating temperature control, noise, water hammer, corrosion and reduced output.

Sizing and selection of each component is influenced by the other components in the package. At Spirax Sarco, we can work with you on the selection of the best steam heated heat exchange package, delivering optimum performance and improving plant efficiency.

While a small discrepancy is not going to cause ship instability or collapsed container stacks, the discrepancies can add up. According to the World Shipping Council, Ukraine Customs weighed all containers over a two week period in 2012 and found that 56% of the containers weighed more than the weight stated in the carrier's cargo manifest. Because of findings like these, in 2014 The International Maritime Organization (IMO) has amended the Safety of Life at Sea Convention (SOLAS) to require, as a condition for loading a packed container onto a ship for export, that the container has a verified weight.

### **New Weight Verification Requirements**

The amendments to SOLAS require that the shipper of a packed container provide a Verified Gross Weight (also referred to as Verified Gross Mass) to the ocean carrier prior to it being loaded onto a ship, no matter who packed the container. The new amendments became legally effective on July 1, 2016. After that date, it would be a violation of SOLAS to load a packed container onto a vessel if the vessel operator and marine terminal operator do not have a Verified Gross Weight of the container. These new requirements are being implemented by the IMO, as the consequences of a mis-declaration of the weight could have an adverse impact on the safety of the ship, crew and shore-side equipment and workforce.

### **Two Weighing Methods**

There are two approved methods for determining the Verified Gross Weight. Method one is to weigh the container plus its contents once it has been packed. The shipper may arrange to have a third party weigh the container for them.

Method two requires the shipper (or an arranged third party) to weigh all the items to be packed in the container separately, including the pallets and other packing materials. The weights of the items can then be added to the weight of the shipping container, which is shown on the exterior of the container. Estimating weight is not permitted. Under either Method, the weighing equipment used must meet national certification and calibration requirements.

### **Reporting the Verified Gross Weight**

Once the Verified Gross Weight is determined, it must be reported. As per the regulation, the Verified Gross Weight information has to be provided by the Shipper named on Bill of Lading. It can be communicated on any document, such as the shipping instructions to the shipping



Image from Google

company or a separate declaration. Whatever form the document takes it must be signed by a duly authorized representative of the shipper. Container would be denied entry at port terminal if there was a 5 tons variance between declared Verified Gross Weight and the weight derived by the terminal operator.

#### **Source:**

<https://www.mpa.gov.sg/web/portal/home/port-of-singapore/safety/port-marine-safety/faqs-to-implementation-of-solas-regulations-vi-2-on-verified-gross-mass-of-containers>  
<https://www.mpa.gov.sg/web/portal/home/port-of-singapore/circulars-and-notice/detail/1433445e-7ae3-4e95-98e0-9374a4cd469a>

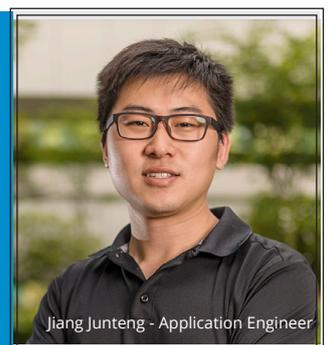


Ong Chen Wee - Project Engineer

## **Meet our Project Team**

**Chen Wee**, our Project Engineer, has been with Spirax Sarco Singapore since 2008. He provides product technical and application support to our sales team and customers as well as project management.

**Junteng** joined Spirax Sarco Singapore as Project Coordinator since April 2015. He currently holds the title of Sales Application Engineer which supports our Sales Team to strengthen our application capabilities in TEM Package solutions, Controls and Metering.



Jiang Junteng - Application Engineer



Turflow Heat Exchange Package

# Spirax Turflow Corrugated Heat Exchanger

One of the most versatile applications for steam is as the primary medium for indirect heating, using heat exchangers. Fluids can be heated in large volumes using this safe, sterile method in both domestic and industrial processes.

Spirax's range of VES Series heat exchangers uses corrugated tubing as standard, fully utilizing the advantages and benefits of this technology.

The application of this technology is to promote optimum turbulent flow conditions which greatly increases the rate of heat energy passing through the tube wall, thus increasing heat transfer efficiency. The Turflow is particularly suitable for fluids in the lower viscosity range, such as water, juices, glycol, light solutions and suspensions containing small particles. Various primary medium namely steam, superheated water and diathermal oil can be used.

### Advantages of the Spirax Turflow Corrugated Heat Exchanger.

**Smaller heat exchangers** - Compact and lightweight, Higher heat transfer coefficient (k value), One-pass design with greater flexibility of installation.

**Vertical Installation** - Optimum for efficient condensate discharge, occupies less space and Inhibits and reduces scaling.

**Maintenance** - No gaskets, no moving parts and maintenance free. Tubes can be easily cleaned mechanically or by CIP Methods (if required)

# Corporate Social Responsibility Activity

Education is one of the solutions to solve our society's toughest problems and empowering people to thrive in the future. As a global leader, we understand the value of skills and education. This drives our efforts to increase student interest in Science, Technology, Engineering and Mathematics (STEM). Building students' skills in these disciplines is the first step in developing a sustainable workforce for the future economy.



In 17 & 18 July 2019, Spirax Sarco Singapore conducted 2 days Steam and Condensate system course for 3rd Year Mechanical and Aeronautical Students from Singapore Polytechnic. A total of 20 students attended as part of their E-Learning week.

Our Technical and Training Manager, Mr Chng Poh Beng lead the training for the students supported by Mr Danny Ow, Area Sales Manager, and Dr Christopher Poczka, Spirax Sarco Academy Partner. A short assessment was conducted at the end of the course and Certificate of Completion was given to students who passed the assessment.



# Steam and Condensate System Training

## Who will benefit?

Designers, plant engineers, senior technicians and those involved in the day to day running of the steam & condensate services.

## Objectives:

To give a good understanding of the purpose and operation of steam & condensate systems and factors affecting their performance and plant output.

## Participants will learn about

- The fundamentals of steam
- Steam Distribution
- Steam Trapping
- Steam trap sizing & selection
- Estimating steam load
- Effective condensate removal
- Condensate Recovery

**Date:** 7 & 8 November 2019

**Time:** 09:00 - 17:00

**Venue:** Spirax Sarco Singapore



Scan Me to view more about Spirax Sarco Training

# Product Maintenance Practical Training

## WHO IS IT FOR?

Contractors, Maintenance Staff, and Facilities / Operations personnel responsible for installation, operation, trouble shooting and maintenance of Steam Traps, Condensate Pumps, Pressure and Temperature Controls Systems.

- Introduction to Steam Traps
- How Steam Traps Work and Spirax Sarco Steam Trap Range
- Hands-On Study on different types of Steam Traps and Condensate Pumps (Installation, Operation, Troubleshooting & Repair)
- Introduction to Control Valves & Safety Valves
- A hands-on study of control valves & Safety Valves (Installation, Setting, Operation, Troubleshooting & Repair)



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## GET IN TOUCH!

If you would like to leave your feedback,  
kindly send it to [Spirax.Singapore@sg.spiraxsarco.com](mailto:Spirax.Singapore@sg.spiraxsarco.com)

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