



# Spiral Heat Exchanger

**STH Technologies**

# Spiral Heat Exchanger (SHE) Technology

For those working in the Energy sector or across a wide array of Industries including the Petrochemical, Natural Gas, Petroleum and Food; you'll be familiar with the need for world class Heat Exchanger technology.

Heat Exchangers are designed for efficient cross-medium heat transfer and often form an integral part of day to day operations across a wide number of Engineering based industries.



***“Designed for efficiency in the day to day operations across various industries”***



These days, industry leaders across the globe are becoming more and more aware of the advantages of installing Spiral Heat Exchangers as their primary method of heat transfer.

A Spiral Heat Exchangers (or SHE) is a coiled tube arrangement, with two channels coiled one around the another. These two channels operate in a counter-flow arrangement, offering excellent turn down ratios, while optimising flow patterns which in turn, enhance heat transfer.

# The Advantages of the Spiral Heat Exchanger Technology

In the 21st Century, Spiral Heat Exchangers are proving themselves in a number of extremely important areas. Most notably SHE technology is environmentally friendly, highly efficient, easy to clean as well as efficient in its use of space.

All these factors add up to an extremely cost effective solution. Below is an in depth overview of the most important advantages of this technology:

## Environmentally friendly

A compact Spiral Heat Exchanger will provide your operation with a reduced carbon footprint, which is both environmentally friendly and able also to lower overall costs.

## Efficient use of space

Another clear advantage of using a Spiral Heat Exchanger ahead of a traditional Heat Exchanger unit is its extremely efficient use of space.

## Reduce costs

Throughout the design phase, allocating less space in your factory or plant can allow for far more effective use of equipment, thus reducing long term costs.

## Efficiency in the overall operation

An oversized Spiral Heat Exchanger has other advantages including reduction in occurrence of pressure drop, higher thermal efficiency and reduction in overall energy costs. These factors all contribute to a heightened level of efficiency throughout your operation as a whole.

## Easy to clean

The other prized asset of this technology is that thanks to a robust design and low fouling properties; and by employing a self-cleaning mechanism, cleaning costs are reduced to an absolute minimum. This factor alone often makes the SHE more attractive than traditional heat exchangers as it increases efficiency, cuts down on labour costs and saves time.



# Cross Industry Applications

Spiral Heat Exchangers have a variety of important applications across many different Industries.

Most commonly, you'll find SHE technology employed in Pasteurization, Pre-Heating, (for use in Recuperators) and in Sludge treatment. Along with these you'll find them in other general uses such as in heat recovery, effluent cooling and digester heating.



## **Pasteurization**

Also known as thermal treatment in the food Industry sees the heating of foodstuffs to reduce harmful pathogens prior to sale. Installation and use of Spiral Heat Exchangers in this area can increase heat exchange and energy efficiency – lowering energy misuse throughout an operation.

## **Recuperators (Exhaust and Air Handling Systems)**

Combustion is used across many types of processes as a means of generating heat. A recuperator serves to reclaim this heat, reuse it or recycle it in order to increase overall efficiency. A recuperator employs counter flow energy recovery via heat exchange. It is in this area where installation of a SHE will have the greatest impact on heat recover and allow for highly improved efficiency.

## **Sludge Treatment (Thermal depolymerisation)**

This process uses hydrous pyrolysis to convert reduced complex organics into oils. Heat exchange technology is required throughout this treatment and it is widely recognised that Spiral Heat Exchangers are the most effective option in this area. The most notable upside in use of a SHE in Sludge treatment comes in self-cleaning and the capacity to easily withstand a variety of chemicals throughout the process.



# Versatility and the construction of the Condenser

For those working in the Energy sector or across a wide array of Industries including the Petrochemical, Natural Gas, Petroleum and Food; you'll be familiar with the need for world class Heat Exchanger technology.

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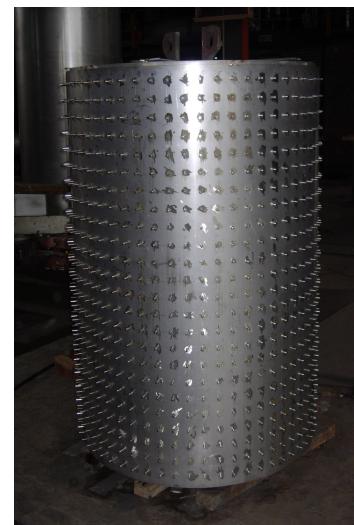
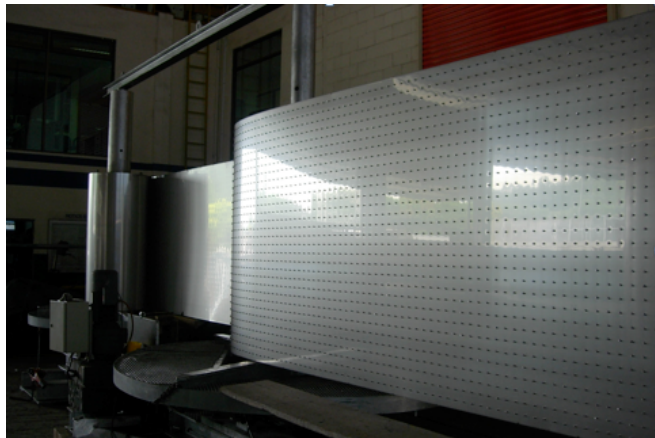
## Compact Construction

It consists of two parallel sheet-metal coils that are wound in such a way to form two separate channels.

The distance between the sheet metal coils in the spiral channels are maintained by using spacer studs that are welded prior to winding.

Once the main spiral pack has been wound, alternate top and bottom edges are welded and each end closed by a gasketed flat body. This ensures no mixing of the two fluids will occur.

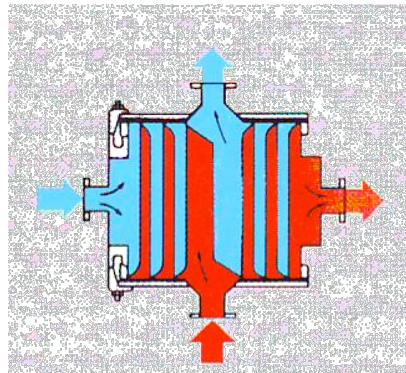
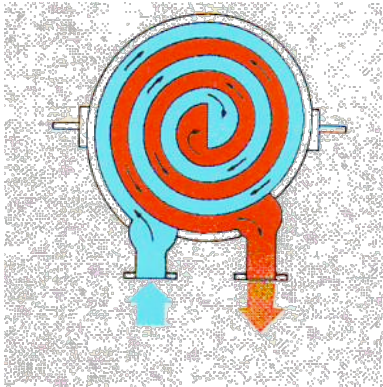
If a leakage happens, it will be from the periphery cover to the atmosphere or to a passage containing the same fluid.



# Types of flows in a Spiral Heat Exchanger

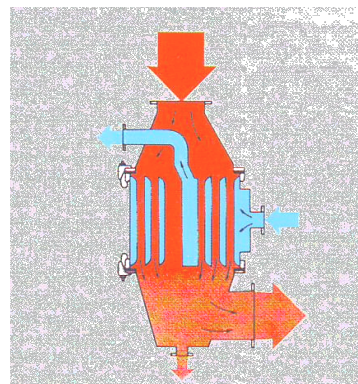
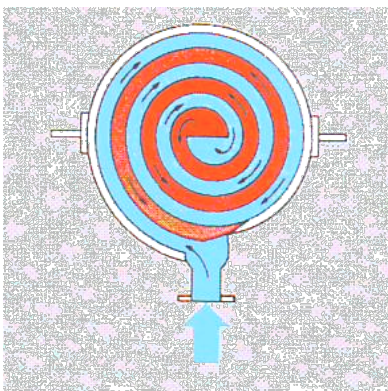
A SHE condenser has advantages over regular condenser technology thanks largely to their unique flow arrangement. A SHE condenser is also perfect for condensing mixed vapours, with or without the inclusion of inert gases. This type of condenser allows for flow of - Counter-current, co-current and a mixture of both, offering a high level of versatility.

## Counter-current Flow



Both fluid flow in opposite directions and are used for liquid-liquid applications.

## Spiral/Cross Flow



One fluid is in spiral flow and the other in a cross flow. Spiral flow passages are welded at each side for this type of spiral heat exchanger. This type of flow is suitable for handling liquid-liquid applications if one liquid has a considerably greater flow rate than the other or the liquid cannot be mixed with the other liquid.

## STH Technologies Difference - Overview of our services

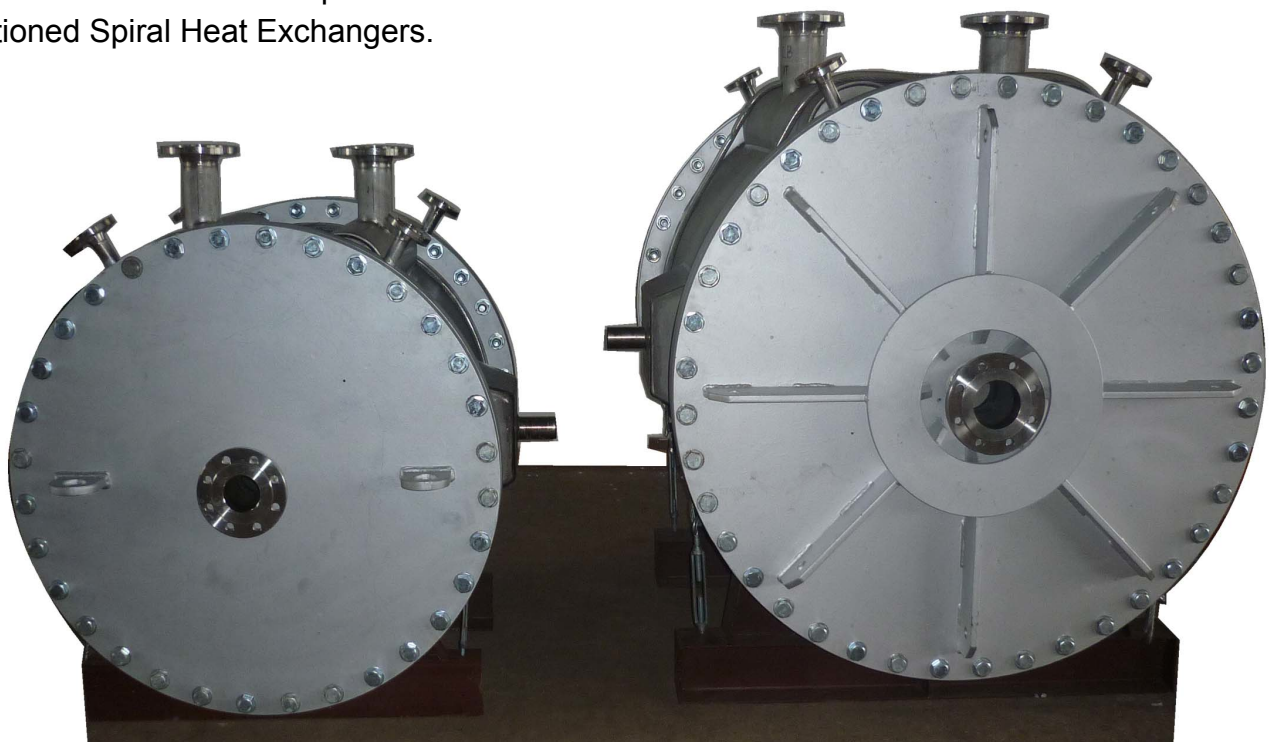
***“STH Technologies is the leading supplier of Spiral Heat Exchanger Technology to the Global marketplace”***

While we specialise in the global supply of state-of-the-art SHE technology, our services also include Fabrication, Maintenance, Repair and overhaul works which include cleaning and refurbishment on used Spiral Heat Exchangers.

We also offer trade-ins on old technology and deal in limited quantities of reconditioned Spiral Heat Exchangers.

Our range of products and services is in many ways superior to our competitors and we work tirelessly to constantly innovate and refine our range of SHE technology and products.

At the same time, we're always seeking new ways to improve on the services and deliver more efficient products to our clients.





# STH Technologies Difference - Overview of our services

## Our Extensive Product Range

Our product range is highly diverse and has uses across a wide number of industries. We offer SHE technology in a range of fixed sized units, plus we also have a number of other options in our customised range.

We stock Spiral Heat Exchangers for use as gas/liquid condensers, as well as shell and tube grade Exchangers for a multitude of uses.

Our Food relevant SHE/ condenser products are also certified as food grade equipment. Servicing a wide variety of clients across a huge range of industries, we guarantee that we only offer the highest standard of quality equipment.



## Fabrication

Outside of our products section, our services also include installation and fabrication of SHE units.

We have a committed engineering team who can tackle any job, big or small and with such an intimate knowledge of Spiral Heat Exchanger technology, we can provide you with the most expert fabrication solution available today.

## Maintenance, Repair and Overhaul

We are extremely proud of our product range and thus take a keen interest in the successful functioning of each and every one of our Spiral Heat Exchangers.

We take the time to provide comprehensive maintenance, repair and overhaul on all our SHE units.

## Reconditioned and Refurbished Units

At STH Technologies, we also provide excellent prices on the purchase or trade in of old SHE units. Where possible we provide reconditioned and refurbished units for sale.

## The Company

We are a Malaysian based enterprise with our Head Offices in Kuala Lumpur, however our location in South East Asia has never deterred us from pursuing a global focus. Thanks to our growth over the last two decades, we've been privileged to provide our equipment and products across the globe, while building strong relationships with organisations across Asia, Africa, Europe and South America.

Determined to offer the very best Spiral Heat Exchanger products in today's dynamic global marketplace, we've set a high benchmark of engineering excellence across our whole operation. It is this high standard which has set us apart from our competitors and helped us to forge countless business relationships.

Strongly committed to our values of quality, professionalism and engineering excellence, we have our eye on the future, and consolidation of our place as the leading supplier of Spiral Heat Exchangers worldwide.



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to our values of  
quality,  
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