

Spiralex' Corrugated Tubular Heat Exchangers used in Food Production

Background

Over recent years, consumer's demands for quality food products have increased, especially in the areas of natural properties, flavour, appearance and texture.

In order to meet these demands, food processors must respond in their treatment of raw products and need to keep abreast of the latest process technologies for fast, homogeneous, aseptic treatment of products: fruit and vegetable, dairy products, soups, purées, puddings, particulate and any products where quality requirement are paramount.

In this way, the use of cold-filling aseptic processes has enabled food manufacturers to supply products of maximum quality and reduce packaging costs. This kind of processes has led to new methods of thermal treatment using **Corrugated Tube** heat exchangers and **Plate** heat exchangers. In order to maintain profitability, versatile heat transfer systems are incorporated into processes which allow for the processing of more than one product, for example cellular juices and fruits pulps.

Spiralex bv supplies all kind of total systems which are based on thermal treatment of products and the heart of the system are our heat exchangers. In this brochure you will find the total system we can supply, including all the device we can supply with it.



Heat Exchangers:

These are the principal equipment of the plant. The heat exchangers based on corrugated tube produces an increase of turbulence when fluids go through. The main advantages of this kind of heat exchangers are:

- The heat transference is faster because of the increase of the mixing, so it can be obtained a more natural product due to avoid thermal degradation.
- The product does not burn inside the tubes because of the stirring and mixing.
- Fouling deposition are reduced, so the heat exchanger can be easily cleaned.

There are three kind of heat exchangers in the plant: Product Heat Exchangers, where the product goes through; Water Heaters, where is heated water used as media in the pasteurisation heat exchanger, and Sterilisation Coolers, where the sterilisation water is cooled before returning to the balance tank.





Devices

Here are presented the main devices used in different lines of the plant in order to assure it works properly:



Steam line

- Steam filter valve
- Manual valve
- Manometer before/after regulating pressure valves and protected by siphon against steam hammer
- Steam pressure reducer valve
- Product hot temperature control

Regeneration loop

- Safety system
- Sight glass
- Expansion tank
- Air vent
- Re-circulating pump
- Flow pump control



Heating water loop

- Safety system
- Sight glass
- Expansion tank
- Air vent
- Re-circulating pump



Cool media line

- Control valve
- Re-circulating pump
- Product temperature control valve
- Hygienic valves

Regulation and Control Equipmen



In this part, it's included the necessary equipment for plant control and regulation. It will be done by the dual control system. The PLC receives electrical signals from valves, pumps, temperature sensors (PT 100). An industrial PC will show the flow diagram of the plant, in order to know the different plant working parameters. The plant will be able to be handle in both, automatic or manual way.



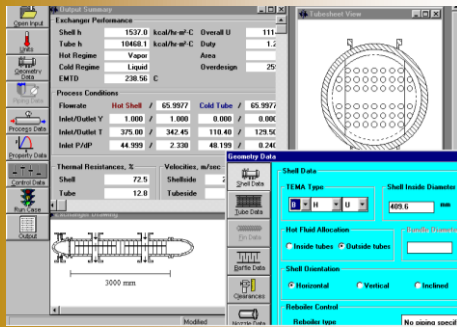
CIP system

We can deliver a CIP system designed to provide detergent requirements to your plant. The system is equipped with conductivity gauges being fully automatic.



Other Devices

Together with the system, Spiralex BV supply the isolation of the system, return lines from bag-in-box filling machine, balance tanks, deaerator tanks, pumps, separators, homogenisers among others important elements necessary for a turnkey plant



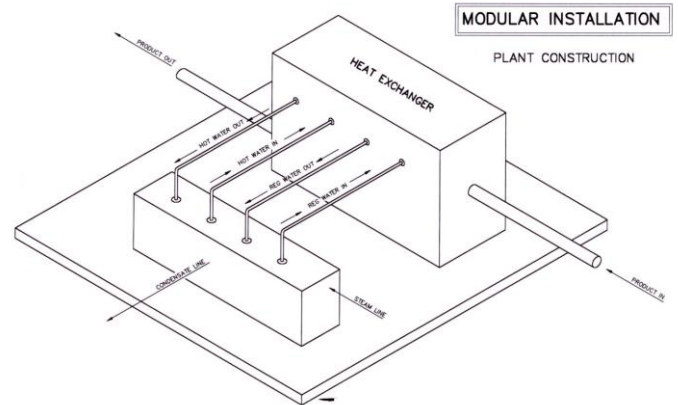
Design

The Spiralex® thermal design is carried out by our own calculation programs in conjunction with the most technologically advanced software available.

Mechanically, the design meets the AD-MERKBLATTER design code for a pressure design of 10 bar and a design temperature of 90°C, the manufacturing materials were selected according to the type of fluids to be treated. The Spiralex® heat exchanger was inspected and approved by DET NORSKE VERITAS.

REFERENCES

- * HERO * JUVER ALIMENTACIÓN * CARGILL *
- EUROCITRUS * UNILEVER * NESTLÉ * DANONE *
- ORANGINA * NUTRICIA * SCHREIBER FOODS *
- JACOBS SUCHARD * PARMALAT * NABISCO * KRAFT *
- HEINZ * MANTEQUERÍAS ARIAS * LECHE PASCUAL *
- REMIA * BARILLA * COCA COLA *



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Spiralex is a main supplier for thermal solutions in the pharmaceutical, food and chemical industries. Its thorough and project-oriented approach, its service and quick response makes Spiralex a reliable and major partner to many leading companies.

When you need additional information or advice, please contact Spiralex BV.