

Kelstream Scraped Surface Heat Exchanger (SSHE)

Kelstream builds scraped surface heat exchangers for inline cooling or heating of your product. The Kelstream SSHE is commonly utilized in aseptic processing of foodstuffs. These heat exchangers are preferred because of their capability to process heat-sensitive, viscous, or particulate-laden products, enhance the heat transfer of viscous products, and minimize the extent of burn-on, or fouling on the heat transfer surface.



Features and Principles

Due to its two concentric heated surfaces, its scraper principle and its large capacity per unit, the Kelstream Scraped Surface Heat Exchanger is the perfect solution for your thermal process. The scraping also takes care for a homogeneous mixing without damaging the product or the particles (up to 25 mm) in it.

Models and Options

The Kelstream Scraped Surface Heat Exchanger is available in a range from 0.5 m² up to and including 7.0 m² for capacities ranging from 100 ltr/hr up to a capacity of 10.000 ltr/hr per unit. The three biggest advantages of the Kelstream Scraped Surface Heat Exchanger are:

- Two concentric heat exchange surfaces to provide an efficient heat transfer
- Efficient heat transfer by continuous scraping the entire surface
- A large heating surface per unit on a small footprint (so, it is space and cost saving)

Benefits and Advantages

The Kelstream Scraped Surface Heat Exchanger has a huge variety of uses and processes. This is due to its economical and efficient design that fully serves its contents. An overview of the main properties:

The scraping principle: economical and clean

The mixing system continuously scrapes the whole heated or cooled surface, resulting in an extremely efficient transfer of heat. This scraping principle has a major efficiency advantage compared to conventional plate or tube-shaped heat exchangers. Furthermore, this prevents the product from sticking to the side.

Mixing with preservation of homogeneity

An additional advantage of the mixing system is that the liquid also mixes while scraping. This promotes heat transfer and keeps the liquid homogenous. In some cases it is even possible to aerate the product, with or without compressed air or nitrogen.

Cooling/heating products with firm components

With the Kelstream Scraped Surface Heat Exchanger you can cool and heat products that contain firm components. The maximum product identity is preserved. You can cool/heat products with particles of a maximum size of 25 mm.

Thorough cleaning

The Kelstream Scraped Surface Heat Exchanger can be fully included in the existing CIP system. You can clean the Kelstream with or against the stream, whereby the mixing system can turn clockwise or anticlockwise. This results in optimum cleaning of the Kelstream Scraped Surface Heat Exchanger.

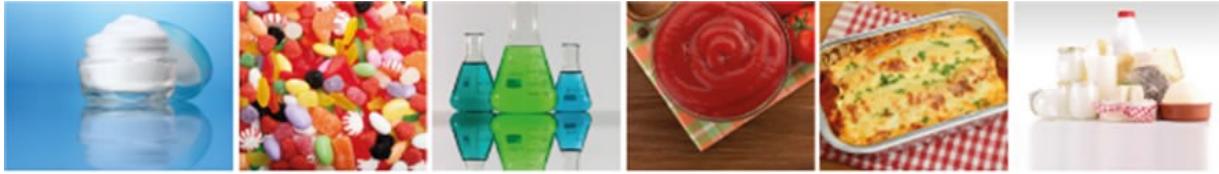
Low downtime

The Kelstream has open-source maintenance, which means it isn't necessary to order spare parts from Kelstream. This can save a considerable amount of downtime during servicing or replacement. The Kelstream is also easy to use because the wearing part can be inspected via the hinged lid. It is not **necessary to disassemble** the shaft seal and bearings first. This easy way of inspection can prevent loss of time.

Constant capacity and temperature

The Kelstream is equipped with two covers through which a cooling/warming medium is pumped. Your product will be monitored and evenly warmed or cooled on two sides (inside and outside the cover). The cooling/ warming medium is completely isolated from your product.

Markets and Applications



The extremely versatile Kelstream Scraped Surface Heat Exchanger can be used for all thin, medium and high viscous products. These can be heated and cooled inline in a controlled way. The Kelstream is used in various markets: feed, food, pharmaceutical and non-food.

Every product has its own characteristics and values. Our team of process engineers are very experienced in calculating which solution is best for your process. We approach each project individually where we take into account the knowledge that we have gained from previous projects. This way we can guarantee the best solution for your specific process.

Feed

- Animal Feed Processing
- Cat/Dog Food with Jelly Meat

Process fresh meat for pet food

- Food
- Soups
- Salsa
- Hummus
- Milk concentrate
- Curd
- Yoghurt and milk
- Mashed potato
- Mechanically Deboned Meat
- Sausage Pasteurisation
- Fruit (puree)
- Vegetable puree
- Pie filling
- Fat crème
- Bonbon filling
- Fruit filling
- Chocolate
- Caramel/Fondant
- Jam/marmalade

Pharmaceutical

- Aerosols
- Syrup
- Vitamins
- Creams

- Ointments
- Sterile operations
- Coating carriers
- Crème preparations
- Dryer systems
- Medicine
- Vaccines
- Containment
- Tonic
- Intravenous fluids
- Eye, ear and nose preparations

Non-food

- Deodorants
- Hand cream
- Toothpaste
- Face creams
- Lotions
- Lipstick
- Shaving Cream
- Shampoo
- Shower Gels
- Glue
- Lubricants
- Inks
- Polymers
- Paints
- Polishes

Processes

Basically all thermal processes are based on cooling or heating. By using different models and sizes of Kelstream's Scraped Surface Heat Exchanger, the effect on the product is different. Kelstream makes a heat transfer calculation based on the properties of your specific product, its initial temperature and the desired final temperature.

Cooling

Bringing down the temperature of your product as much as your process is asking for. Cooling can be done with several cooling mediums, like glycol and (ice) water.



Heating

Heating your product can be done by using steam to heat the surfaces. We can calculate how much steam you need to achieve the desired temperature.

Tempering

Tempering is a method of increasing the shine and durability of chocolate couverture by melting it and cool it down. With the Kelstream Scraped Surface Heat Exchanger you can temper chocolate in a very controlled way.

Jellification

Jellification is defined as the process of turning a substance into a gelatinous form. With this process, liquid substances are converted into solids with the help of a gelling agent.

Crystallisation

Crystallisation is the formation of solid crystals from a solution. Crystallisation is applied in the sugar and dairy industry, but also for crystallize Sodium Kelstream is applied.



Pasteurisation

Pasteurisation is a temperature treatment of food whereby microbiological organisms are destroyed in order to make the product safe for human consumption and to provide biological stability of the food product to improve its shelf life.

Sterilisation

Sterilisation is the removal of living micro-organisms, and can be achieved by using steam to heat the product. Sterilisation is a heat treatment of over 100°C for a period long enough to lead to a stable product shelf-life.



Boiling

Boiling is heating the product till it reaches boiling temperature. Kelstream is able to calculate the amount of heat is needed to reach boiling temperature.

The Kelstream Series

| | F50 | F100 | F150 | F200 | F450 | F700 |
|--|------------|-------------|-------------|-------------|-------------|-------------|
| Capacity (ltr/hr)* | 50-120 | 100-200 | 150-300 | 250-500 | 800-1500 | 1000-2500 |
| Cooling/Heating Medium (m³/hr) | 2-8 | 4-8 | 4-8 | 4-12 | 15-25 | 15-25 |
| Footprint Ø Diameter (m) | 0.8 | 0.8 | 0.8 | 0.8 | 1.3 | 1.3 |
| Total Height (m) | 1.3 | 1.6 | 1.9 | 2.3 | 2.9 | 3.5 |
| Connection product in/out | DN50 | DN50 | DN50 | DN65 | DN80 | DN80 |

*These values give an impression of the possibilities. The product capacity and accompanying cooling/heating medium depend on the product and are calculated by GPI per case

Options

To provide you with the best possible solution, every Kelstream can be equipped with several features.

Material: 1.4404/1.4462 Duplex

Seals: Hygienic lip seal, optional with cleanability and controllability

Lid/Cover: Single walled; Double Walled; Scraped; Not Scraped

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