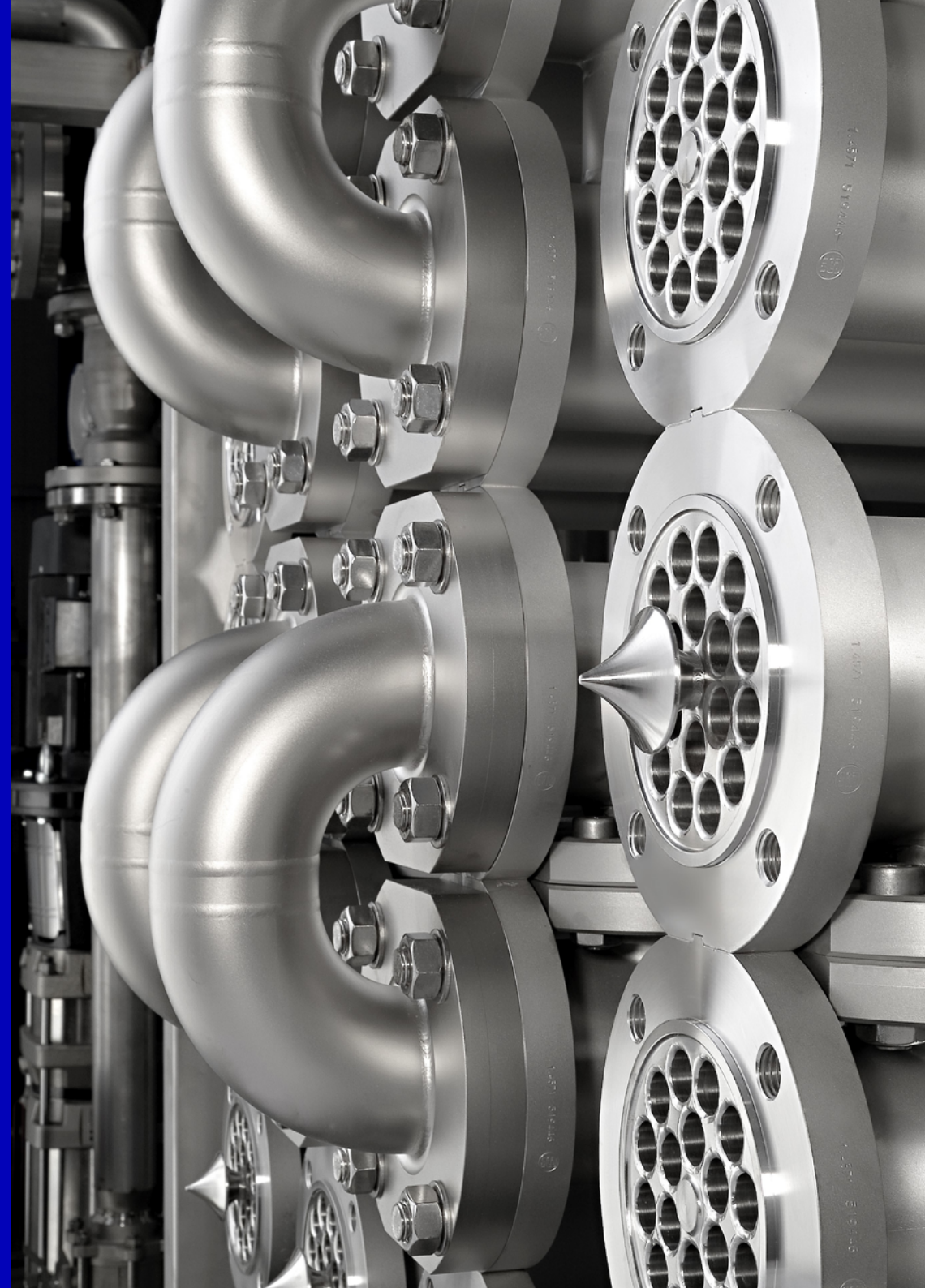


# GEA VARITUBE®

Tubular heat exchangers



# PIONEERING HEAT EXCHANGE EFFICIENCY.

## **Tubular heat exchangers**

GEA VARITUBE® tubular heat exchangers are specifically designed for the thermal treatment of low- to high-viscous products as well as products containing particles, pulp and fibers. They are applicable for hygienic and aseptic applications of food, beverage, dairy or new food industries.

## **Application-oriented technology**

The GEA VARITUBE® tubular heat exchangers are individually planned to ideally meet the specific product requirements. They are designed to offer most gentle heat treatment by reducing the thermal stress onto the product and by decreasing dwell times to a minimum. With improving the plant's filling volume, product losses can be further optimized.

The GEA VARITUBE® tubular heat exchangers allow to benefit from energy savings by reduction of both thermal capacities and required pump energy. The hygienic design features a sanitary sealing system and product flow paths free of dead pockets, to ensure both highest product quality and reliability.

GEA VARITUBE® heat exchangers feature

- Gentle product handling
- Gentle thermal treatment
- Custom-tailored design
- Robust and pressure resistant tube design
- Theoretically infinite lifespan for tubes and modules
- Low maintenance effort by just few product wetted gaskets
- Special designs available (i.e. high pressure versions)
- Available as complete skids or loose component

## **Technical concept**

GEA VARITUBE® heat exchangers are straight-tube heat exchangers with one or more inner tubes inside a shell tube.

The inner tubes can be executed either plain or corrugated, with corrugated tubes leading to a boost of the thermal efficiency of the heat exchangers.

The GEA VARITUBE® tubular heat exchangers are available in a high variety of tube diameters and tube- bundle arrangements. The portfolio allows to select the adequate heat exchanger model to perfectly adapt to the specific needs of the product and thermal application, or to handle most challenging conditions.

GEA VARITUBE® tubular heat exchangers are manufactured from stainless steel 1.4404 (AISI 316 L) / 1.4571 (AISI 316 Ti) and standard gaskets of EPM / PTFE. Higher graded stainless steel or improved gasket materials are available per demand.

The tubular heat exchangers are assembled in subunits of 2 or 4 heat exchanger modules each. This modular design results in lowest installation efforts and allows for simplest future modifications of the heat exchanger.

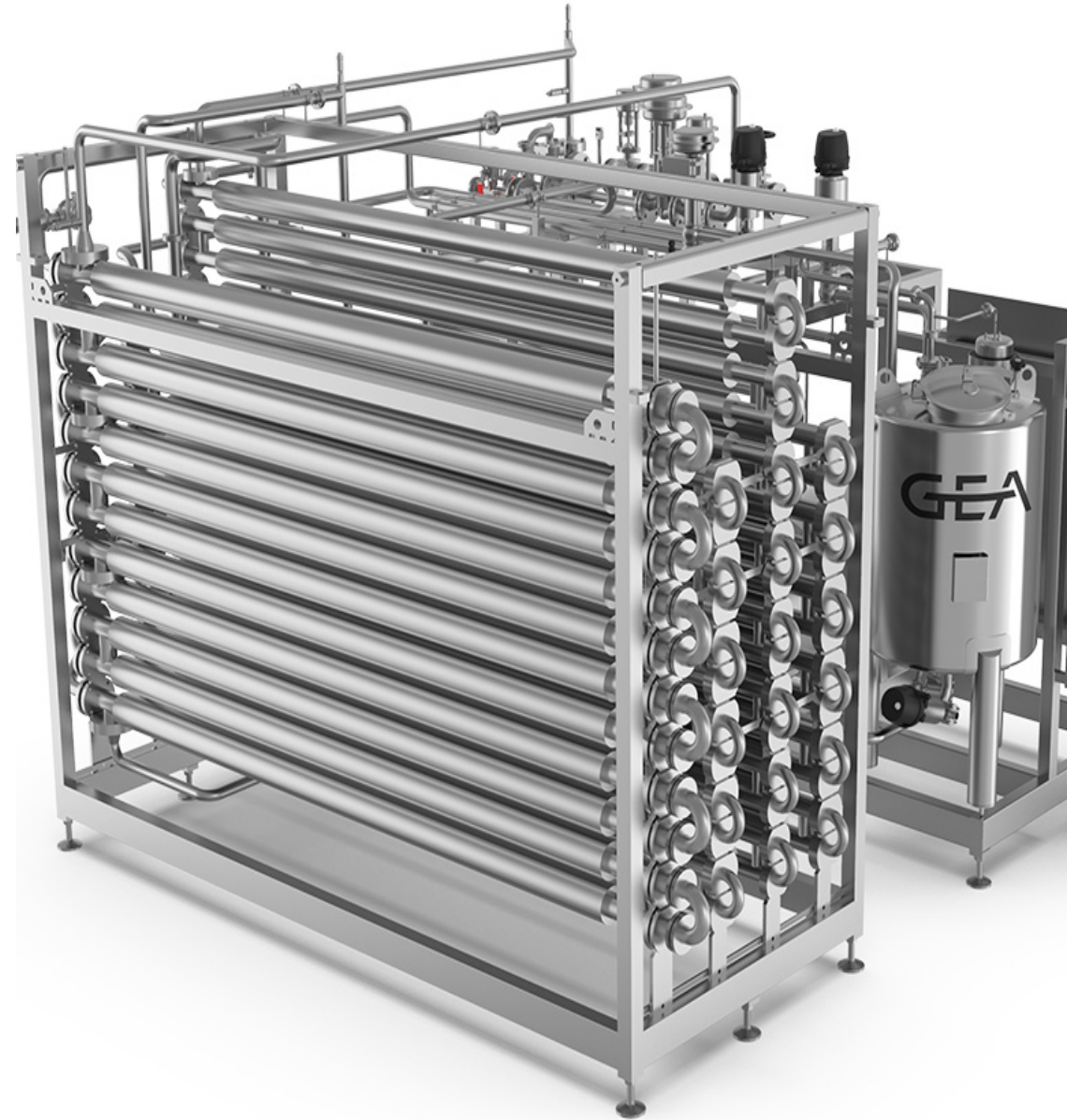
The inner tubes can be installed in a fixed or a floating mount. The floating mount is mainly used for compensation of the thermal expansion between inner tubes and shell tube. It allows to remove the tube bundle for visual inspection.

GEA VARITUBE® heat exchangers offer low maintenance effort due to their robust design and lowest spare part count. All product wetted gaskets can be accessed easily, i.e. for inspection or regular replacement.

**Discover more at [gea.com](https://www.gea.com)**

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# TUBULAR HEAT EXCHANGER

## GEA VARITUBE® S & M

GEA VARITUBE® S

Single tube-in-tube or multitube-in-tube design for the indirect heat treatment of products containing chunks and particles. The product is processed through the inner tubes, which are surrounded by the service medium in the shell tube.

The inner tube can be installed in a fixed or a floating mount.

Welded modules allow for inspection of the tube side without draining the shell side.

A floating mount is used primarily to compensate for the thermal expansion between inner tubes and shell tube.

Gasket leakage detection and pressure less drain between shell and product side.

A variety of tube bundle arrangements are available to specific product and flow specifications.

The single tube-in-tube design is also compatible with pipping systems for product recovery and cleaning,

GEA VARITUBE® M



# TUBULAR HEAT EXCHANGER

## GEA VARITUBE® S and M

Single tube-in-tube or multitube-in-tube design for the indirect heat treatment of products containing chunks and particles. The product is processed through the inner tubes, which are surrounded by the service medium of the shell tube.

The inner tubes can be installed in a fixed or a floating mount.

Gasket leakage detection and pressure less drain between shell and product side.

A variety of tube bundle arrangements are available to specific product and flow specifications. The single tube-in-tube design is also compatible with pipping systems for product recovery



GEA Varitube® M - fixed & removable product tube



GEA Varitube® M - fixed & removable product tube

# TUBULAR HEAT EXCHANGER

## GEA VARITUBE® P

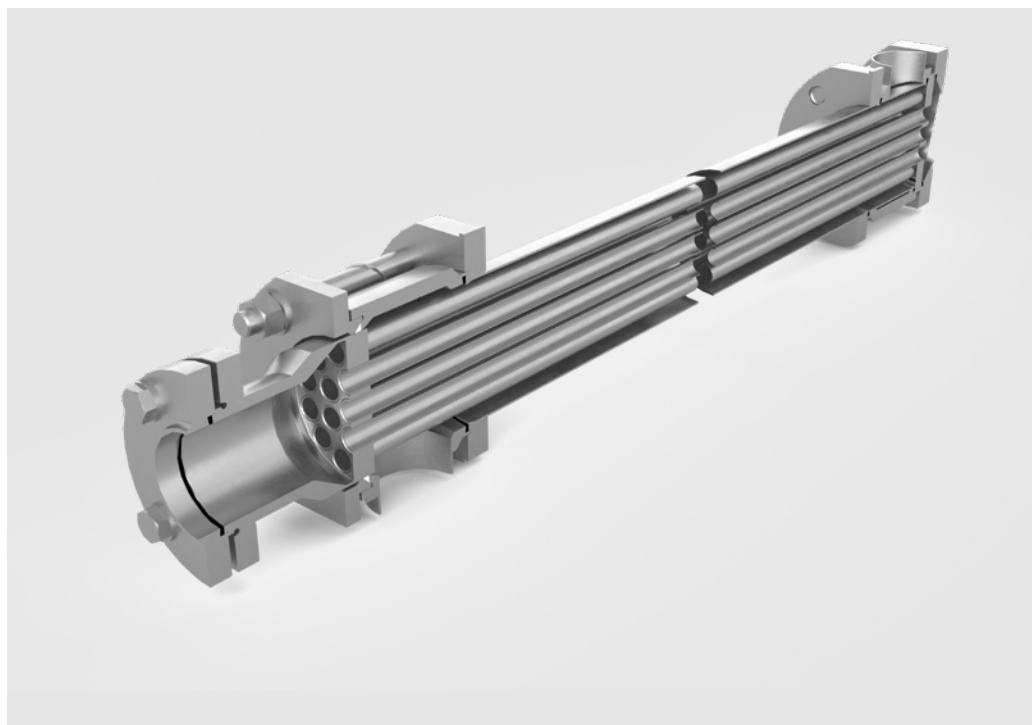
Available in both single tube-in-tube or multitube-in-tube designs for direct product-vs.-product heat recovery, where the product is processed both through the inner tubes and through the surrounding shell tube.

This configuration is suitable for low viscosity, smooth products that may contain fibers.

The inner tubes are installed in a floating mount, which makes it possible to remove the tube bundle for visual inspection or maintenance.

Using product-vs.-product heat recovery the heat exchanger can achieve higher rates of heat regeneration when compared with an indirect recovery system that uses a regenerative water circuit, and the GEA technology also has a smaller footprint.

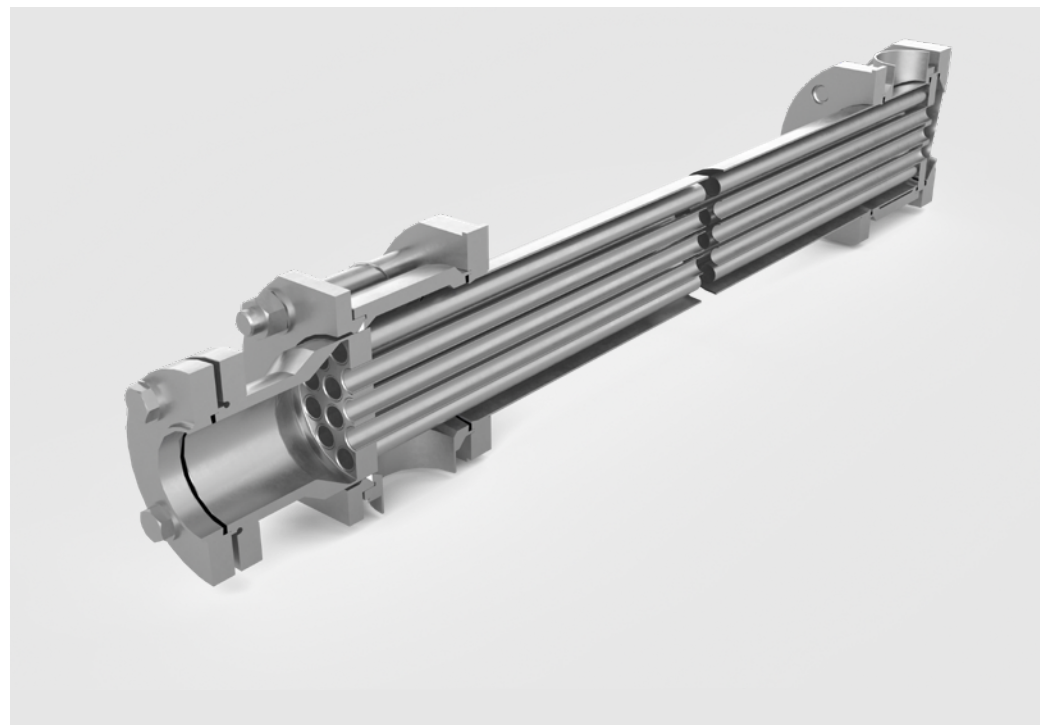
Customer benefits from energy savings and so better plant



GEA VARITUBE® P

# TUBULAR HEAT EXCHANGER

## GEA VARITUBE® P



GEA VARITUBE® P

Available in both single tube-in-tube or multitube-in-tube designs for direct product-vs.-product heat recovery, where the product is processed both through the inner tubes and through the surrounding shell tube.

This configuration is suitable for low viscosity, smooth products that may contain fibers.

The inner tubes are installed in a floating mount, which makes it possible to remove the tube bundle for visual inspection or maintenance.

Using product-vs.-product heat recovery the heat exchanger can achieve higher rates of heat regeneration when compared with an indirect recovery system that uses a regenerative water circuit, and the GEA technology also has a smaller footprint.

Customer benefits from energy savings and so better plant sustainability.

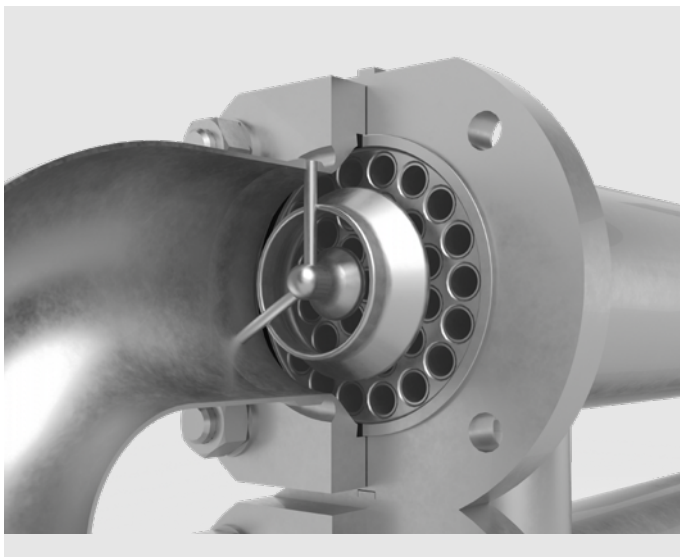
# TUBULAR HEAT EXCHANGER

## GEA VARITUBE® SK

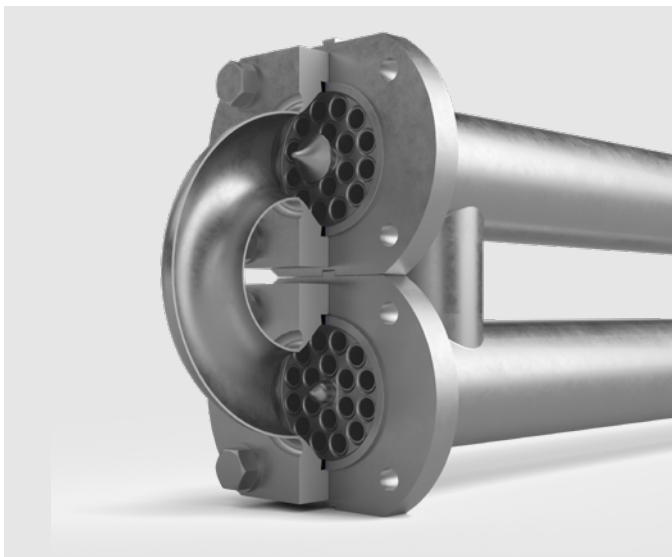
The GEA VARITUBE® SK is our patented flow device, which minimizes deposits on the tube sheets and distributes the product homogeneously across the tube bundle.

Using jet-type acceleration, the flow device can improve plant runtime and also supports CIP.

Configured with the GEA VARITUBE® SK technology our GEA VARITUBE® tubular heat exchanger can handle products containing fibers of up to 30 mm length



GEA VARITUBE® SK



GEA VARITUBE® SK

The patented flow device is available for all GEA VARITUBE® M (GEA VARITUBE® M-SK), as well as multitube versions of the GEA VARITUBE® P (GEA VARITUBE® P-SK).



# TUBULAR HEAT EXCHANGER

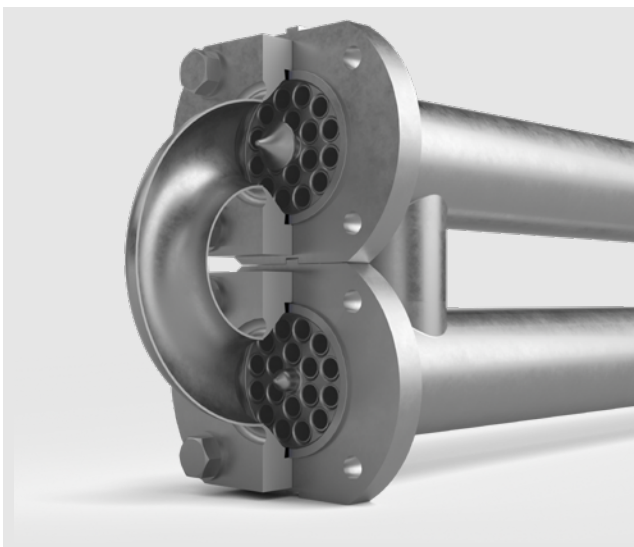
## GEA VARITUBE® SK

GEA VARITUBE® SK is our patented flow device, which minimizes deposits on the tube sheets and distributes the product homogeneously across the tube bundle. Using jet-type acceleration, the flow device can improve plant runtime and also supports CIP.

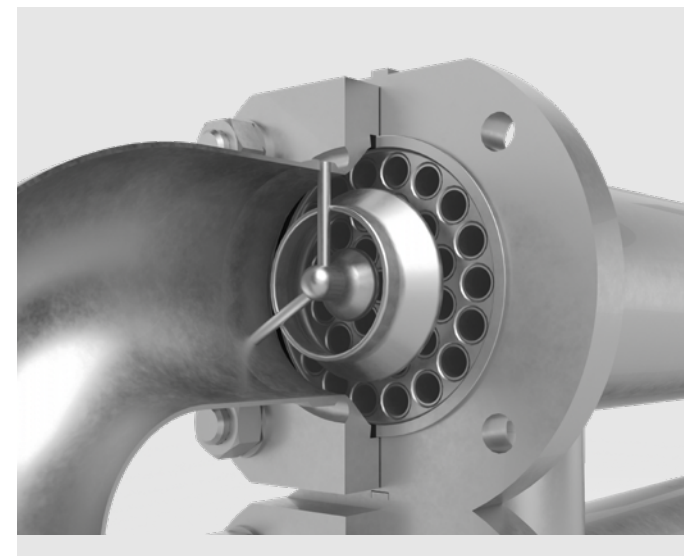
Configured with the VARITUBE® SK technology our GEA VARITUBE® tubular heat exchangers can handle products containing fibers of up to 30 mm length.

The patented flow device is available for all GEA VARITUBE® M (GEA VARITUBE® M-SK), as well as multitube versions of the GEA VARITUBE® P (GEA VARITUBE® P-SK).

GEA VARITUBE® SK



GEA VARITUBE® SK



# TUBULAR HEAT EXCHANGER

## Corrugated product tubes

Most product tubes can be executed with a corrugated finish. The corrugation prevents the product from forming laminar layers close to the tube walls.

The thereby more turbulent product behavior enables an improved efficiency of the thermal application and the overall heat exchanger.

Likewise, the corrugation leads to optimized plant runtimes and a reduction of CIP requirements.



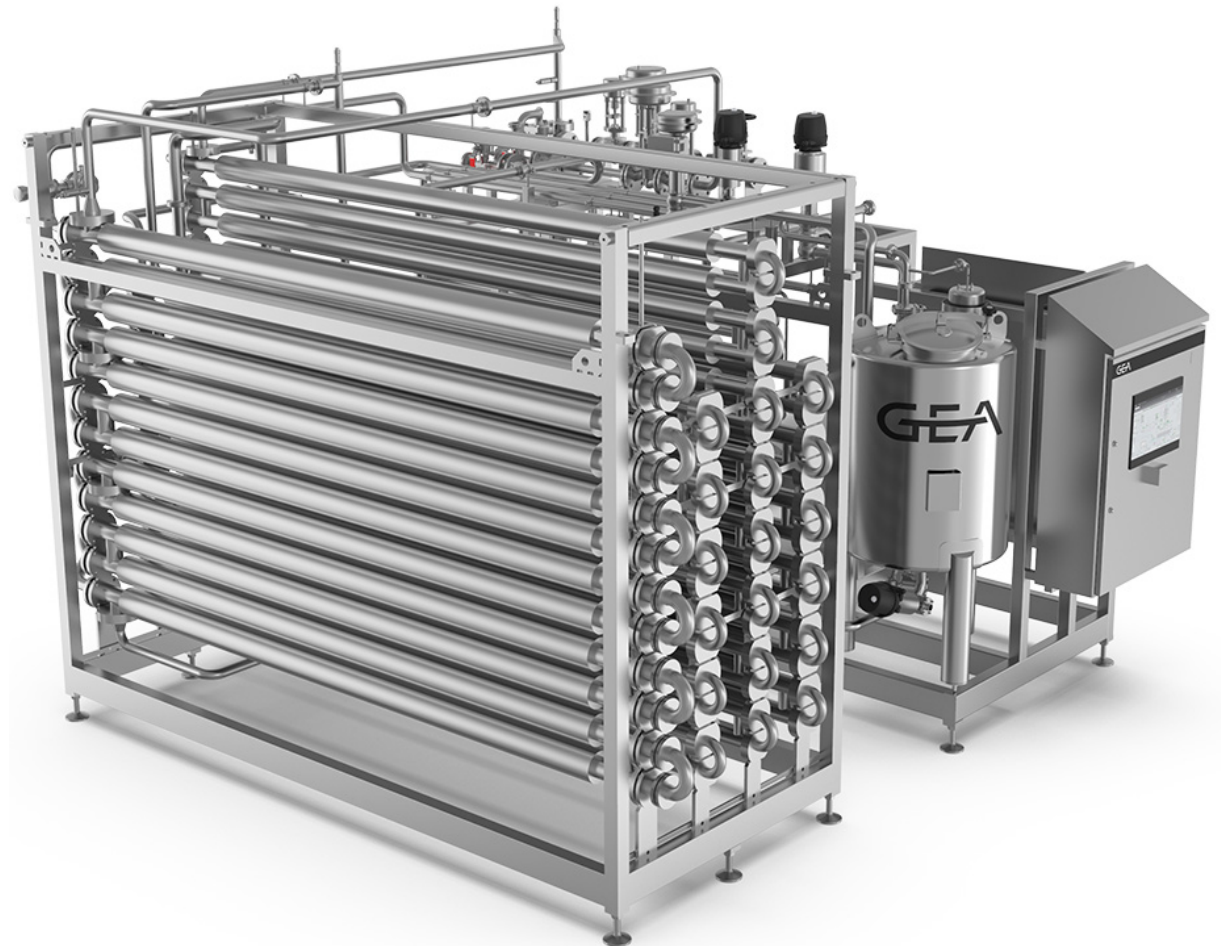
GEA VARITUBE® Corrugated product tubes

# TUBULAR HEAT EXCHANGER

## GEA VARITUBE® S, M & P

### Key benefits and features:

- Available as complete heat exchanger skid or as a component for integration into an existing plant
- Assembled from subunits, each consisting of 2 or 4 heat exchanger modules
- Inner tubes installed in a fixed or floating mount
- Inner tubes can have either a smooth or corrugated surface
- Tube lengths of 3,000 mm or 6,000 mm
- Different insulation types available
- Higher graded materials available
- EHEDG-certified gaskets
- 3A-type heat exchangers available
- TÜV-approved



# TUBULAR HEAT EXCHANGER

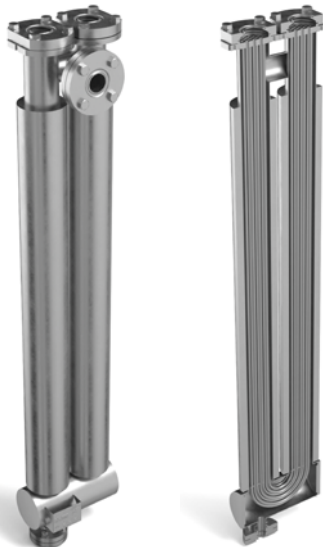
## CIP Heater & Hot Water Units

Multitube-in-tube design, optimized for hot water generation or heating CIP media via indirect heat exchange by means of saturated steam or water.

### GEA VARITUBE® HS

GEA VARITUBE® HS heat exchangers feature high thermal performance at average volume flow rates of up to 60 m<sup>3</sup>/h.

- Inner tubes installed in U-shape (hairpin) configuration



GEA VARITUBE® HS

### GEA VARITUBE® E

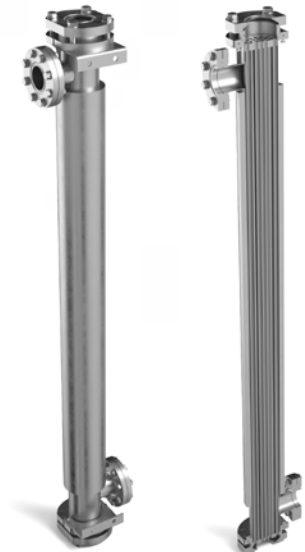
High performance versions for use with heat pump water are also available.

GEA VARITUBE® E heat exchangers are optimized to process high volume flow rates of up to 220 m<sup>3</sup>/h at average thermal capacity.

- Available in tube lengths of 2,000 mm or 3,000 mm
- Available in tube lengths of 2,000 mm or 3,000 mm
- Hygienic design – allows direct product processing
- Corrugated inner tubes – boost thermal efficiency
- Leakage detection
- Removable tube bundle

#### Included as standard:

- EHEDG-certified gaskets
- TÜV-approved
- Compensation for thermal expansion
- Insulation – air gap with stainless steel shell
- All counter connections



GEA VARITUBE® E



# GEA TEST FACILITIES

Evaluate GEA VARITUBE® heat exchangers at their site of manufacture, and help, support and advice from our experts.

## Global centers of excellence

At our GEA center of competence (COC) in Ahaus Germany, you can compare and test our GEA VARITUBE® heat exchanger technology for different applications.

The Ahaus site is where we develop and manufacture the tubular VARITUBE® units, so along with a wide range of the equipment itself you'll find a wealth of specialist technology, process and industry expertise, all under one roof.

Partner with us and our experts will sit down with you to evaluate your project needs and business expectations, budget, and existing production set up.

We can then work with you to design and configure the best VARITUBE® system for your heating needs, and trial your existing, and developmental products a GEA pasteurization and UHT plants. If requested we can also look at you needs for upstream and downstream processes, whether that's systems for ingredients handling and mixing or to tailoring systems for refrigeration, homogenization or separation.

Our experts can optimize existing processes and help develop processes for new products. Whatever the scale, we can perform comparative process studies, help devise customers trials, and conduct product - and customer- specific tests.



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