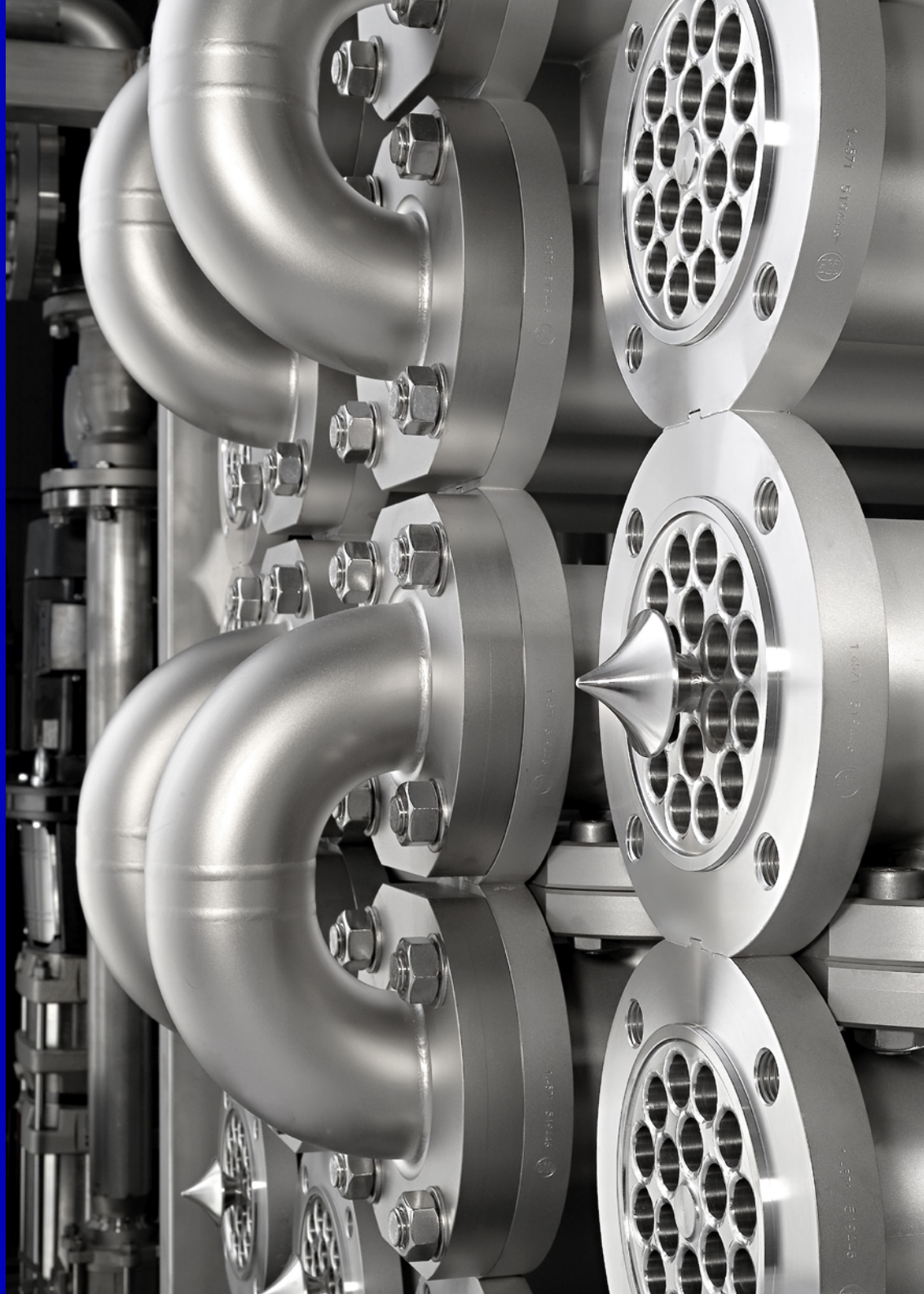
GEA VARITUBE®

Tubular heat exchangers



GEA Engineering for a better world.

GEA.com

PIONEERING HEAT EXCHANGE EFFICIENCY

Tubular heat exchangers
GEA VARITUBE® tubular heat exchangers have been specifically designed for the thermal treatment of low- to high-viscosity products in the food, beverage, dairy and new food industries. With the capacity to handle products containing particles, pulp or fibers, our GEA VARITUBE® portfolio is ideally suited to hygienic and aseptic applications, and we can custom design the heat exchangers to meet specific product and process requirements, including high pressure applications.

Application-oriented technology
GEA VARITUBE® tubular heat exchangers have been developed to support gentle heat treatment by reducing thermal stress on the product and keeping retention time at high heat to a minimum. Our small volume design means that there´s less product wasted when emptying the tubes for product changeover and/or CIP.

When configured as part of a UHT, pasteurization, or other heating or cooling plant, the VARITUBE® tubular heat exchangers can also help to achieve energy savings by reducing both thermal capacities and required pump energy.

The hygienic design features a sanitary sealing system, and product flow paths without dead pockets, to help reduce the risk of contamination and make thorough cleaning easier.

Features of GEA VARITUBE® heat exchangers:
- Gentle product handling and thermal treatment
- Robust, pressure-resistant tube construction
- Potentially unlimited lifespan for tubes and modules
- Easy inspection and low maintenance effort
- Option for customized designs (i.e. high-pressure versions)
- Available as a complete skid or as a component for customers to integrate into their exisiting installation

Technical concept
Our comprehensive family of GEA VARITUBE® heat exchangers comprise straight-tube heat exchangers with one or more inner tubes inside a shell tube. We can supply inner tubes with corrugated walls, which may improve turbulence characteristics and overall thermal efficiency.

The portfolio spans a wide range of tube diameters and tube bundle arrangements, and we can help customers select a tube bundle design that will best match the thermal profile requirements to process the final product. We’re confident that we can design a heat exchanger configuration that will give you great results, under even the 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 and gasket materials are available on request.

The tubular heat exchangers are assembled from subunits, each comprising 2 or 4 heat exchanger modules. This modular design simplifies both initial installation and any future modifications to the heat exchanger setup.

The inner tubes can be installed in a fixed or a floating mount. The floating mount is used primarily to compensate for thermal expansion between inner tubes and shell tube. Floating mount construction in addition makes it possible to remove the tube bundle for visual inspection.

GEA VARITUBE® heat exchangers are also low on maintenance. The gaskets - a maximum of 4 - are not subject to wear and tear, and those gaskets that come into contact with product can be easily accessed for inspection or regular replacement.

Discover more at gea.com

TUBULAR HEAT EXCHANGER

GEA VARITUBE® S & 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 shell tube containing a service medium.

- The inner tube can be installed in a fixed or a floating mount.
- When installed in fixed mounts, the welded modules allow for inspection of the tube side without draining the shell side.
- Floating mounts are used primarily to compensate for thermal expansion between inner tubes and shell tubes.

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

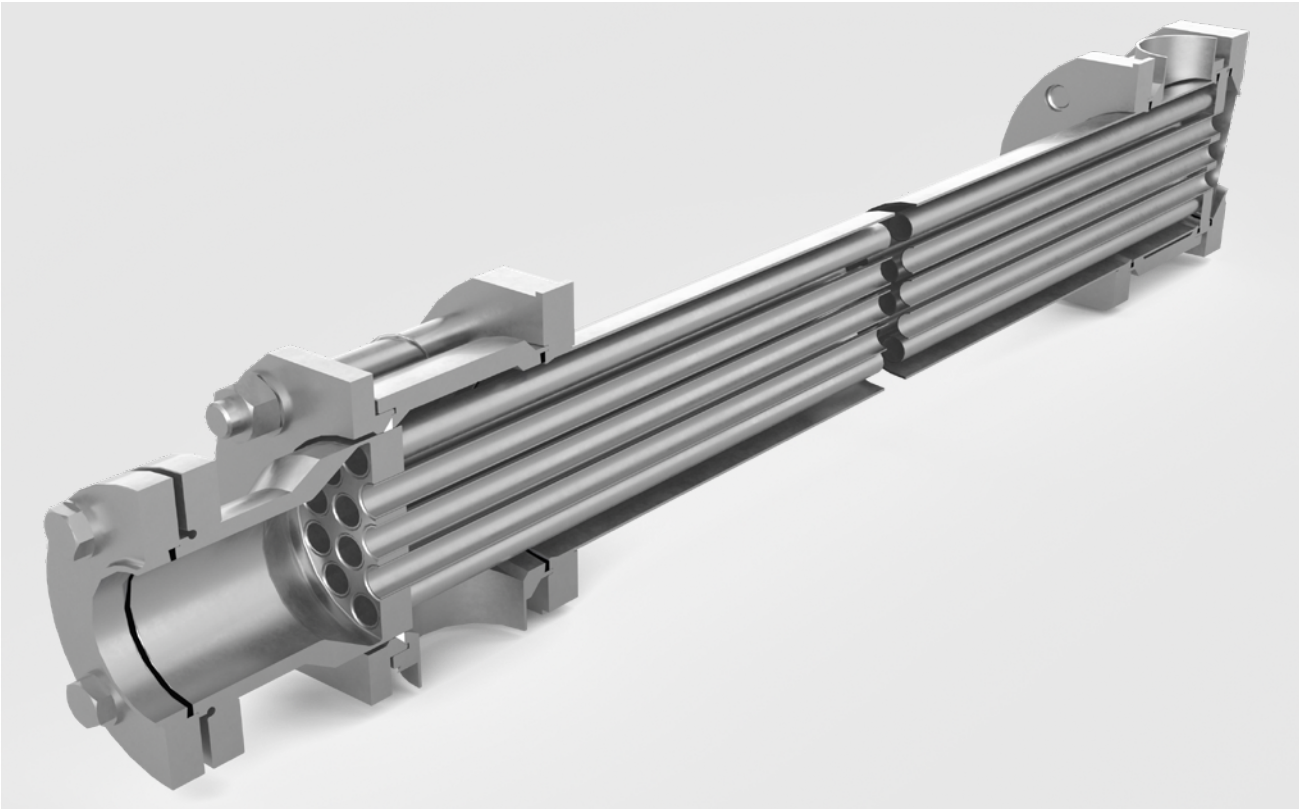
The single tube-in-tube design is also compatible with pigging systems for product recovery and cleaning.

GEA VARITUBE® S

GEA VARITUBE® M

TUBULAR HEAT EXCHANGER

GEA VARITUBE® P



GEA VARITUBE® P

Available in 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. The GEA technology also has a comparatively smaller footprint.

The customer may benefit from energy savings and so better plant sustainability.

TUBULAR HEAT EXCHANGER

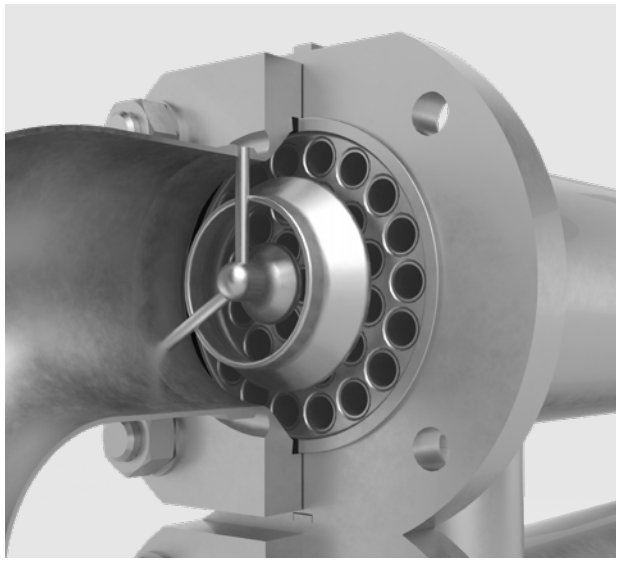
GEA VARITUBE® SK

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

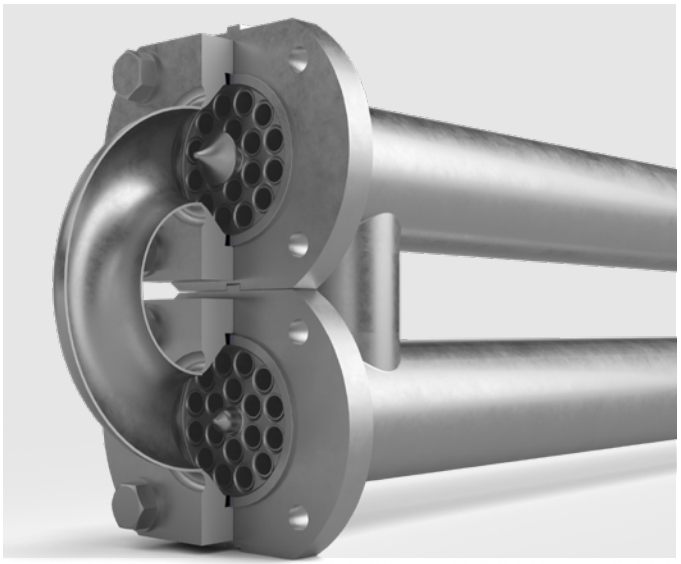
Using jet-type acceleration the flow device can improve plant runtime and also supports CIP.

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

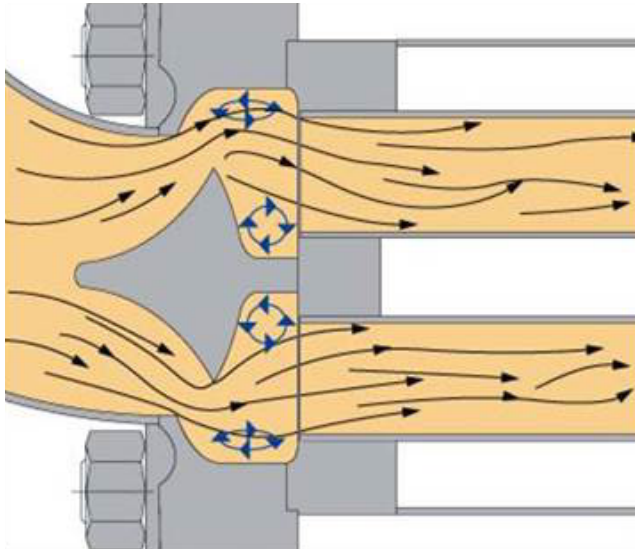
The patented flow device is available for all GEA VARITUBE® M (GEA VARITUBE® M-SK), as well as multitube versions of the GEA VARITUBE® P (GEA VARITUBE® P-SK).



GEA VARITUBE® SK



GEA VARITUBE® SK



GEA VARITUBE® SK flow pattern

TUBULAR HEAT EXCHANGER

Corrugated inner tubes

GEA VARITUBE® corrugated product tubes

Most product tubes can be constructed with a corrugated finish.

Corrugation primarily increases flow turbulences and prevents the liquids from forming laminar layers close to the tube walls.

The thermal efficiency and overall heat exchanger efficiency improve with optimization of turbulence.

Higher product turbulence also reduces the risk of fouling and sedimentation, which may improve plant runtimes.

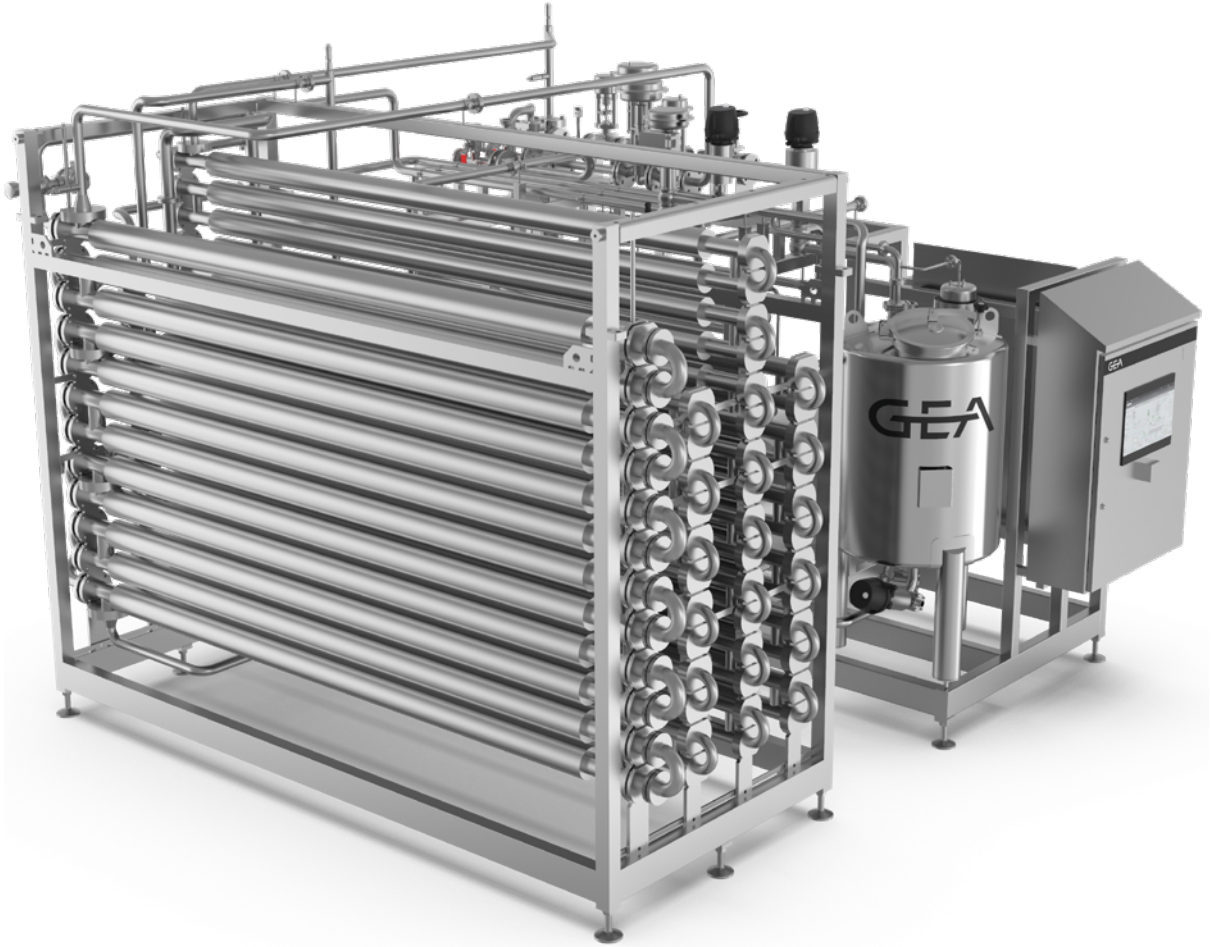
The benefits of corrugation may extend to reducing CIP duration and intensity, as well as enabling longer production intervals between CIP cycles.

TUBULAR HEAT EXCHANGER

GEA VARITUBE® S, M & P

Key features and benefits:

- Available as a 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
- Available with the patented flow device GEA VARITUBE® SK
- Available in tube lengths of 3,000 mm or 6,000 mm
- Different insulation types available
- Higher graded materials available
- All counter connections
- EHEDG-certified gaskets
- 3A-type heat exchangers available
- TÜV-approved



TUBULAR HEAT EXCHANGER

GEA VARITUBE® HS

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

GEA VARITUBE® HS heat exchangers offer high thermal performance at average volume flow rates of up to 60 m^3/h.

- The Inner tubes are installed in a U-shape (hairpin) configuration

Included as standard:

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

GEA VARITUBE® HS

TUBULAR HEAT EXCHANGER

GEA VARITUBE® E

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® E heat exchangers are optimized for processing at high volume flow rates of up to 220 m^3/h, at average thermal capacity. High performance versions for use with heat pump water are also available.

- 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 CENTER

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

Global centers of competence
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 you can access a wide range of equipment and 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 on GEA pasteurization and UHT plants. If requested we can also look at you requirements for upstream and downstream processes, whether that includes systems for ingredients handling and mixing, or tailored 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.

Discover more at gea.com

Engineering for a better world.

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