HRS UNICUS SERIES

STANDARD SPECIFICATIONS

MATERIALS:
Service Side: AISI 304 Stainless Steel
Product Side: AISI 316 Stainless Steel
Other material options available

CONNECTIONS:
Service Side: Clamp/Flange
Product Side: Clamp/Flange
All clamp & flange types available

SURFACE FINISH:
External: Polished
Internal: <0.8μ

DESIGN CONDITIONS:
Service Side: 147 PSI/365°F
Product Side: 232 PSI/365°F

APPLICATIONS

The HRS Unicus Series is suitable for heat transfer applications in a wide range of industries including:

- Dairy
- Fruits
- Vegetables
- Confectionery
- Protein
- Beverages
- Cosmetics
- Environments/Waste
- Bioreactors
- Oil & Gas

www.hrs-heatexchangers.com

PRODUCT BROCHURE: HRS UNICUS SERIES
SCRAPED SURFACE HEAT EXCHANGERS
The effect of scraping is twofold, it ensures potential fouling is minimized by keeping the tube wall clean while enhancing turbulence and increasing the heat transfer rate. This patented design makes the Unicus an ideal heat exchanger for high fouling and viscous fluids.

The gentle movement of the scrapers allows the system to be used with delicate products, such as whole fruit or vegetable pieces, without destroying the integrity.

The Unicus when used as an evaporator can be applied in a multi-effect setup or in combination with mechanical vapour recompression. The scrapers allow continuous operation and increases uptime of the plant.

The Unicus evaporator can operate under vacuum and is ideally suited for volume reduction of environmental waste and reducing transportation costs.

The patented design is based on a traditional shell and tube heat exchanger with scraping elements inside each tube. The reciprocating movement of the scrapers moves the fluid while cleaning the heat exchange surface. This keeps heat transfer high and reduces downtime. In addition, the scraping movements introduce turbulence in the fluid increasing levels of heat transfer.

This patented design makes the HRS Unicus Series the ideal heat exchanger for sanitary applications where fouling or low heat transfer is a limiting factor.

A special version of the Unicus has been developed for use in environmental applications. The patented design consists of a shell and tube heat exchanger with scraping rods in the interior tubes. During evaporation, fouling and reduced heat transfer can become a problem for traditional evaporators.

With the Unicus, the scraping action keeps the heat transfer surface clean and maintains high heat transfer, allowing the Unicus to concentrate to levels where traditional technologies fail.

The Unicus when used as an evaporator can be applied in a multi-effect setup or in combination with mechanical vapour recompression. The scrapers allow continuous operation and increases uptime of the plant.

The HRS Unicus Series is the ideal heat exchanger for sanitary applications where fouling or low heat transfer is a limiting factor.

The gentle movement of the scrapers allows the system to be used with delicate products, such as whole fruit or vegetable pieces, without destroying the integrity.

The solution for applications with delicate products

The effect of scraping is twofold, it ensures potential fouling is minimized by keeping the tube wall clean while enhancing turbulence and increasing the heat transfer rate. This patented design makes the Unicus an ideal heat exchanger for high fouling and viscous fluids.
HRS R SERIES

STANDARD SPECIFICATIONS

MATERIALS
Service Side: AISI 304 Stainless Steel
Product Side: AISI 316L Stainless Steel
Other material options available:
Scrapers: PEKK, Metal Detectable PEKK
Gaskets: EPDM, Viton, PTFE
Mechanical Seals: Carbon Silicon Carbide, Tungsten Carbide

CONNECTIONS:
Service Side: Clamp/Flange
Product Side: Clamp
All flange & clamp types available

SURFACE FINISH:
External: Polished
Internal: <0.8μ

DESIGN CONDITIONS
Service Side: 145 PSI/365°F
Product Side: 305 PSI/365°F

POWERS:
Standard R Series: 5.4 hp - 40hp
Heavy Duty RHD Series: 10hp - 74hp

HRS R Series

APPLICATIONS

The HRS R Series is suitable for heat transfer applications for very wide range of products including:

- Viscous Food Products
- Convenience Foods
- Protein
- Cosmetics
- Oil & Gas

PRODUCT BROCHURE: HRS R SERIES
SCRAPED SURFACE HEAT EXCHANGERS

www.hrs-heatexchangers.com

HRS UK
+44 1923 232 335
HRS Spain
+34 948 676 157
HRS USA
+1 770 726 3540

HRS Malaysia
+60 3 8081 1898
HRS India
+91 20 2566 3581
HRS Australia
+61 3 9489 1866
HRS New Zealand
+64 9 889 6045
The HRS R Series is a rotary scraped surface heat exchanger developed for sanitary applications. Each inner tube contains a scraper bar fitted with a helical screw which rotates at high speed and enhances flow through the tube whilst reducing pressure drop. Furthermore, the continuous scraping action eliminates fouling on the inner tube wall, ensuring that the heat transfer area is clean at all times.

The HRS R Series technology uses a rotary scraper bar, which can reach speeds of up to 300rpm reaching high levels of shear and mixing at the heat transfer surface, dramatically increasing the heat transfer rate.

In addition to the standard HRS R Series, a heavy duty version is available. The HRS RHD has been developed for more demanding applications and has all the benefits of the standard model. Features include a more powerful self-supported motor, larger scraper bar and additional scraper supports which enable the unit to be used under extreme conditions.

Some of the unique features of the HRS R Series include:

- Large heat transfer area
- Single and multiple tube options, all with removable tubes
- Reduced pressure drop
- High level of product recovery
- Low noise level gearbox
- Energy efficient
- Multipass version available

The HRS R Series is the ideal solution for high value viscous applications such as honey, molasses, custards and creams, where fouling or low heat transfer is a problem.

The solution for high value viscous applications

GEARBOX SYSTEM

Unlike other rotating scraped surface heat exchangers, the HRS R Series can use up to six heat transfer tubes in a single unit. This is made possible using a uniquely engineered gearbox system which transfers the energy of a single electrical motor to the scraper rods in each individual tube. In this way a greater surface area can be fitted in a single unit. The gearbox design also gives the benefit of low noise level during operation due to the materials of construction.

REMOVABLE INNER TUBES

The HRS R Series is fitted with removable inner tubes, each tube has a single mechanical seal at position A and guide ring at position B. Easy inspection and maintenance significantly reduces operational costs.

BAFFLE PLACEMENT

The design of the HRS R Series allows one or multiple heat transfer tubes to be fitted into one single heat exchanger shell, increasing the size of the shell side cross section. If the liquid shell side flow is limited then velocities and therefore heat transfer are reduced on the shell side. To improve this, longitudinal baffles are fitted to separate the fluid paths in the shell acting as an individual compartment for each heat transfer tube. The flow cross section is reduced and velocities increase, maintaining heat transfer rates. For multipass designs, complete counter-current flow between the shell side fluid and tube side fluid can be obtained.

In case of condensing (for example steam heating) or evaporating (for example ammonia cooling) fluids, the units can be designed without longitudinal baffles for better performance.

SEALING SYSTEM

This HRS R Series is fitted with a unique sealing system which enables the removal of individual tubes, resulting in easy servicing and replacement. This unique feature leads to a significant reduction in operating costs.

Some of the unique features of the HRS R Series include:

- Large heat transfer area
- Single and multiple tube options, all with removable tubes
- Reduced pressure drop
- High level of product recovery
- Low noise level gearbox
- Energy efficient
- Multipass version available

The HRS R Series is the ideal solution for high value viscous applications such as honey, molasses, custards and creams, where fouling or low heat transfer is a problem.