

HRS UNICUS SERIES

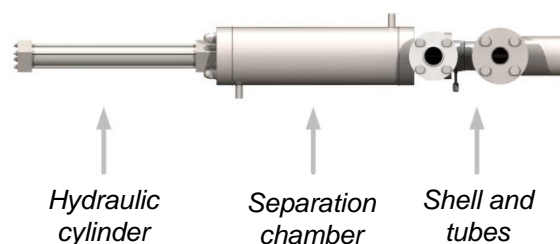
DYNAMIC SCRAPED SURFACE HEAT EXCHANGER



The HRS Unicus Series is a scraped surface heat exchanger ideal for industrial and hygienic applications. Based on the traditional shell and tube heat exchanger, the Unicus has scraping elements inside each interior tube that are moved back and forth by hydraulic action. This is to ensure that any fouling on the tube wall is removed. Additionally, the scraping movement introduces turbulence in the fluid increasing heat transfer. This design makes the Unicus an ideal heat exchanger for high fouling and viscous fluids.

ELEMENTS OF THE UNICUS

The Unicus consists of a hydraulic cylinder that moves the scraper bars, the heat exchanger and a chamber that separates both elements. The hydraulic cylinder is connected to a hydraulic power pack that is included in the supply. Smaller models of the Unicus can be supplied with a pneumatic cylinder.



SCRAPED SURFACE

The scraping system consists of a stainless steel rod to which the scraping elements are fitted. Various types of scrapers are available. For each application, the optimal scraper is selected and fitted. The Unicus can work with fluids containing big particles due to its unique design.



APPLICATIONS

Heating/Cooling
Pasteurization
Crystallization
Evaporation

MATERIALS OF CONSTRUCTION

Shell Side: AISI 304/316L Stainless Steel
Tube Side: AISI 316L Stainless Steel

STANDARD CONNECTIONS

Shell Side: DIN Flange
Tube Side: Clamp/Flange

STANDARD DESIGN CONDITIONS

Shell Side: 10 barg/365°C
Tube Side: 16 barg/365°C

SURFACE FINISH

External: Satin or Polished
Product Side: Roughness < 0,8µ

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PRODUCTS

Dairy:	Cheese, yogurt, cream, whey concentrate, ice cream, condensed milk
Fruits:	Juice concentrate, fruit purée, diced fruit
Vegetables:	Fried vegetables, tomato concentrate
Convenience Food:	Eggs, mashed potato, ketchup, mayonnaise, baby food, spreads, fats, oils
Proteins:	Visceras, meat slurry, MDM, meat stuffing, minced meat, pet food
Confectionary:	Chocolate, pie filling, paste, marmalade, syrup, gelatine, starch, butter
Beverages:	Coffee extract, juice freezing, yeast-malt extracts
Cosmetics:	Lotion, cream, gel
Environmental Waste:	Waste concentration, manure, food plant effluent, chemical waste, solvent recovery
Biofuels:	Oil extraction for biodiesel, biomass pre-treatment, thermal hydrolysis, fermentation digestate concentration

EVAPORATION

A special version of the Unicus has been developed for evaporation applications. The 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. In 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 evaporators can be applied in a multi-effect setup or in combination with mechanical vapor recompression. The scrapers allow continuous operation and reduces downtime of the plant.



The Unicus evaporator can operate under vacuum and is ideally suited for volume reduction of environmental waste to reduce shipping costs.

RANGE

Models:	Lengths (ft)	Surface Area (sq ft)	Shell Side Connection	Tube Side Connection	Volume Shell Side (gal)	Volume Tube Side (gal)	Power (*) Consumption (hp)
U 1/1 89/60	3 – 20	12	1½"	2"	4	4	2 (**)
U 1/1 104/76	3 – 20	15	1½"	2½"	5	6	2 (**)
U 3/X 154/60	3 – 20	37	2"	2"	14	12	4 (**)
U 4/X 219/76	3 – 20	62	3"	2½"	28	26	7 (**)
U 7/X 219760	3 – 20	86	3"	2"	25	28	7 (**)
U 7/X 273/76	3 – 20	109	3"	2½"	38	45	10 (**)

Unicus evaporator models can be supplied with areas up to 1290 sq ft. Contact HRS Heat Exchangers for further details.

The surface area and volumes shown are for 20ft length models.

(*) The power consumption is for a stroke rate of the scraper bar around 10-14 cycles/minute.

(**) These models can be supplied with a pneumatic cylinder instead of a hydraulic cylinder. The required air pressure is a minimum of 8 bar. Ask HRS Heat Exchangers for further details.