RECIPROCATING SCRAPED SURFACE HEAT EXCHANGERS

HRS UNICUS SERIES - ENVIRONMENTAL

The HRS Unicus Series is a scraped surface heat exchanger was originally developed for food and hygienic applications. Based on the traditional shell and tube heat exchanger, the Unicus has scraping elements inside each interior tube which move back and forth by hydraulic action.

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.

The scraping action of the Unicus keeps the heat transfer surface clean and maintains high heat transfer, allowing concentration to levels where traditional technologies fail. In evaporation processes, the Unicus can be utilised in a multi-effect setup or in combination with mechanical vapour recompression. The scrapers allow for continuous operation and significantly reduced downtime of the plant.

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

TECHNICAL DATA

APPLICATIONS

Evaporation
Heating/Cooling
Crystallisation

STANDARD MATERIALS OF CONSTRUCTION

Service Side:	AISI 304 Stainless Steel
Product Side:	AISI 316L Stainless Steel

Other material options available

STANDARD CONNECTIONS

Service Side:	Flange
Product Side:	Flange

All flange types available

SURFACE FINISH

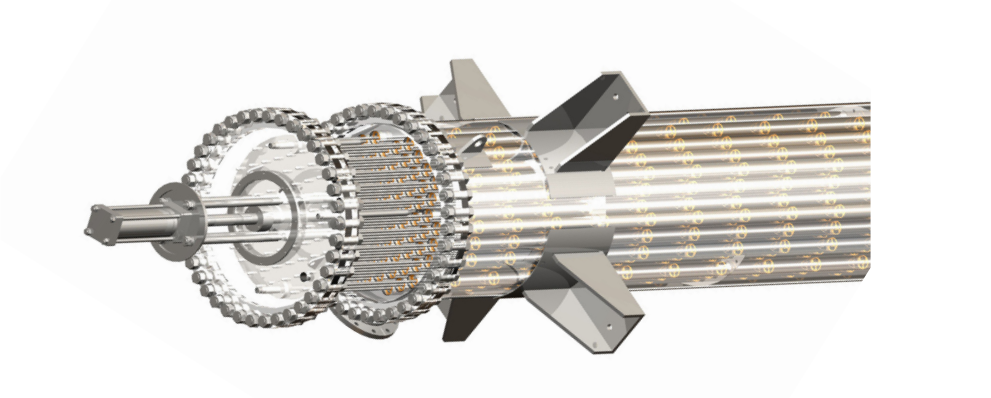
External:	Matt
Internal:	Matt

STANDARD DESIGN CONDITIONS

Service Side:	10 bar/185°C
Product Side:	16 bar/185°C

DESIGN CODE AND COMPLIANCE

PD 5500, PED 2014/68/EU, 2006/42/CE, ASME TR CU 032, DOSH Compliant



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SCRAPED SURFACE

The scraping system consists of a stainless steel rod to which the scraping elements are fitted. Various types of scrapers are available.

The optimal scraper is selected based on the application. The Unicus' unique design enables use with fluids containing large particulates.

ELEMENTS OF THE UNICUS

Hydraulic Cylinder and Power Pack
Separation Chamber
Heat Exchanger

PRODUCTS

ENVIRONMENTAL WASTE:	Waste concentration, manure, food plant effluent, chemical waste, solvent recovery
BIOFUELS:	Oil extraction for biodiesel, biomass pre-treatment, thermal hydrolysis, digestate concentration

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