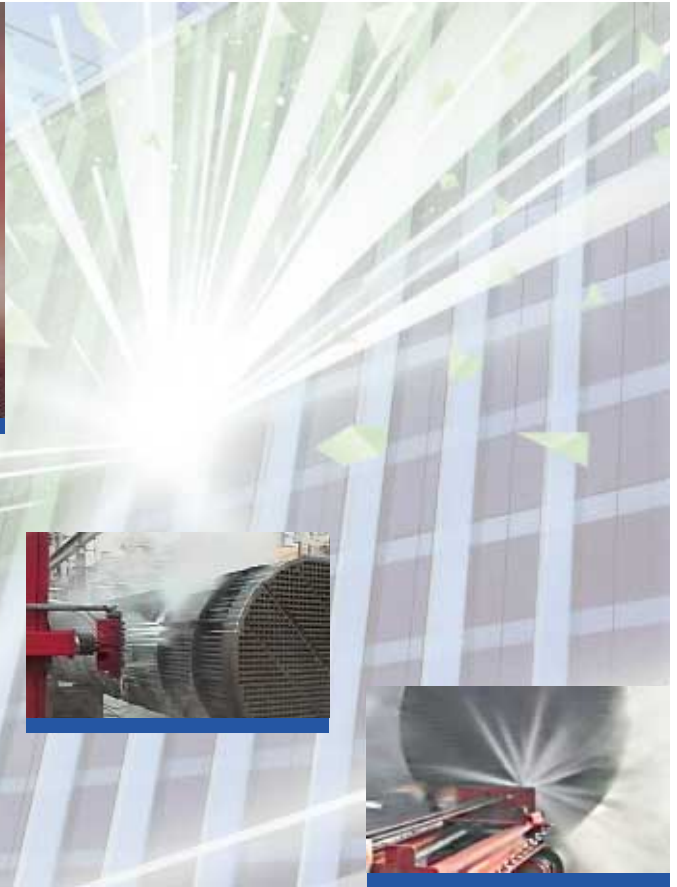


Heat Exchanger Cleaning



high pressure

12 000 to 40 000 psi 800 to 2 800 bar

shell-and-tube heat exchanger cleaning

plate-type UHP water jetting

spiral refineries

petrochemical industry

chemical industry

foodstuff industry

manual automatic

environmental technology industry

special devices

bundle cleaning

URACA High Tech for Heat Exchanger Cleaning

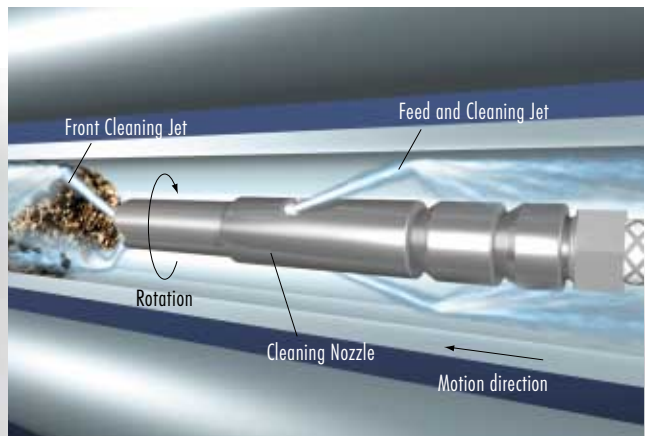
Heat exchangers are important and common components of plants in the chemicals sector, the oil industry and in the foodstuffs and environmental technology sectors.

Economic aspects and quality requirements demand very well-cleaned heat exchangers.

The method of cleaning heat exchangers with high pressure water is becoming more and more popular due to economic, environmental and energy-related aspects: Virtually all types of heat exchanger can be cleaned with high pressure water:

- Shell-and-tube heat exchangers
- Spiral heat exchangers
- Plate-type heat exchangers

The particular advantage of this method relates to the fact that cleaning with water under high pressure avoids the damage to the heat exchanger tubes which frequently occurs when cleaning mechanically. The method also allows tubes banks with curved tubes to be cleaned.



Manual Heat Exchanger Cleaning



Manual cleaning of a vertical heat exchanger with flexible hose and bell-type splash guard.



Top: Flexible and rigid lances.
Bottom: Cleaning nozzle. The outlet openings of the cleaning jet can be seen at the front and the pushing nozzles can be seen at the side.



Typical URACA high-pressure pump unit for heat exchanger cleaning.

Basically, heat exchangers can be cleaned in fitted condition (generally using manually guided lances). Alternatively, the tube banks can be extracted and cleaned centrally at a washing position. Automated tube-bank cleaners may also be used in this case for interior and exterior cleaning in order to save time.

An extensive range of accessories, developed on the basis of practical needs, such as various nozzles (rigid and rotating) and flexible and rigid lances is necessary in order to always achieve optimum cleaning in view of the wide variety of heat exchangers. URACA also develops and produces special devices for automated cleaning of spiral heat exchangers for instance.

URACA also attaches particular importance to operating personnel safety. Consequently, we have developed safety accessories such as nozzle restraint devices, remote controls (HP hose unpressurised) and foot valves (dead-man circuits) etc.

Heat exchanger cleaning equipment from URACA:

- Easy handling.
- Ruggedly engineered for tough continuous duty.
- Various cleaning nozzles and devices allow matching to the relevant intended application.
- Rigid and rotating nozzles and lances.
- Safe working thanks to safety devices.



Top: Restraint device for protection against cleaning lance whiplash.
Bottom: Protective clothing



Automated Heat Exchanger Cleaning

URACA AutoJet FX 2/3



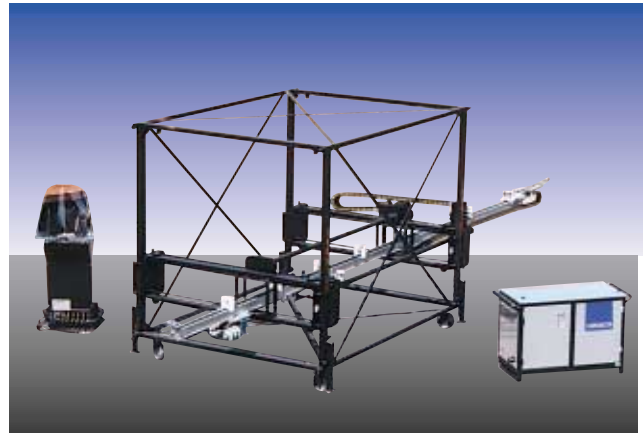
Semi-automatic heat exchanger cleaning with flexible lances.



- Convenient operation via lance gun: no need to touch cleaning lances.
- Automatic feed hydraulically variable.
- Allows horizontal and vertical cleaning.
- For bundles built-in and removed.
- 2 flexible lances included in scope of delivery (12 m each).
- Equipment and accessories, see Page 8.

Technical data		Auto Jet FX 2/3
Length	mm	900
Width	mm	720
Height	mm	260
Weight	kg	87
Water pressure max.	bar/psi	1400/20000
Flow / lance	l/min	45 - 60
Lance speed	m/sec	0,7 - 1,5
Lance working stroke	mm	12.000
Lance diameter (outside)	mm	9,4 - 11,6
Lance diameter (internal)	mm	5 - 6
Automation	Feed	Positioning
	automatic	manual

URACA AutoJet OV2/40 KPSI



Simple and efficient cleaning system for particularly stubborn dirt. Very variable in use with low space requirement and low costs.



- Very high cleaning performance thanks to two rigid rotating lances.
- Automatic feed hydraulically variable.
- Allows horizontal and vertical cleaning.
- For bundles built-in and removed.
- Equipment and accessories, see Page 8.

Technical data		Auto Jet OV2/40PSI
Length	mm	8.000
Width	mm	2.000
Height	mm	2.000
Weight	kg	800
Water pressure max.	bar/psi	2800/40000
Flow / lance	l/min	20 - 30
Number of rotating lances		2
Bundle length max.	mm	7.000
Bundle diameter max.	mm	1.500
Lance speed	m/sec	0,5
Automation	Feed	Positioning
	automatic	auto./man.

URACA AutoJet I 930/5 - Internal Cleaning



Generously dimensioned system for high throughput and maximum automation.



- High productivity thanks to extensive automation of operation and designed for continuous duty.
- For dismantled bundles.
- Up to 5 rigid lances clean at one time.
- Complete shielding of the operator by a protective booth.
- Equipment and accessories, see Page 8.

URACA AutoJet E 930 - External Cleaning



Rigid lance system for targeted exterior cleaning of heat exchangers. Ideal in combination with the AutoJet I 930/5.



- 3 cleaning nozzles.
- For dismantled bundles.
- Full shielding of the operator by a protective booth.
- Equipment and accessories, see Page 8.

AutoJet E 930 (left) and AutoJet I 930/5 (right). The ideal combination for exterior and interior cleaning of heat exchangers.



Technical data		Auto Jet I 930/5	
Length	mm	10.600	
Width	mm	2.500	
Height	mm	2.700	
Weight	kg	3.000	
Water pressure max.	bar/psi	1400/20000	
Flow / lance	l/min	70	
Number of lances		1 - 5	
Jet lance horizontal travel	mm	9.300	
Jet lance vertical travel	mm	1.880	
Jet lance cross travel	mm	1.550	
Automation	Feed	Positioning	Heat Ex. Motion
	automatic	automatic	automatic

Technical data		Auto Jet E 930	
Length	mm	9.080	
Width	mm	920	
Cabin hut height	mm	1.830	
Column height (at working condition)	mm	2.700	
Weight	kg	2.000	
Water pressure max.	bar/psi	1400/20000	
Flow / nozzle	l	70	
Number of nozzles		3	
Jet lance horizontal travel	mm	9.000	
Jet lance vertical travel	mm	1.850	
Jet lance cross travel	°	90	
Automation	Feed	Positioning	Heat Ex. Motion
	automatic	automatic	automatic

Handling Systems for Heat Exchanger Cleaning

In some cases, it may be necessary to remove the heat exchangers in order to clean them. Removal of the tube bank is frequently essential, particularly for exterior cleaning.

Special handling units are used to extract and transport the tube bank.

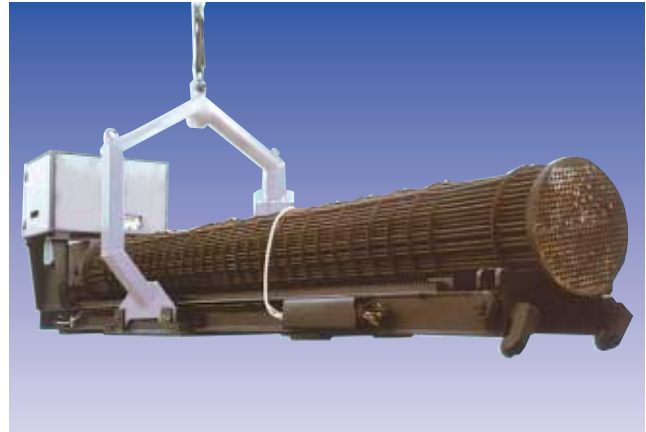
Hydraulic Rollers

The heat exchanger is mounted on two roller blocks and can thus be turned effortlessly to cleaning position.

- Extreme load-carrying capacity.
- Stepless positioning for manual and automatic cleaning.

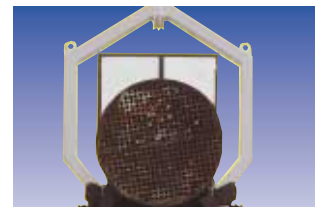


URACA Kid Extractor



Special-purpose hydraulic unit for extraction and reinsertion for virtually all heat exchangers and tube banks in refineries and in the chemical industry.

- The hydraulic system allows automatic switching between high force and high velocity.
- Light-weight, rugged and extremely high-performance.



Technical data		Hydraulic Rollers
Length	mm	1.100
Height	mm	350
Width	mm	800
Weight	kg	300
Bundle weight max.	kg	25.000

Technical data		Kid Extractor
Length	mm	7.000
Height max.	mm	2.215
Width of Extractor	mm	1.020
Weight of Extractor (unloaded)	kg	4.800
Bundle length max.	mm	6.250
Bundle diameter max.	mm	1.600
Winch pulling force max.	kN	280
Bundle weight max.	kg	13.000
Winch pulling speed	mm/min	28.000

URACA Bundle Extractor Truck



Ideal if heat exchangers need to be moved over large distances for cleaning. Extraction, transport and reinstallation can be carried out efficiently with one and the same machine.

- The hydraulic system allows automatic switching between high force and high velocity.
- Rugged and extremely powerful, high-performance.
- Loading and unloading, in addition to transportation without the aid of additional cranes or transporters.



URACA Straddle Carrier



For transporting extracted heat exchangers / tube banks over short and moderate distances.

- Can be manoeuvred very easily in small areas.
- Rugged and extremely powerful, high-performance.
- Fully encapsulated driver's cab for continuous working.



Technical data		Extractor Truck
Working Height max.	mm	7.000
Working Height min.	mm	610
Bundle Diameter max.	mm	2.000
Bundle Weight max. (at min. extraction)	kg	25.000
Bundle Weight max. (at max. extraction)	kg	15.000
Winch pulling force max.	kN	400
Winch pulling speed	mm/min	28.000

Technical data		Straddle Carrier
Length	mm	5.015
Height	mm	3.680
Width	mm	2.370
Weight	kg	7.000
Bundle length max.	mm	12.000
Bundle diameter max.	mm	1.600
Bundle weight max.	kg	25.000
Lift stroke max.	mm	1.300
Transportation speed max.	km/h	40
Gradients max.	%	5

Overview of Heat Exchanger Cleaning

Pump units

A powerful high-pressure pump unit manufactured by URACA forms the basis for heat exchanger cleaning.

Unit	Power
Easy Power 70	70 kW
RS 716	110 kW
RS 724	180 kW
RS 725	300 kW
RS 627	400 kW
RS 412	550 kW

Please refer to our special brochure "High-Pressure Pump Units" for further information.



The RS 627D high-pressure pump unit.

Accessories

From the cleaning nozzle through to the automatic cleaning unit, URACA offers an extensive and high-quality all-in range for professional heat exchanger cleaning.



Highly efficient cleaning nozzles ensure optimum cleaning action. Special models are available for various applications.



High-pressure hoses, switching valves and spray lances etc. form the basis for manual heat exchanger cleaning.



Systems and devices for semi-automatic and fully automatic heat exchanger cleaning are available in various versions.



Various transport and handling systems for heat exchangers are available for assisting the cleaning operation.

Objective

The up-to-date, high-pressure URACA cleaning systems allow you to perform any heat exchanger cleaning task efficiently, economically and safely.



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