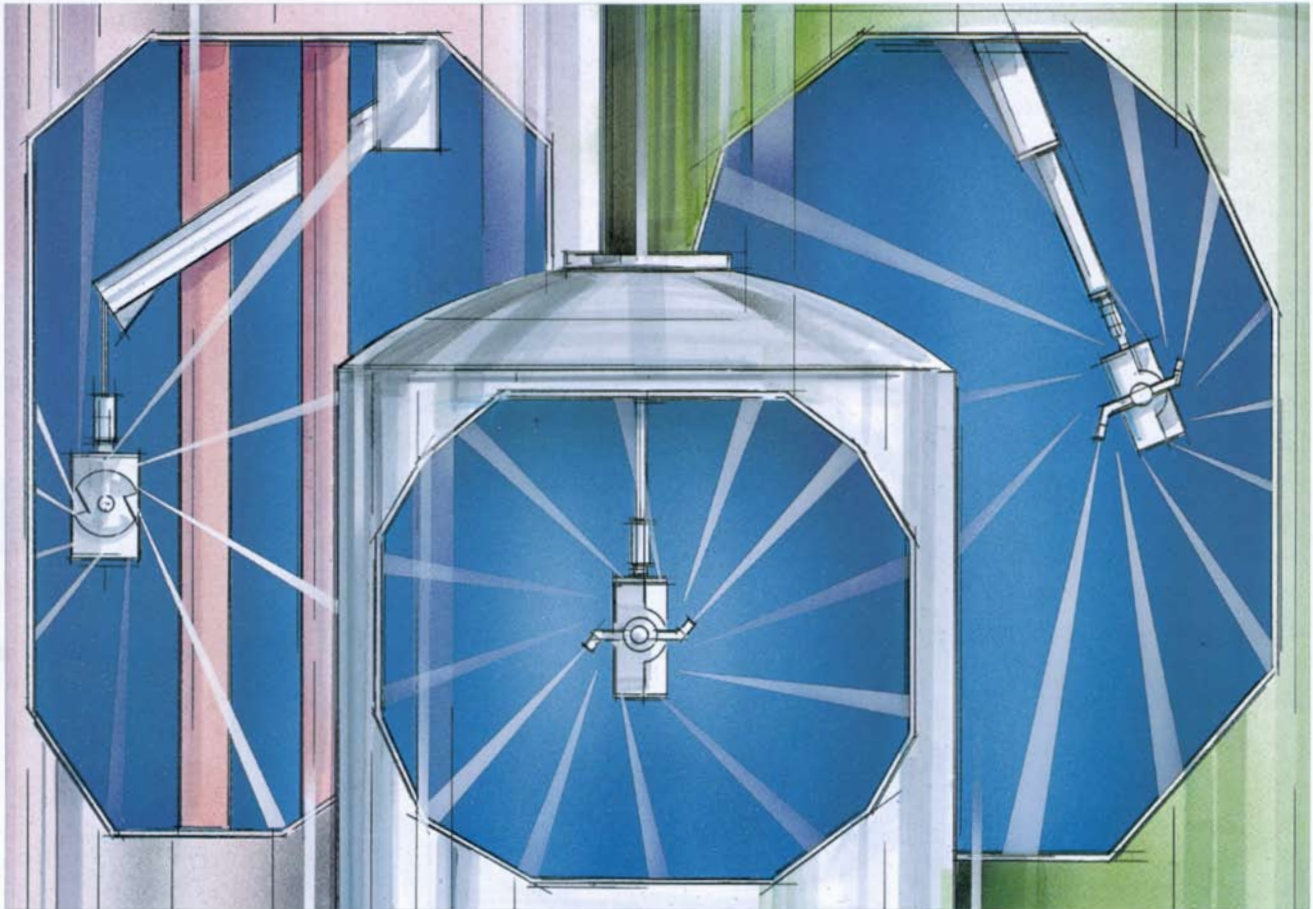


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**URACA**

## Internal vessel cleaning



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H I G H P R E S S U R E - T H E A N S W E R T O C L E A N I N G P R O B L E M S

# URACA – Vessel cleaning systems that solve cleaning problems

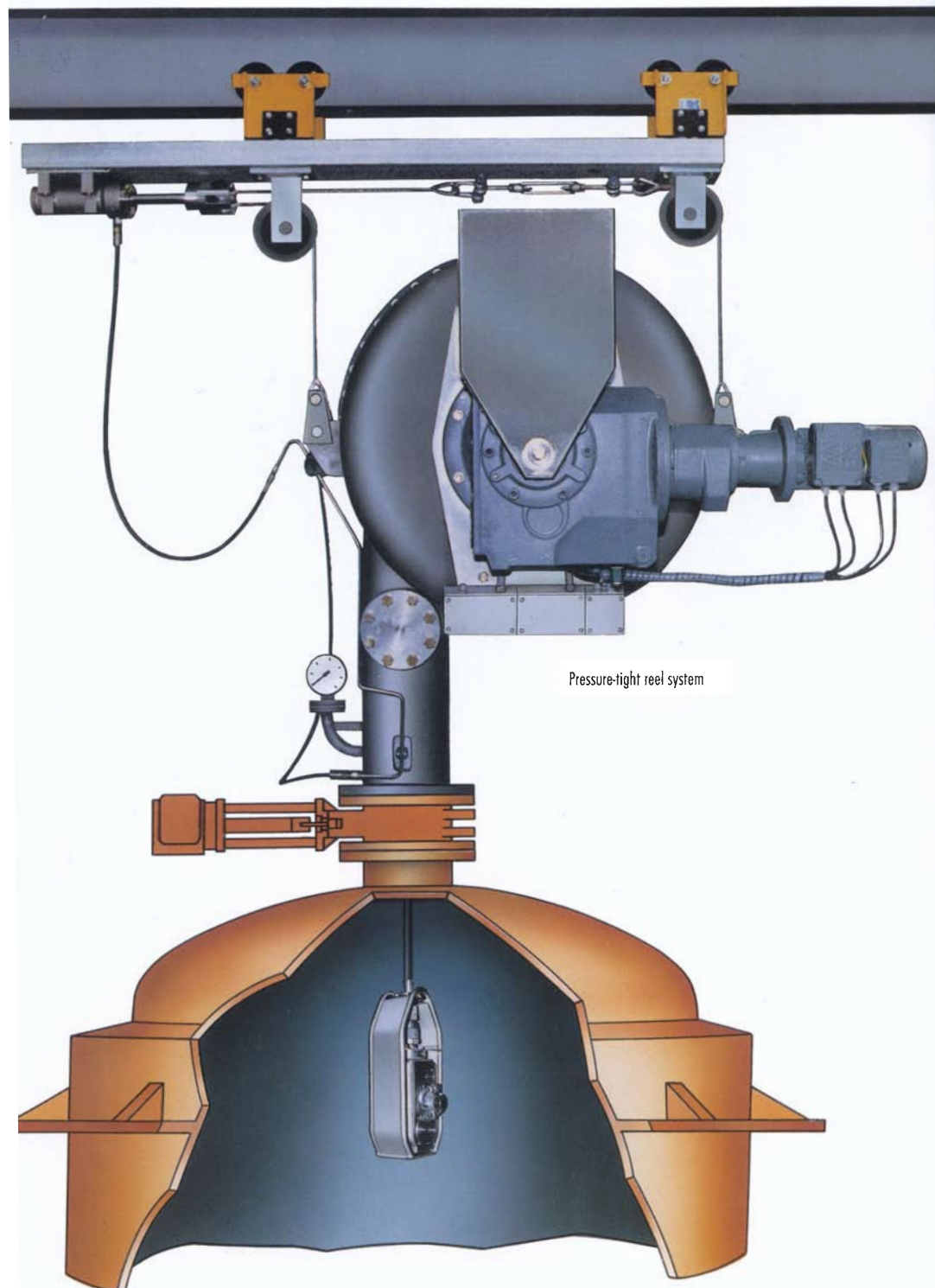
## URACA: The leading supplier of vessel cleaning systems

In the production of most chemicals or petrochemicals, reactors, vessel internal surfaces such as agitator blading etc. must necessarily be cleaned. A clean vessel leads to improved production efficiency, better product quality and reduced residence times which can be directly related to improved profitability.

Also, in this day and age, pollution control requires environmentally friendly plant operations. URACA vessel cleaning systems, cleaning with water, offer these benefits.

URACA tank cleaning systems optionally position the TWK cleaning head. The cleaning head driven only by the high pressure water is the key functional element in achieving:

- Minimum vessel down time for cleaning purposes.
- Cleaner vessels with improved heat transfer, reduction of batch to batch contamination.
- Reduced labor manhours with vessel mounted and process computer integrated cleaning systems.
- Vessel purging or gas emissions into work areas by utilizing tight gas systems.
- Automatic cleaning and variable cleaning programs through the use of programmable control systems.
- Minimum investment pay back time through increased productivity, and improved product quality.



### URACA's approach to a vessel cleaning problem:

URACA engineers visit the plant site to discuss the problem in detail. The required parameters

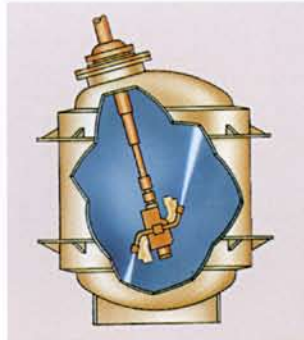
such as capacity, pressure, cleaning time, and potential automation would be developed. If required, URACA would be prepared to undertake a field test cleaning program with portable

pump. The system available is nominally rated 400 kW (508 HP) and 1200 bar (17400 psi). The client has firsthand opportunity to witness the cleaning process.



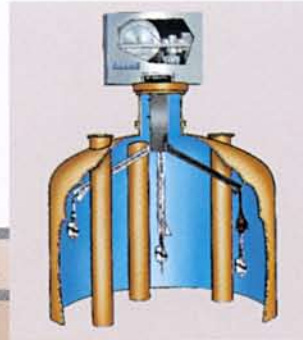
**Positioning device**

Manual device to position TWK in vessel.



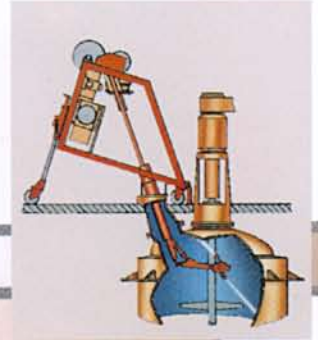
**URACA-telescope**

A combination of manual and partially automatic system for locating TWK in various cleaning positions.



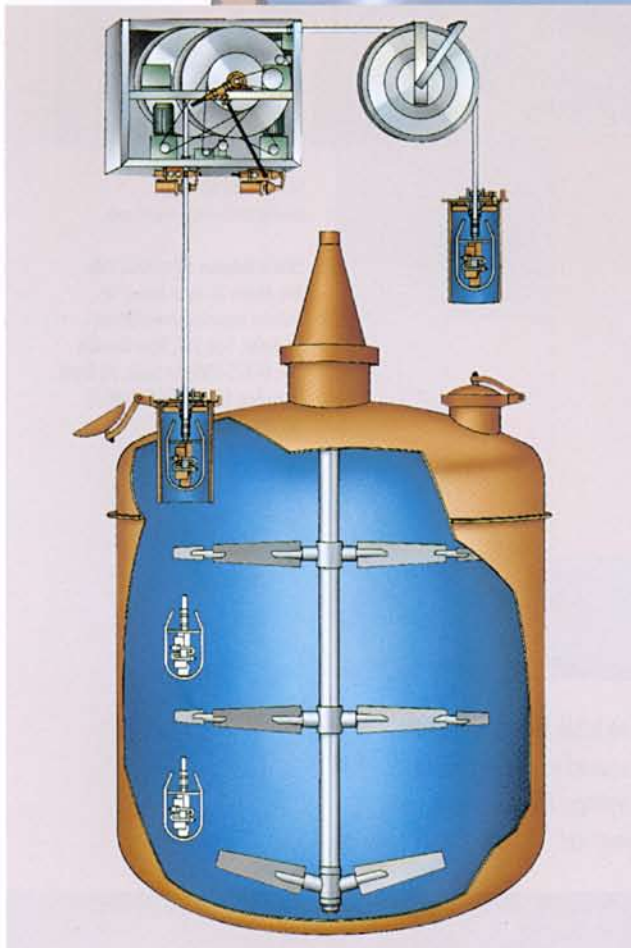
**TWK-knee**

A fully automatic hose reel system for large diameter vessel. Programming feature allows for extension, vertical positioning and timing of the cleaning function.



**Cleaning robot for vessels at or below floor level**

URACA produces movable positioning arrangements that can move from vessel to vessel. Positioning within the vessel is controlled to conform to individual vessel geometries.



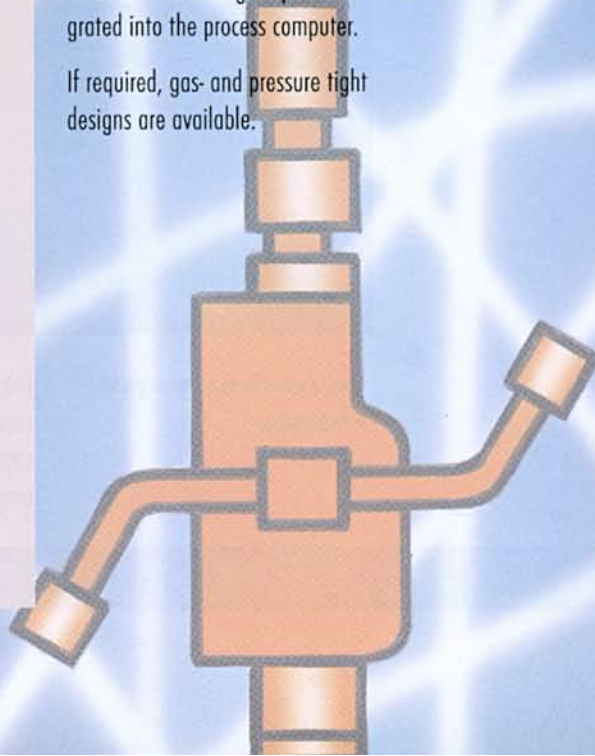
**Reel type system**

Hose reel systems may be fixed installations, transportable via overhead track or moved by crane from vessel to vessel. Via manual or automatic control cleaning positions within the vessel are optional. Additionally, for full automation cleaning may be integrated into the process computer.

If required, gas- and pressure tight designs are available.

**Other systems**

Many diverse proven positioning equipment designs are available for vessel cleaning. URACA engineers are prepared to modify the existing design, or if need be, completely develop something new to meet a special requirement.



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# URACA – your partner to exploit cleaning opportunities

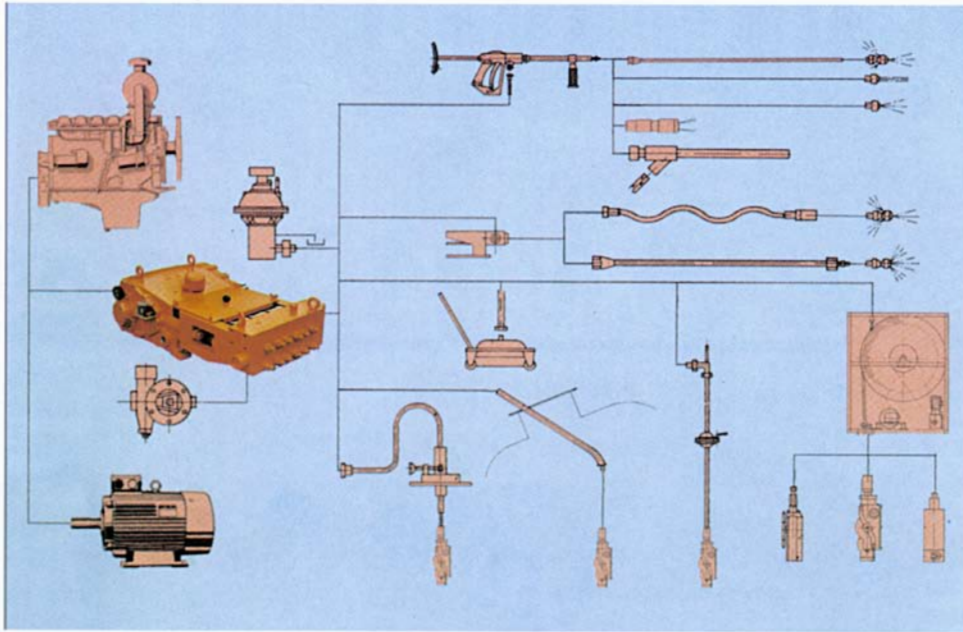


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## Hydrodynamic cleaning – a universal system

Cleaning of vessel internals is but one example of utilizing high pressure cleaning.

High pressure water without chemical additives has almost universal applicability.

Surface coating	Pressure in bar (psi)			
	< 400 (5800)	< 900 (13000)	< 1200 (17400)	< 2000 (29000)
Fat	Yes			
Glue	Yes			
PVC	Yes			
Latex		Yes		
Spray tower	Yes			
Plastics		Yes		
Plaster			Yes	
Dispersions				Yes
Dyes				Yes
Paint				Yes
Coke				Yes
Concrete				Yes

**Our experiences are your advantage**

The table indicates pressure required to remove various coatings. Pressure values are empirical.