

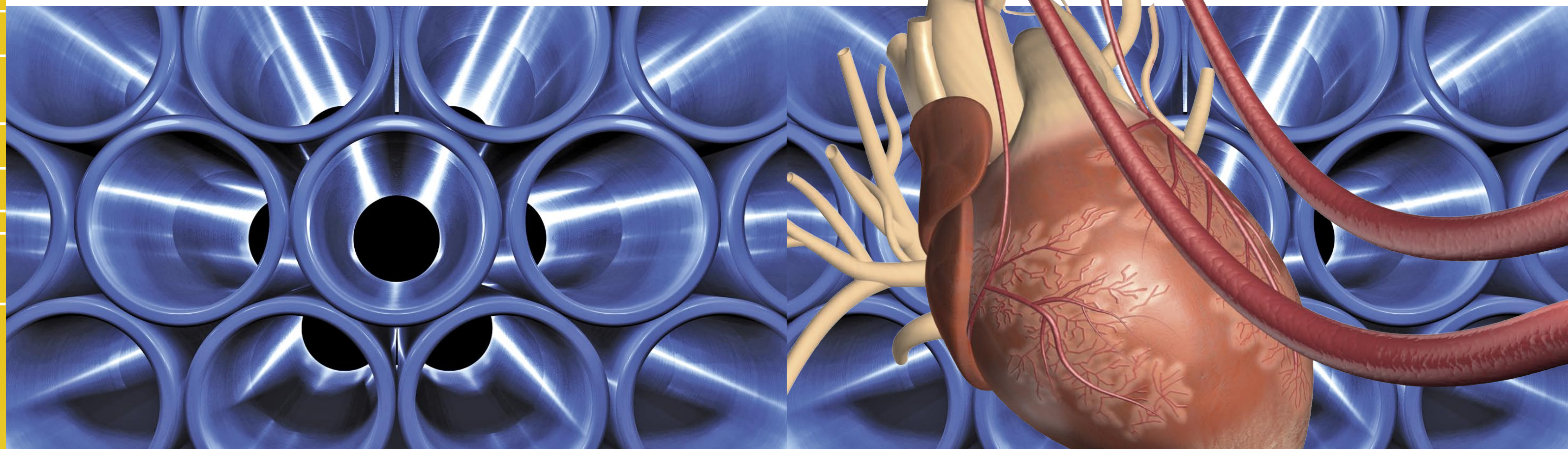
**Our service for you:**

- Project analysis before installation but even during and after installation
- Recommendations for the pipe line lay out in regard to pigging
- Basic engineering for launcher and receiver penstocks
- Concept und instruction for proper and efficient pigging
- Manufacturing and delivery for project related cleaning pigs
- Delivery of transmitters, pig detecting electronics and measurement sensors
- Development of the particular pigging instruction and technology
- Execution or accompaniment of the pigging process
- Identification of occurrences
- Preparation of the pigging report with conclusions and recommendations

**One of the most important conditions for high efficient functioning piping systems are scavenged clean pipe lines.**

This applies to the transportation of every media like gas, water, oil, sewage or even air. The estimation of experts is that the cleanness and disinfection of potable water pressure lines will become one of the highest priorities in the close future.

Our UNIROR-pigging System is qualified for highest challenges and necessities.



Project Management & Sales  
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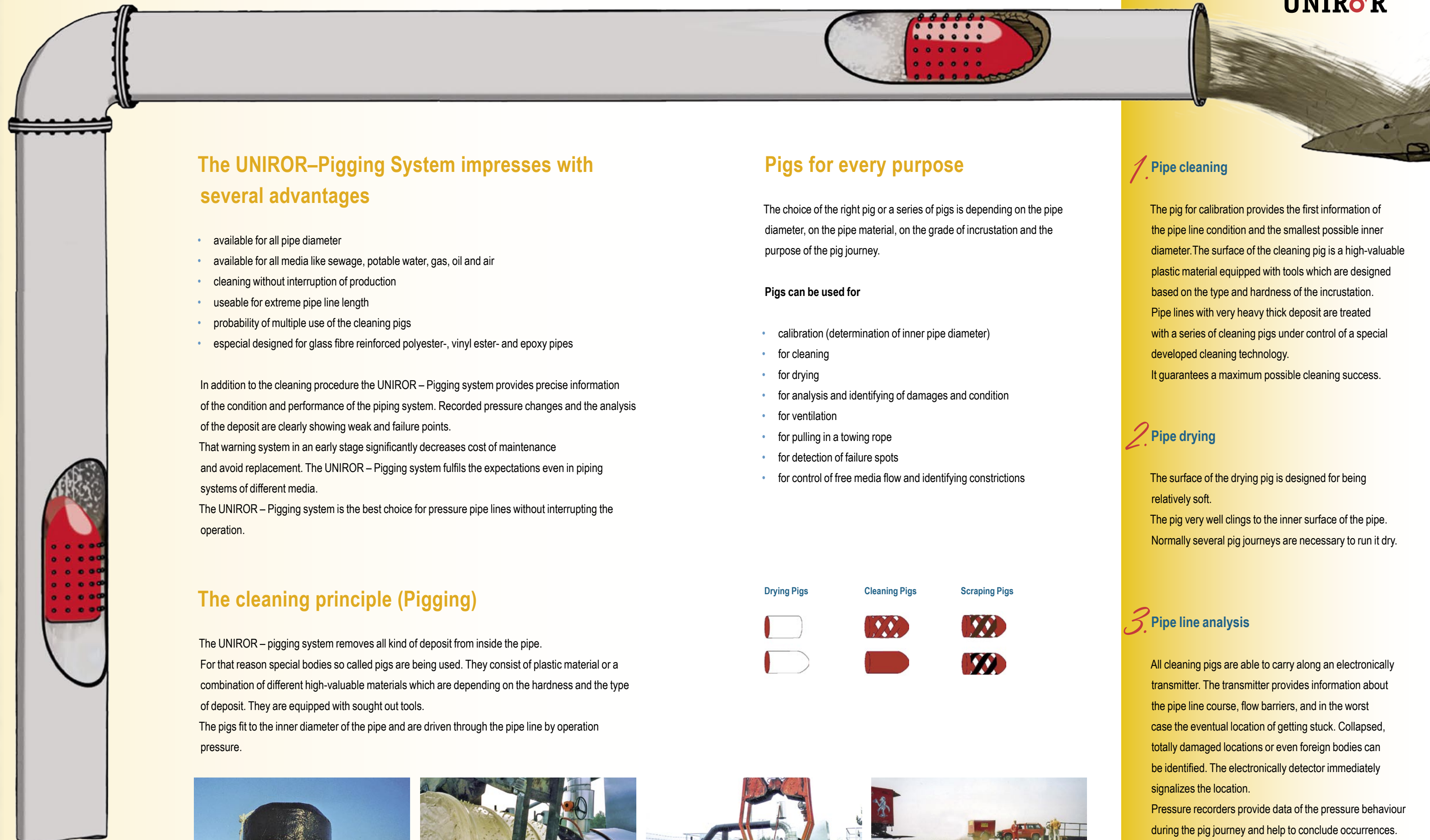
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**CLEAN PIPE LINES  
HEALTHY SYSTEM**



## The UNIROR-Pigging System impresses with several advantages

- available for all pipe diameter
- available for all media like sewage, potable water, gas, oil and air
- cleaning without interruption of production
- useable for extreme pipe line length
- probability of multiple use of the cleaning pigs
- especial designed for glass fibre reinforced polyester-, vinyl ester- and epoxy pipes

In addition to the cleaning procedure the UNIROR – Pigging system provides precise information of the condition and performance of the piping system. Recorded pressure changes and the analysis of the deposit are clearly showing weak and failure points.

That warning system in an early stage significantly decreases cost of maintenance and avoid replacement. The UNIROR – Pigging system fulfils the expectations even in piping systems of different media.

The UNIROR – Pigging system is the best choice for pressure pipe lines without interrupting the operation.

## The cleaning principle (Pigging)

The UNIROR – pigging system removes all kind of deposit from inside the pipe.

For that reason special bodies so called pigs are being used. They consist of plastic material or a combination of different high-valuable materials which are depending on the hardness and the type of deposit. They are equipped with sought out tools.

The pigs fit to the inner diameter of the pipe and are driven through the pipe line by operation pressure.



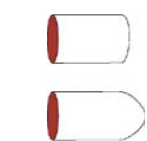
## Pigs for every purpose

The choice of the right pig or a series of pigs is depending on the pipe diameter, on the pipe material, on the grade of incrustation and the purpose of the pig journey.

### Pigs can be used for

- calibration (determination of inner pipe diameter)
- for cleaning
- for drying
- for analysis and identifying of damages and condition
- for ventilation
- for pulling in a towing rope
- for detection of failure spots
- for control of free media flow and identifying constrictions

Drying Pigs



Cleaning Pigs



Scraping Pigs



## 1. Pipe cleaning

The pig for calibration provides the first information of the pipe line condition and the smallest possible inner diameter. The surface of the cleaning pig is a high-valuable plastic material equipped with tools which are designed based on the type and hardness of the incrustation. Pipe lines with very heavy thick deposit are treated with a series of cleaning pigs under control of a special developed cleaning technology.

It guarantees a maximum possible cleaning success.

## 2. Pipe drying

The surface of the drying pig is designed for being relatively soft.

The pig very well clings to the inner surface of the pipe.

Normally several pig journeys are necessary to run it dry.

## 3. Pipe line analysis

All cleaning pigs are able to carry along an electronically transmitter. The transmitter provides information about the pipe line course, flow barriers, and in the worst case the eventual location of getting stuck. Collapsed, totally damaged locations or even foreign bodies can be identified. The electronically detector immediately signalizes the location.

Pressure recorders provide data of the pressure behaviour during the pig journey and help to conclude occurrences.

Special experiences provide the UNIROR – pigging system for cleaning and inspection of glass fibre reinforced plastic pipes.