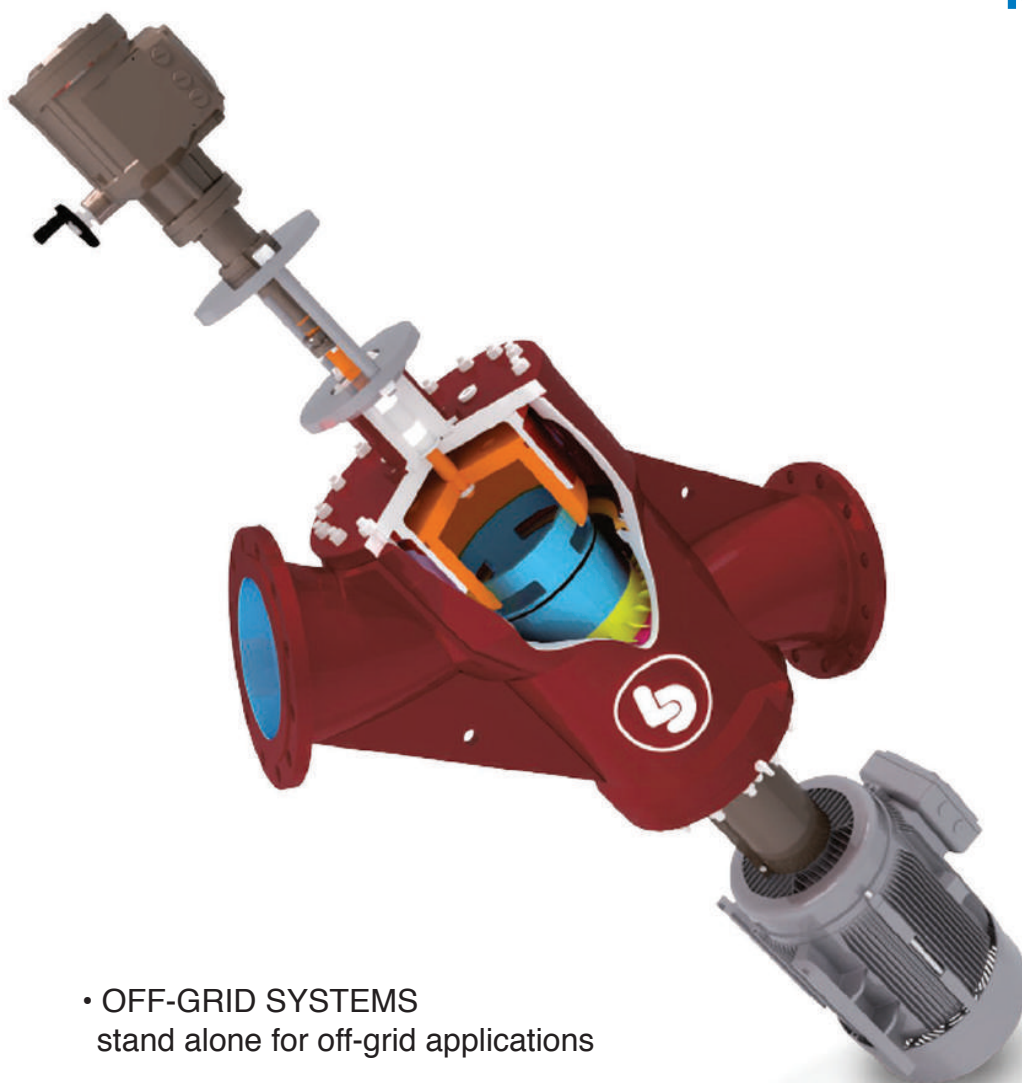


# PIPELINE INTEGRITY AND ENERGY HARVESTING

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# LOCPOWER

## REAL-TIME FLOW CONTROL FOR PROACTIVE PRESSURE & FLOW MANAGEMENT



- OFF-GRID SYSTEMS  
stand alone for off-grid applications
- GRID-CONNECTED SYSTEMS
- ENERGY STORAGE
- POWER TO FUEL



## General information

LOCPOWER is a patented energy harvesting solution. It consists of a new concept of control valve able to harvest energy otherwise dissipated during its normal use in flow and pressure control, equipped with an electrical control panel.

**The LOCPOWER system converts energy dissipation into mechanical power and then into clean electricity.**

**Zero-emission energy harvesting, zero CO2 production.**

LOCPOWER's design allows smart utilities and industries to control the pipeline flow and pressure, offering energy harvesting features without giving up to safety criteria in the actual context, regulation and control as an integrated system.

LOCPOWER has a double flow control: hydraulic by actuator and electric by turbine. The electrical regulation acting directly on the turbine minimizes the net pressure fluctuations.

# LOCPOWER TURNS ENERGY DISSIPATION INTO ENERGY SAVINGS



Unlike traditional control valves where the pressure drop is achieved through a single or multi-stage trim, LOCPOWER regulates the flow by splitting the pressure drop through a single or multi-stage trim-turbine, designed to fit perfectly into the valve's body and to maximise the energy-recovery feature.

In this way, you are harvesting 100% renewable energy that would otherwise be wasted. Maximum efficiency can be reached thanks to the most sophisticated CFD and FEM simulation software.

Moreover, performance and reliability tests are run by Valpres hydraulic flow test facility.



## Design

LOCPOWER'S innovative design tends to maximize valve capacity (Cv/KV) and its energy harvesting features. Moreover, the majority of maintenance operations can be performed on-site without removing the valve from the pipeline.

## Ads (advanced diagnostic systems)

LOCTORQ and LOCSSENS represent a new generation of advanced diagnostics systems; together with the 4-20mA positioner remote control and feedback LOCPOWER. They can be equipped with advanced technologies for safety and remote diagnostics; LOCTORQ continuously monitors shaft speed and torque to prevent any anomalous behaviour directly from the control room; LOCSSENS is a predictive diagnostics system that works through acoustic and vibrational acquisitions to identify unexpected changes in process conditions, avoiding cavitation, early wear or leakages.

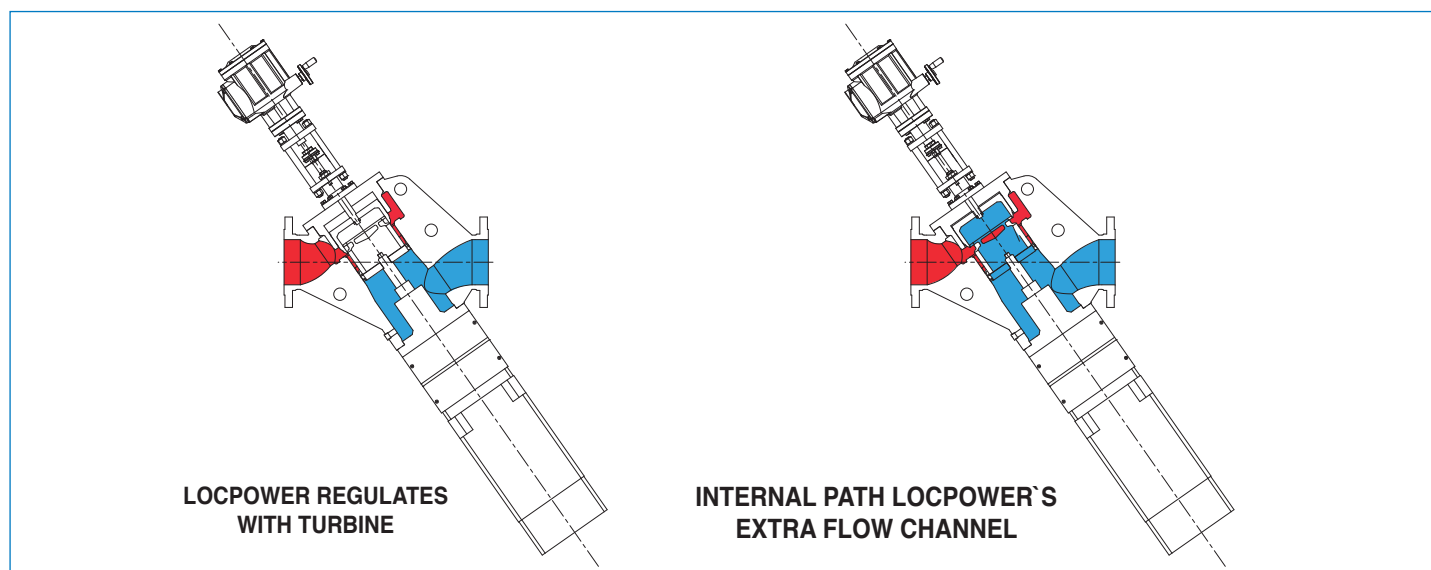
### INTERNAL EXTRA FLOW, HIGHEST RELIABILITY

LOCPOWER regulates unexpected overflow thanks to an internal extra flow channel.

This innovative feature allows valves to operate even if the turbine stops working for whatever reason and to control a higher flow rate when needed, thus maximizing energy harvesting.

This is the key factor to combine a turbine with a control valve and complex piping layout all in one device.

Moreover, the extra flow channel avoids unexpected over pressure to ensure pipeline integrity.



## Electric generator (5 to 300 kW)

LOCPOWER is commonly proposed with state of the art synchronous electric generator to harvest even the smallest portion of energy from the fluids. Electric generators are typically interfaced through the latest technology of active front end inverters to exchange energy with the domestic grid, local supply, or to store energy.

## Body and bonnet

LOCPOWER has a newly designed valve body that maximises the flow rate and harvesting efficiency. It is offered in carbon steel, stainless steel or exotic alloys, depending on the service. End connections are available from different standards, such as UNI EN 1092-1 or ANSI B16.5 flanges.

### PRODUCTION RANGE

	Size	Pressure	
NPS	3-24	150-300-600	ANSI
DN	80-600	16-40-100	PN



# TURN YOUR PIPELINE INTO A RENEWABLE ENERGY SOURCE

## Mechanical seal and bearings

Mechanical seals and bearings are carefully sized and selected to achieve high quality levels in terms of reliability and service life.

## Integrated UPS

LOCPOWER's e POWER is self-sufficient for start-up operations up to 24h in case of energy black-out, even when equipped with the latest generation of modulating electric actuator.

## Actuator

- Manual gear.
- Electric actuator with in option smart UPS unit.
- Pneumatic actuator (diaphragm or piston type) with smart positioner.
- Pilot operated.

## REAL WORLD EFFICIENCY EXAMPLES: SMALL CHANGE - BIG EFFECT

	Real case 1 waterworks Italy	Real case 2 district heating Italy	Real case 3 crude oil pipeline Italy
DN	200 mm	250 mm	400 mm
Q	65 l/s	105 l/s	250 l/s
$\Delta p$	3 bar	3.5 bar	7 bar
P	12 Kw	25 Kw	115 Kw
CO <sub>2e</sub> Emissions saved	34.7 T	96.4 T	621 T
Household electricity consumption	26 Households	72 Households	286 Households

N.B. Calculations are based on real-world data provided by the end users based on an annual operating time of 8,600 h.

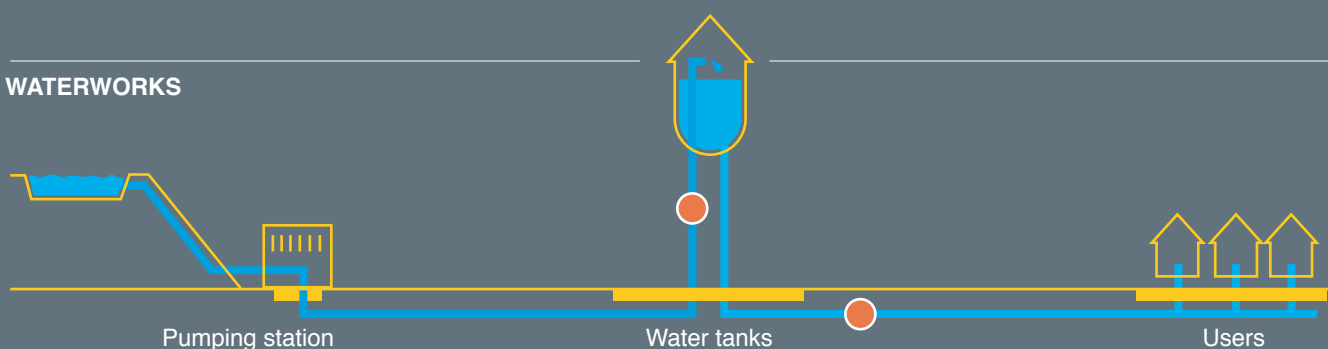
The policy of our company is to provide tailored-made solutions.

Please provide data about your pipeline system using the chart below and our engineers will be glad to support you.

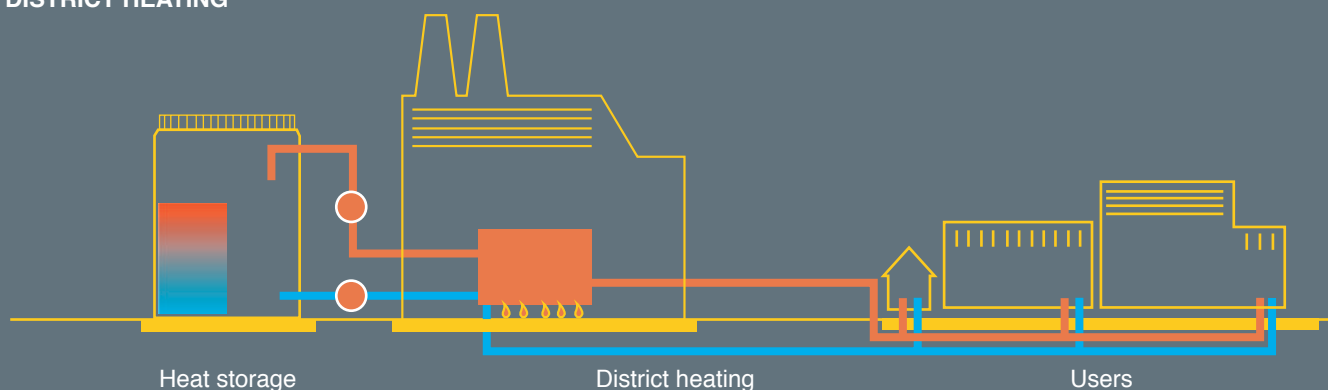
	Characteristics of the system	Min.	Max.
Ø	Pipe diameter	80 mm	600 mm
Q	Flow rate	10 l/s	1000l/s
$\Delta p$	Pressure drop	Please specify	
h	Annual operating time	Please specify	

## INSTALLATION POINT EXAMPLES

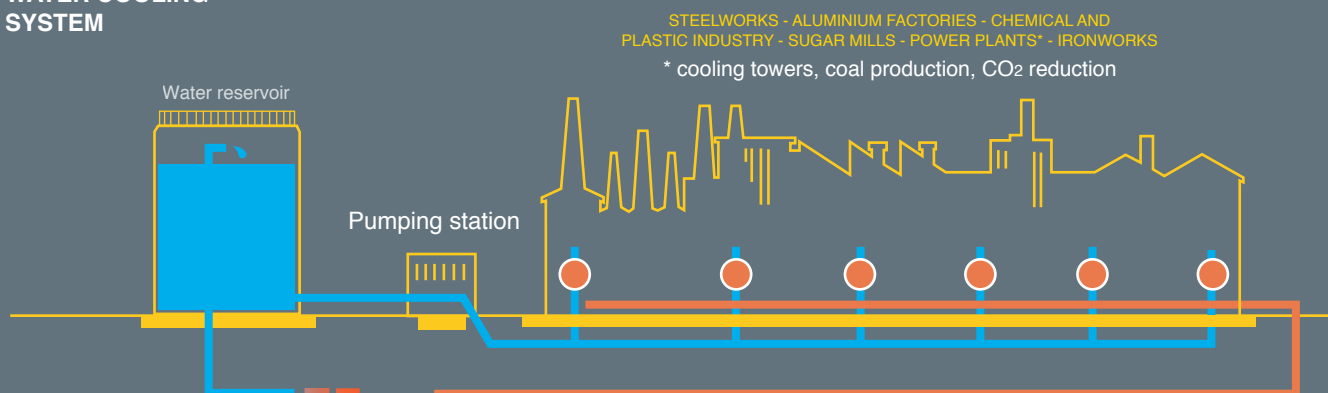
### WATERWORKS



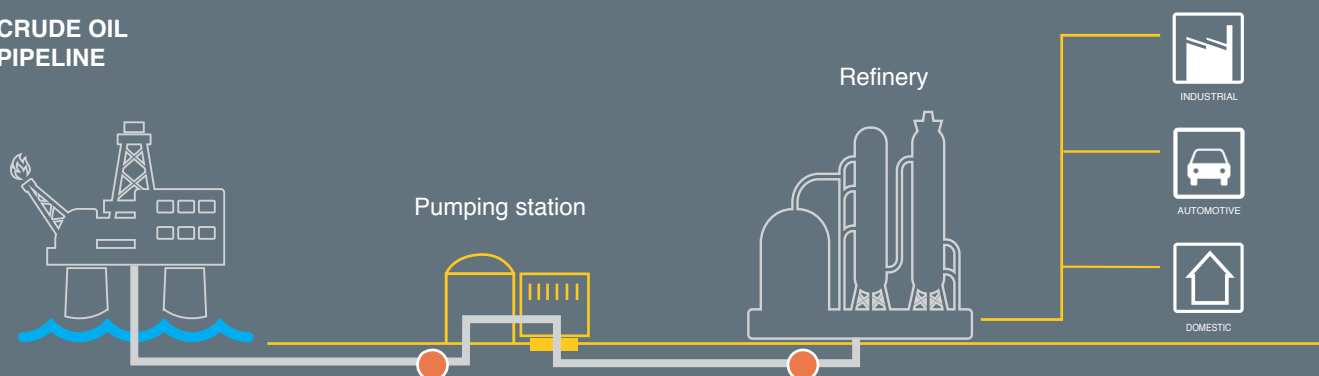
### DISTRICT HEATING

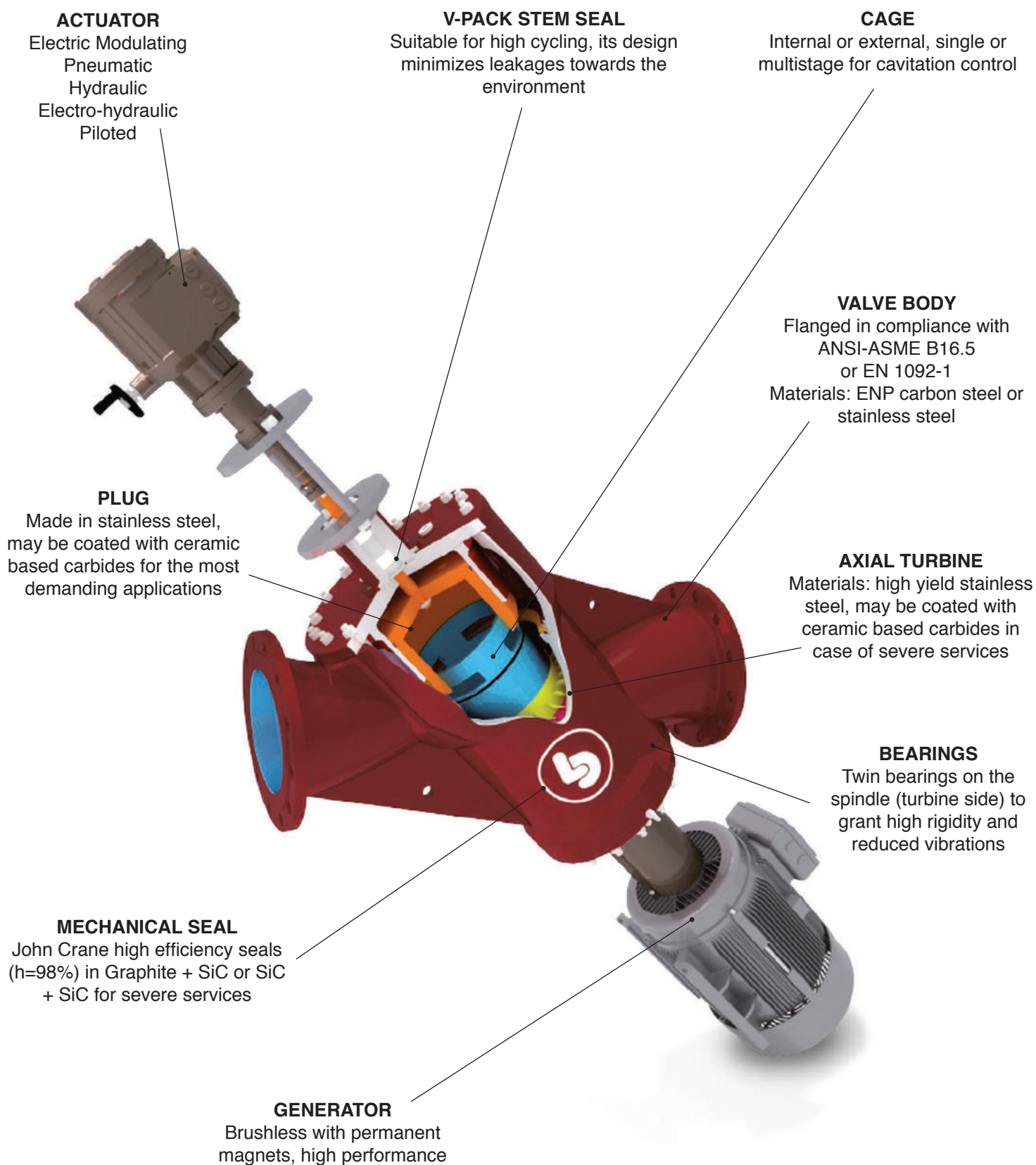


### WATER COOLING SYSTEM



### CRUDE OIL PIPELINE







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