

■■■■■■ Pumps.

**KRAL**

# Smart Screw Pump Technology for Tank Terminals.



# Flexible and Profitable – Pumping a Wide Variety of Oil Products With Just **ONE** Pump.

**KRAL screw pumps are efficient and flexible, therefore they have a wide range of applications in tank farms. KRAL pumps can handle many different liquids with various qualities and viscosities, even with strongly varying backpressure and different suction behavior. The efficient operation of only one pump is profitable.**

## Fast goods turnover.

The storage and processing of petroleum products, chemicals and products with high viscosity require high-performance pumps. KRAL pumps guarantee reliable operation and fast goods turnover.

## Pumping different liquids efficiently.

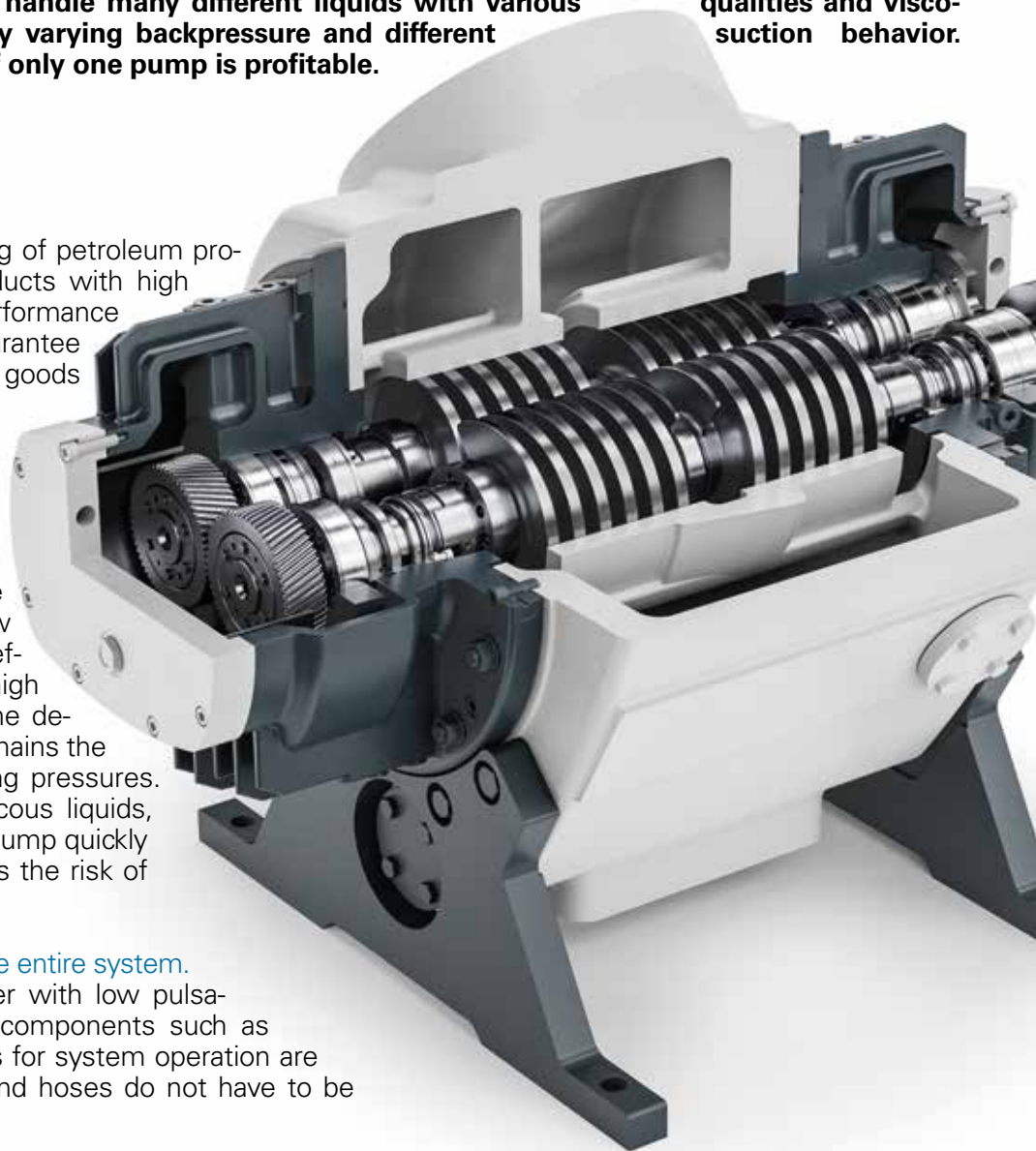
The viscosity of the products to be pumped is irrelevant for our pumps. We convey oil products with low viscosity (e.g. gas oil) as effective as products with high viscosity (e.g. bitumen). The delivery rate characteristic remains the same, even with fluctuating pressures. When pumping highly viscous liquids, for example, a centrifugal pump quickly becomes inefficient or runs the risk of being damaged.

## Long-lasting operation of the entire system.

KRAL screw pumps deliver with low pulsation, which is why other components such as pipelines are spared. Costs for system operation are reduced, since pipelines and hoses do not have to be replaced so often.

## Energy savings.

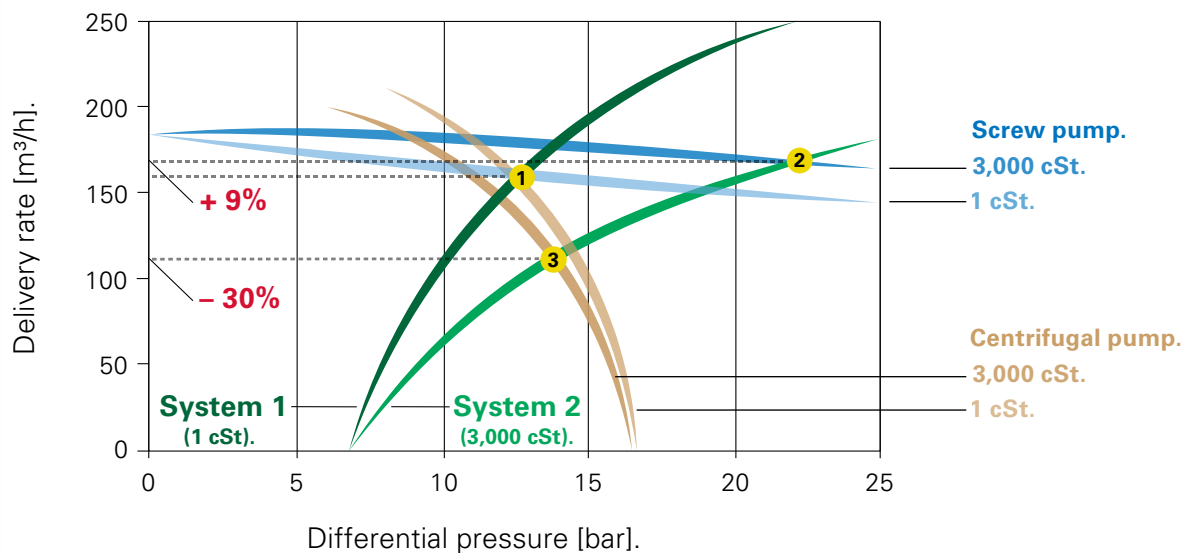
Liquids do not have to be preheated or treated, that saves energy and operating time. Ships without heating equipment can also be unloaded. KRAL screw pumps are very flexible in terms of speed, can suck in the liquid automatically with high force and have a constant delivery rate even with different operating points.



## Clear advantages compared to centrifugal pumps.

The standard "centrifugal pump" solution is increasingly being replaced by screw pump technology. This means that the disadvantages of centrifugal pumps, such as a lack of flexibility, no longer have to be compensated by the provision of several pumps. This saves costs. In contrast to centrifugal pumps, KRAL screw pumps cover a wide range of delivery rates, pressures, temperatures and viscosities for almost all pumpable liquids. The liquid flows through a screw pump at the same speed as in the pipe. This prevents damage and extends the service life of a screw pump.

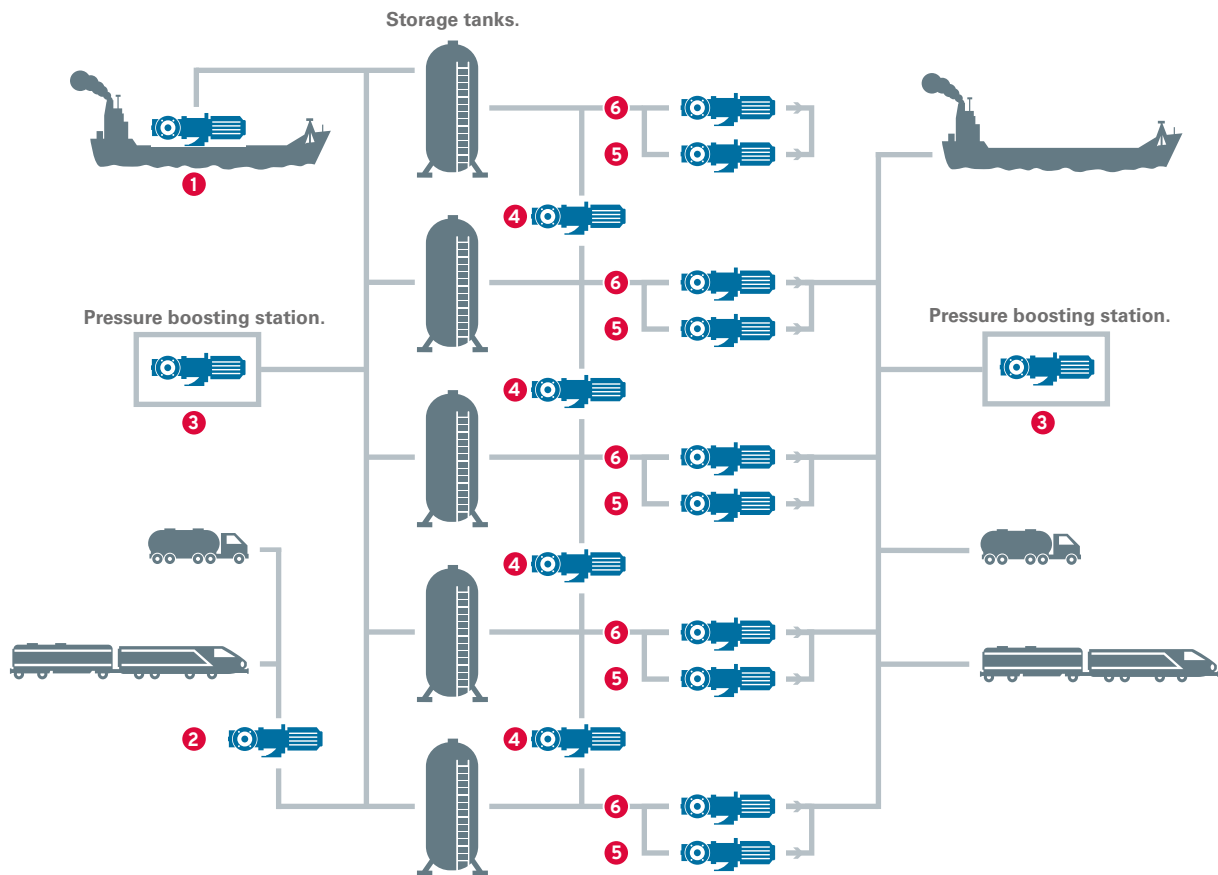
## Highly efficient in the delivery rate of viscous liquids.



Example: Based on water as a reference (with viscosity 1 cSt) **1**, operation with viscous liquids (e.g. with viscosity 3,000 cSt) reduces the delivery rate of centrifugal pumps by up to **30 % 3**. The delivery rate of a screw pump increases in such a case by **9% 2**.

## Data of the KRAL Z series screw pump at a glance.

- Delivery rate: 330 to 16,660 l/min or 20 to 1,000 m³/h.
- Max. differential pressure: 25 bar.
- Temperature range in the pumped liquid: -40 °C to +300 °C.
- Housing: Ductile iron or welded steel.
- Screws: Solid or engineered.
- Approvals: ABS, BV, DNV-GL, LRS, RINA. Others on request.
- ATEX: Device Group II, Device Category 2.
- Heating: Electrical, liquid or steam.
- API: Manufacturing according to API 676 possible.



- 1 Crude oil loading pump on board.
- 2 Crude oil unloading pump.
- 3 Booster pump.
- 4 Circulation pump.
- 5 Tank drain pump.
- 6 Loading and transfer pump.

# 1 pump for all liquids and up to 30% more efficient

over the whole journey  
of liquids around tank terminals.

