E

E-impeller

S

S-impeller

design system

## KSB provides worldwide:

### 24 hr service

The assembly, inspection, maintenance and repairs we provide set the standard.

### Advice at site

KSB is active globally. A network of manufacturing plants and sales offices world-wide provide the fast and comprehensive service our customers expect.

### Competence and experience

KSB has supplied pumps for over a century. This 125 year tradition is a 125 years of experience allied to the latest technology.

3D Marketing + Design, Halle

Subject to technical modifications

05/01

2554.021-10

## In every case the right impeller. A modular design system.

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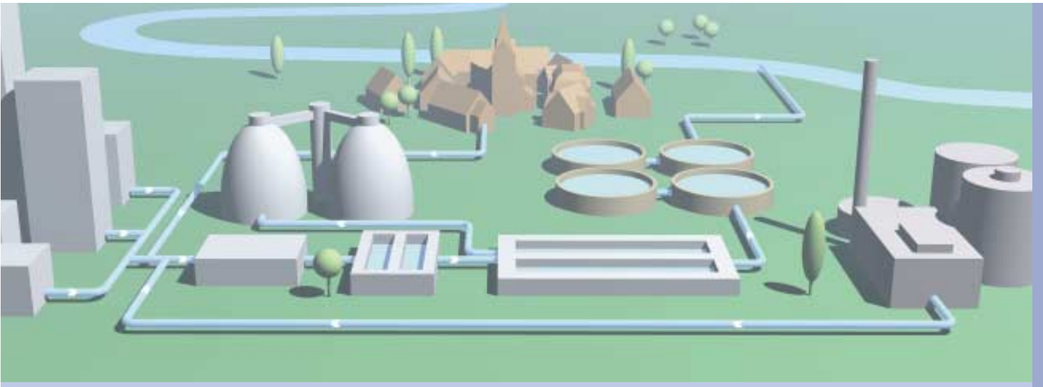
## New requirements in waste water management. New solutions from KSB.



Modern waste water management makes demands which require new solutions in pump engineering.

■ The number of **sewerage connections,** for example, has increased considerably.

■ At the same time, **water consumption** in industry and households has decreased. In the years 1983 to 2000, we have seen a decrease of approximately one third. As a consequence, sewage now has a higher solids and fibre content. Hence, new solutions are required to guarantee an uninterrupted flow from the pumps.

■ To save energy, **speed control** by means of frequency inverters is increasingly used. If the flow rate is allowed to fall below the minimum volume flow rate, clogging can be the result.

■ Increasingly, **pump systems are not provided with screens** as maintenance considerations and costs influence the pumping system design and purchasing decisions more and more.

## The new component in the modular design system

## Advantages of the D-impeller

- High efficiency
- 150 mm free passage
- Increased reliability
- Adjustable clearance gap
- Flat power curve
- Higher percentage of solids can be pumped
- Beneficial NSPH values
- The D-impeller guides the pumped medium, at an early stage, in the direction of the discharge nozzle
- Stagnation point lies in front of the impeller
- Solids cannot attach

WASTE The modular impeller design system

WATER D-IMPELLER.

KSB is looking for solutions

KSB – always new ideas

**New requirements in waste water management.**
**Only the best solution wins admiration.**

## F-impeller (free flow impeller)

Free flow impeller for fluids containing solids and long fibrous matter, with coarse solids as well as gas and air inclusions; free passage up to 135 mm.

- Raw sewage
- Activated sludge
- Raw and digested sludge
- Mixed water

## E-impeller (single vane impeller)

Single vane impeller for sewage with solid and long fibrous matter; free passage up to 143 mm.

- Raw sewage
- Circulated and heated sludge
- Mixed water
- Raw and digested sludge
- Activated sludge

F

F-impeller

## K-impeller (multi-vane impeller)

Closed multi-vane impeller for contaminated fluids loaded with solids and sludge which do not gas, or contain matter which is liable to twist and bunch; free passage up to 170 mm.

- screened sewage
- Mechanically treated sewage
- Industrial waste water
- Land fill effluent
- Rain water
- Activated sludge

## S-impeller (cutter)

For the economic transport of household sewage with coarse and/or long fibrous substances; free passage up to 7 mm.

- Household sewage
- Waste water
- Faeces

K

K-impeller



## • The impeller family from KSB

The correct pump design plays an important role when there are problems in modern sewage systems.
Important criteria in these cases are, besides the efficiency, the geometric characteristics and features of the impeller and especially the size of the free passage. F-, S-, E- and K-impellers are the impellers central to sewage transportation. With KSB there are no universal solutions, only specifically engineered designs.

135 mm

143 mm

KSB offers solutions

The modular impeller

## Introducing the D-impeller

Solids, fibres, waste – when sewage is produced today, it is dense. For these applications KSB develops user specific solutions: Besides the K-impeller, the E-impeller, the F-impeller, and the cutter – S-impeller, the modular impeller system is now supplemented by the D-impeller. With a free passage of 100 mm it complies with the ATV regulations.
Furthermore, the specific form of the D-impeller guides the pumped medium, at an early stage, in the direction of the discharge nozzle, thus ensuring the stagnation point lies in front of the impeller so that the medium does not accumulate on the rear wall of the impeller.
Solid matter can not, therefore, attach to the surfaces, and is transported with the waste water without causing any clogging.

**The D-impeller – another result of product development on target, dedicated to actual applications**

## A lot is expected of a sewage pump – especially the impeller.

- **Sewage has many aspects**
  **Sewage can be composed of rain and surface water, communal, agricultural, and industrial waste water, and even sludge.**

- **Sewage has character**
  **Essential parameters to characterise waste waters are gas content, fibre content, and the maximum solids size as well as the sand and dry substance content.**

- **The focus of attention**
  The impeller is the heart of every sewage pump. Its design will in the end dictate the efficiency and reliability, as well as the effectiveness of the entire plant. Here, a solution for each specific application is needed, and only the best solution wins admiration.

- **Sewage needs a clear passage**
  **The ATV-DVWK-A 134 regulations specify that to transport sewage impellers must have a free passage of at least 100 mm to avoid clogging.**

- **Sewage clogs**
  **Problem areas in sewage pumps are the clearance between impeller and casing and the impeller leading edge.**




ATV-DVWK-A 134

OLUTIONS.

KSB thinks ahead