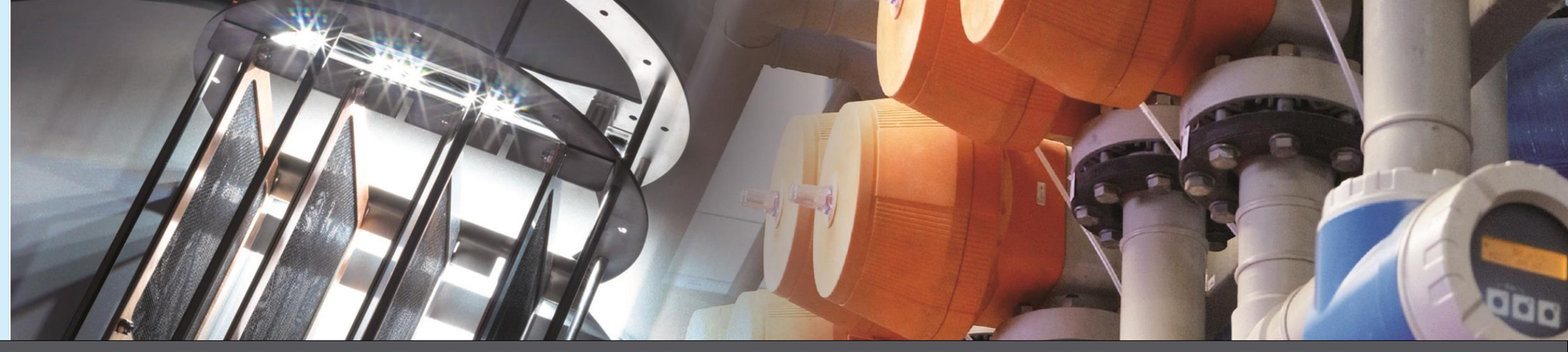
INSPIRE WATER



INNOVATIVE SOLUTIONS IN THE PROCESS INDUSTRY FOR NEXT GENERATION RESOURCE EFFICIENT WATER MANAGEMENT

# Chemical free and energy saving particle separation with permanent magnets

## Situation

- Process-related entering of iron particles down to 0.5µm in cooling and gas wash water
- High back flush flows from 3% till 5% of the treated flow with conventional filters with need of dewatering
- Large space demand of conventional separators  up to 250 m² for treatment of 500 m³/h
- Use of chemicals and loss of valuable raw material through non selective removal
- High maintenance costs because of wear and clogging with direct influence to the product quality and scaling

Untreated cooling water

## Solution

- Chemical free and energy saving particle separation with permanent magnets
- Optimum magnet positioning and hydrodynamics considering liquid medium composition, particle properties and operational required flow rate

Inlet Outlet

Magnetic separator 50 m³/h

## Advantages

- High concentration of particles about factor 250 to 1000
- Solid content in sludge up to 30 wt.-%
- Low backwashing water down to 0.06%
- Compact design – e.g. 50 m³/h plant: 1.9 x 1.5 x 3.2 m
- Reduced energy demand due to pressure less operation
- Constant particle content despite fluctuating inlet particle content
- Reduction of disposal costs by internal metallurgical re-use of separated iron containing particles

Covered magnets

Removed scale after briquetting

## Potential applications

- Cooling water - hot rolling, scarfing
- Gas washing water - blast furnace, basic oxygen furnace
- Metal working emulsions - cold rolling, grinding
- Quenching bathes with water or polymer – heat treatment

## Contact

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