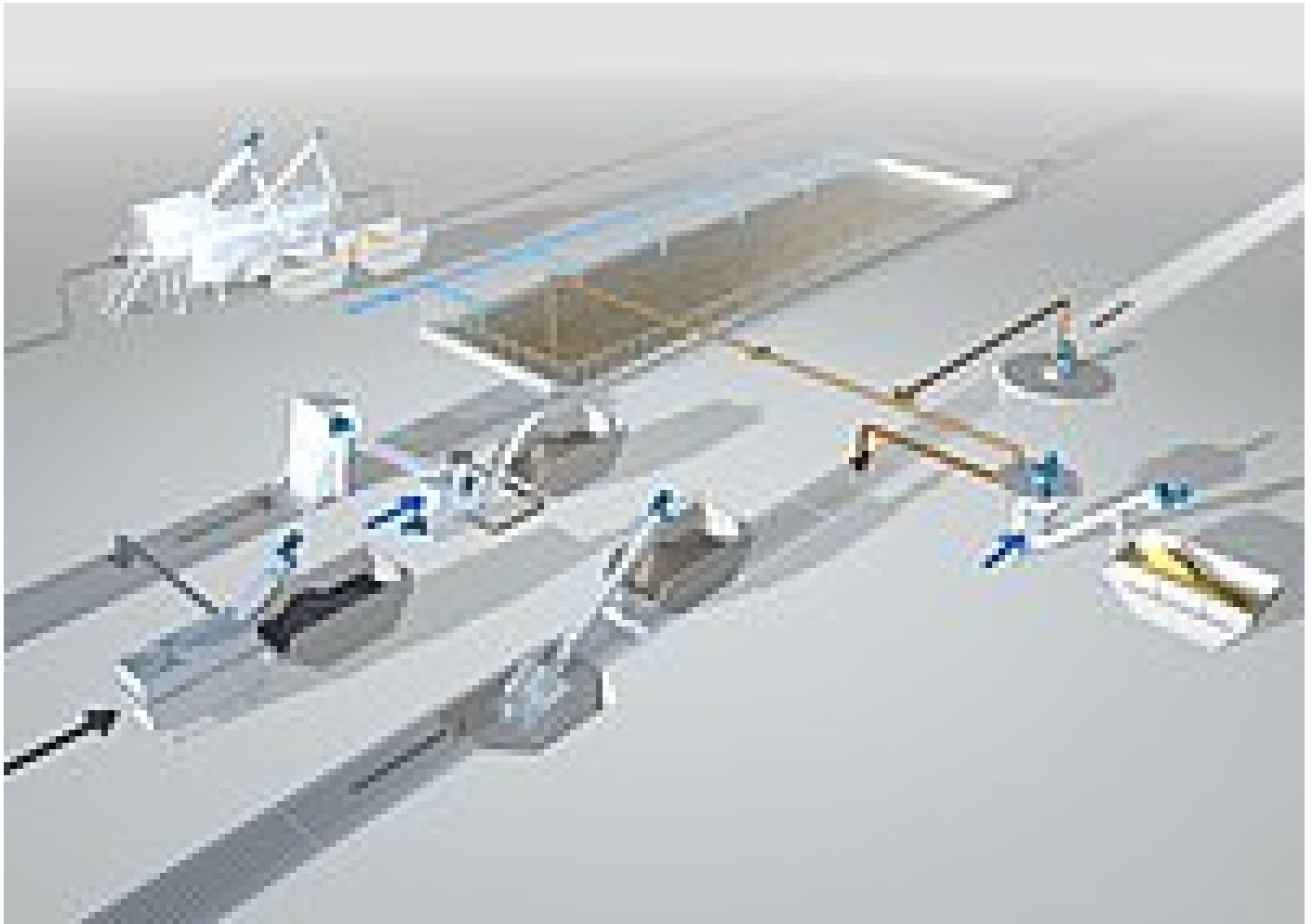


Energy-Efficient Mechanical Pre-treatment



Though pre-treatment requires only a small fraction of a plant's power, its energy-efficiency can be increased.

The following units should be investigated:

- **Pumping and lifting**
- **Screening and screenings treatment**
- **Grit removal and treatment**

Screening and Screenings Treatment

Energy consumption of screens, screening conveyors and wash-presses is low (0.5 – 1.5 Wh per m³ of wastewater), but ancillary equipment can consume much energy.

The following should be considered in respect to selection and application of [HUBER Screens](#):

- Rotating screens, e.g. our [ROTAMAT® Screens](#), consume less power than screens with travelling rakes.
- Power consumption of spray water supply is significant and must be taken into account.
- Power consumption of effective screenings washing and compaction (See e.g. [Wash-Presses WAP](#)) is negligible in comparison with fuel and cost savings for transport and disposal.
- Ventilation, heating and odour control of buildings consumes much energy. Bagging of screenings can avoid or reduce such requirements.
- Outdoor installation with thermal insulation and trace heating, where necessary for frost protection, not only saves construction costs but also heating and ventilation energy.



Grit Removal and Treatment

Grit traps should be designed to remove over 95 % of sand particles with a diameter of 0.2 mm.

State-of-the-art equipment

- Aerated or not aerated grit channel with optional lateral grease trap (See our [ROTAMAT® Longitudinal Grit Trap Ro 6](#));
- Circular aerated grit chamber (See our [HUBER Circular Grit Trap HRSF](#));
- Circular vortex grit chamber with central propeller (See our [Circular HUBER Vortex Grit Chamber VORMAX](#)).



Removed grit slurries contain organic solids. Their organic content can be somewhat reduced with grit classifiers (See our [COANDA Grit Classifier RoSF 3](#)). However, only state-of-the-art grit washing can produce clean and reusable grit (See our [COANDA Grit Washing Plant RoSF 4](#)).

The following aspects should be considered:

- Circular Vortex grit chambers, like our [VORMAX Grit Trap](#), are more compact and consume far less power than aerated grit channels.
- Power consumption of grit channel aeration is 0.3 – 1.0 kWh/(PT•a).
- Even with good aeration and after classification, removed grit slurries still contain 20 - 50 % volatile solids plus much water.
- Our [Grit Washer RoSF 4](#) produces clean and reusable grit with < 3 % organics and < 10 % water with a power consumption of only around 0.1 kWh/(PT•a).
- Grit chamber aeration is not needed, or can be reduced, where grit slurry is thoroughly washed. This saves much power.
- Mass reduction by effective grit washing is 50 % or more. Fuel consumption and costs for transportation and disposal are thus minimized.

□