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## Unique innovation from the market leader: HUBER Detection System Safety Vision

### Challenges in mechanical preliminary wastewater treatment

Screens, such as the [HUBER Multi-Rake Bar Screen RakeMax®](#), are used in the inlet of wastewater treatment plants to remove coarse contaminants from the incoming wastewater stream. At the same time, such preliminary screens also protect the operation of downstream machinery and units, such as a screw conveyor or a wash press, and ensure the smooth operation of the entire wastewater treatment plant.

In addition to the type of material to be expected, however, other unforeseen materials often get into the inlet of the sewage treatment plant, such as canisters, squared timber and tyres. Even though screening plants are built for coarse and bulky material, such matter can cause massive damage, resulting in long downtimes, high costs and, above all, additional stress. To prevent this, HUBER has developed a worldwide unique system for wastewater screens: the *HUBER Detection System Safety Vision*.

### Contaminant detection



*HUBER Safety Vision system installed at STP Nuremberg*

The innovative HUBER Detection System Safety Vision enables the screen to "see" the screenings and reliably identify potentially critical contaminants. This is achieved by precise real-time measurement of the screenings with sensors, fast processing of the measurement results, and an intelligent evaluation logic that examines the measurement results for defined anomalies. As soon as potentially critical screenings are detected in this way, the operation of the screen stops immediately. At the same time, an image of the situation in the screen is recorded and transmitted to the operator. Based on this message, the operator can decide individually whether the screen should continue to be operated or should stop until the debris is removed. This effective protection mechanism reliably prevents damage to the screen or the downstream equipment, which not only increases the availability of the machines involved, but also improves the operational safety of the entire plant technology.

### Further functions - runtime optimisation and adaptive operation

In addition to the contaminant detection function, the measurement results obtained are also used to enable two further functions: the adaptive operation of the machine combination based on the detection of events and the optimisation of the running time of downstream machines.

#### Adaptive operation:

Adaptive operation addresses the challenge of sewer flushing surges. These occur primarily shortly after the onset of heavy rainfall events and cause an extremely high pollutant load in the inflow to the treatment plant. In unfavourable cases, the screen can become overloaded by the high freight volumes and fail, with the result that the wastewater reaches the next process stage almost unpurified. To safely avoid such situations, the measurement results recorded by Safety Vision are used and checked for known events with the help of a sophisticated evaluation. If the evaluation registers signs of an incipient flush surge, the screen is automatically released and set to "flush surge mode". This has the positive effect of reducing the risk of overloading the screen to a minimum. If, in the course of time, the pollutant load and thus also the risk of overloading the screen decreases, the screen adapts to the current conditions by automatically switching to the appropriate operating mode. Adaptive operation thus both prevents overloading of the screen and ensures that the screen is always optimally utilised. However, this function does not only affect the screen, but also includes other HUBER machines that are directly connected to the screen.

#### Runtime optimisation:

The third Safety Vision function - runtime optimisation - pursues the same goal as optimal machine utilisation. With the help of this function, it is possible to reduce the operating times of downstream machines such as the HUBER Wash Press WAP® or HUBER Screw Conveyor Ro8 T by up to 40 %. This is achieved by permanently evaluating the measured screenings volume on the rake bar. The intelligent control system then ensures that the addressed machines are activated according to the actual screenings volume present and not according to rigid specifications. By reducing the running time of the machines, not only the operating costs can be reduced, but also the wear. This consequently leads to both lower maintenance costs and a longer machine service life.



*HUBER Detection System Safety Vision detects beaver in HUBER Multi-Rake Bar Screen RakeMax® and saves its life*



*HUBER Detection System Safety Vision saves HUBER Multi-Rake Bar Screen RakeMax® from major damage caused by pipe sealing cushions*

### Safety Vision in use

HUBER Safety Vision proves its function on a daily basis at many wastewater treatment plants, where it performs its duties reliably and effectively. For example, three HUBER Multi-Rake Bar Screen RakeMax® units used as coarse screens at the Nuremberg wastewater treatment plant were equipped with Safety Vision. This not only reduced the running time of the downstream HUBER Wash Press WAP® units by about one third, but also prevented several cases of damage. This is impressively illustrated by the picture with the pipe sealing cushion, which was detected by HUBER's contaminant detection system Safety Vision during the commissioning of a screen in September 2019 and protected the screen from major damage. In addition to the pipe sealing cushion, larger pieces of wood and a live beaver were also identified several times. The latter could be safely released back into its original habitat after being freed from the screen by the Nuremberg professional fire brigade.

The experience gained so far and the application examples described impressively show that the HUBER Safety Vision contaminant detection system is not only a unique system that can optimise the operation and safety of the mechanical pre-treatment stage on a wastewater treatment plant, but that Safety Vision can also save lives.

### Option Safety Vision:

- Maximum machine availability and operational safety through protection of the screen and downstream machines
- Reduced wear and maintenance, increased machine lifetime and reduced costs by optimising the runtime of the downstream HUBER machines
- Optimum machine utilisation through adaptive operation based on event detection

### A member of the HUBER Group

Postaddress / Mailing address:  
Hydropress HUBER AB  
Box 125, 437 22 Lindome, Sweden

Besöksadress / Visiting address: Telephone: + 46 31 99 64 60  
Heljesvägen 4  
437 36 Lindome, Sweden

E-mail: [info@hubersverige.se](mailto:info@hubersverige.se)

[www.hubersverige.se](http://www.hubersverige.se)  
Bankgiro: 5870-0386  
Postgiro: 6402198-3