



Cylindrical Grit Separator Compact Unit WS

**clean
water
engineering**



Cylindrical Grit Separator Compact Unit WS
80 with odor treatment

Cylindrical Grit Separator Compact Unit WS.

OUR ALL-ROUNDER

The Cylindrical Grit Separator Compact Unit WS offers mechanical pre-cleaning, screenings treatment, grit and grease removal in one single system.

The Compact Unit WS in use.

And this is how it works:

At the beginning of the cleaning process in the Cylindrical Grit Separator Compact Unit WS, the waste water flows either by gravity or being pumped to the inflow tank where the screening system is installed. Here, the coarse substances are deposited on the screen grid and are being removed from the waste water flow before they are routed to the integrated Screenings Wash Press. This unit washes and dewateres the screenings and presses the compacted material through a discharge pipe e.g. towards a disposal container. Because of the special design of the screen drainage system, the pre-cleaned waste water is routed to the following Cylindrical Grit Separator. A tangential flow component is already generated during the inflow into the grit separator, crosswise to the actual horizontal flow direction through the Grit Separator. The formation of the spiral flow is the basis for a successful grit separation. To maintain the spiral flow formation over the whole length of the Grit Separator, coarse air bubbles are injected into the tank alongside the entire Grit Separation System. The effective design of the tank shape and the optimized supporting flow deflection of the waste water ensure to accomplish the desired spiral flow pattern.

The solid particles contained in the waste water are entrained by this spiral flow, reaching, as a result of the acting forces, the outer section of the rotating flow. On the one hand, the horizontal flow is smaller in this outer section and, on the other hand, the possibilities of contact with the tank wall are more frequent and longer. Both factors have the effect that the solid particles are routed to the tank wall and transported through the spiral flow to the bottom of the Cylindrical Grit Separator. Here, a conveyor screw is arranged in a trough-shaped section along the entire length of the Cylindrical Grit Separator. Due to small flow velocities over the trough, a sedimentation of the particles occurs in this low-flow area of the base conveyor screw. The deposited constituents are conveyed through the operation of the base conveyor screw towards the diagonally arranged grit discharge screw. Here, the deposited grit is taken over from the base conveyor screw and transported through a dewatering zone to a container provided for this purpose or a downstream grit washing system.



Cylindrical Grit Separator Compact Unit WS 50 in outdoor installation with heating, isolation and stainless steel housing

The function of the described grit separation process has been scientifically confirmed and proven successfully in hundreds of operational applications. Due to their low density, grease and floating particles are buoyed up to the water surface and accumulate as a result of the prevailing surface flow conditions at the outflow side in front of the baffle.

Here, these floating particles can be removed automatically with the aid of an easily implemented grease removal system through a grease pump and, on request, be integrated into the screenings. The resulting mechanically treated waste water leaves the Cylindrical Grit Separator through the outflow channel and can be routed through the outflow pipe to the downstream biological waste water treatment process.

Many advantages for your plant.

“The whole unit with Flat-Fine Screen convinces with its operational friendliness.”

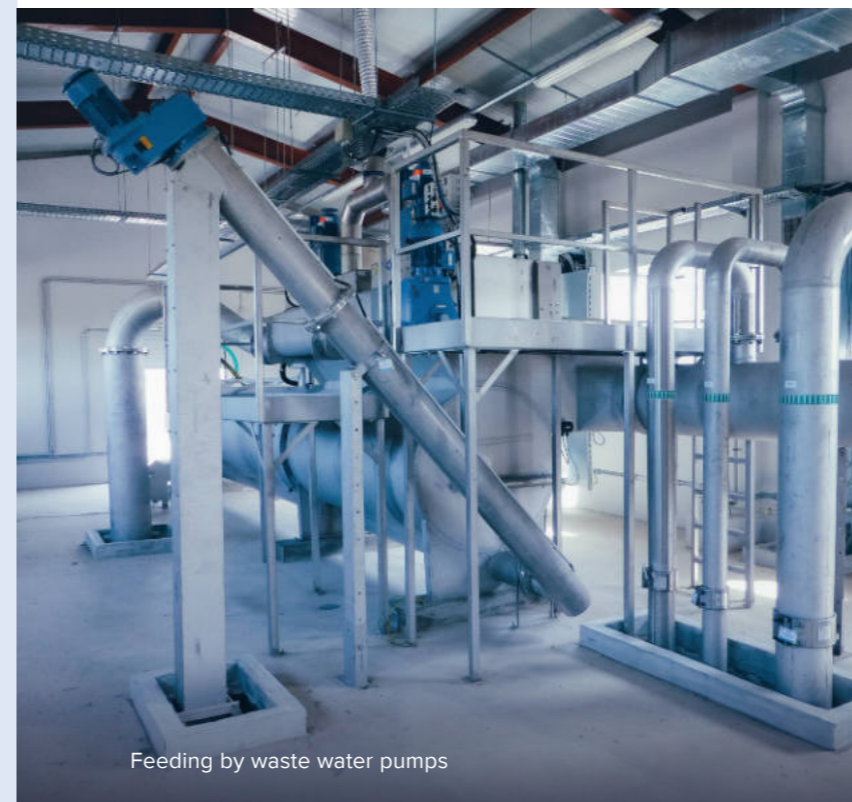
The Cylindrical Grit Separator Compact Unit WS can additionally be equipped with an integrated, automatically responding emergency bypass so that costly constructional measures are omitted. This is combined with space savings of up to 50% as opposed to conventional compact units, the same grit collection efficiency, a clearly better operational accessibility as well as lower maintenance costs.

The maintenance costs are verifiably extremely low due to the Flat-Fine Screen with an integrated Screenings Wash Press as well as the efficient grease and floating substance technology.

The Cylindrical Grit Separator Compact Unit WS differs from the other designs by the low inflow heights and the low required air injection depth into the Grit Separator. In total, this leads to a low energy consumption.



Flat-Fine Screen in inlet tank with air extraction



Feeding by waste water pumps



Bypass pipe and air supply in Cylindrical Grit Separator WS 120



Customer testimonials

“This simple grease removal is remarkable!”

“In one day ready for operation inclusive electrical control. Simply great!”

“In comparison to the old concrete construction it is a big operational relief.”

All important details.

GENERAL FEATURES

Simple and quick installation through compact design of the entire system

Highly efficient and scientifically proven grit separation in the typical requirements range

The small overall height with a low inflow height and a low air injection depth in the Cylindrical Grit Separator clearly reduce the required energy demand

Space savings up to 50% and reduction of construction costs as opposed to conventional compact systems as well as clearly better operational accessibility

In the case of lower level pit arrangement with gravity inflow, no pit cover accessible for vehicles is required, as the disposal containers may be placed at the side of the pit

Verifiably lowest maintenance and operating effort

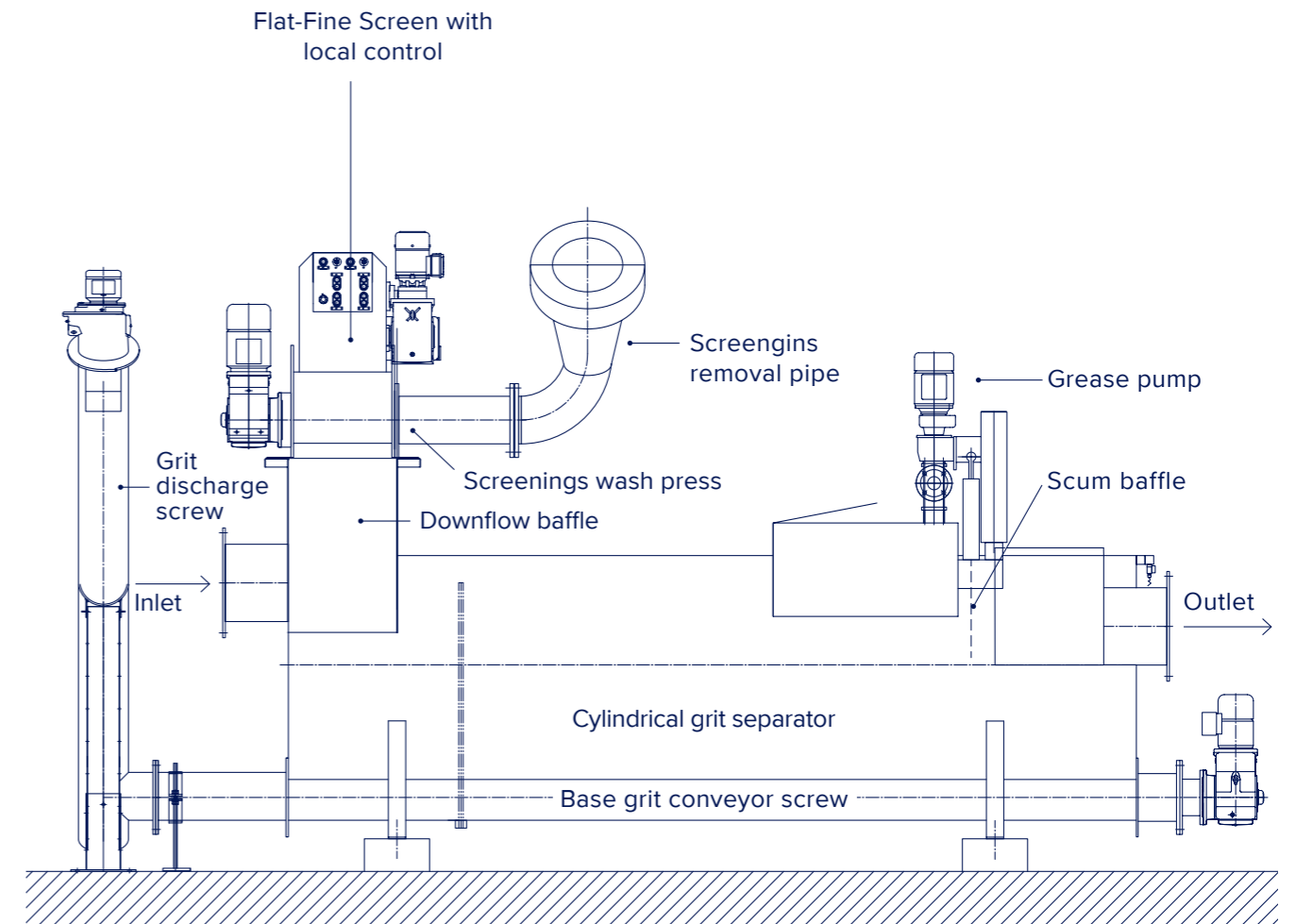
Whole system is hygienically encapsulated and, despite this, easy accessibility to all units is given

Very easy modification of the screen gap width possible according to required operating situation

No moving parts in the submersed section of the fine screen system

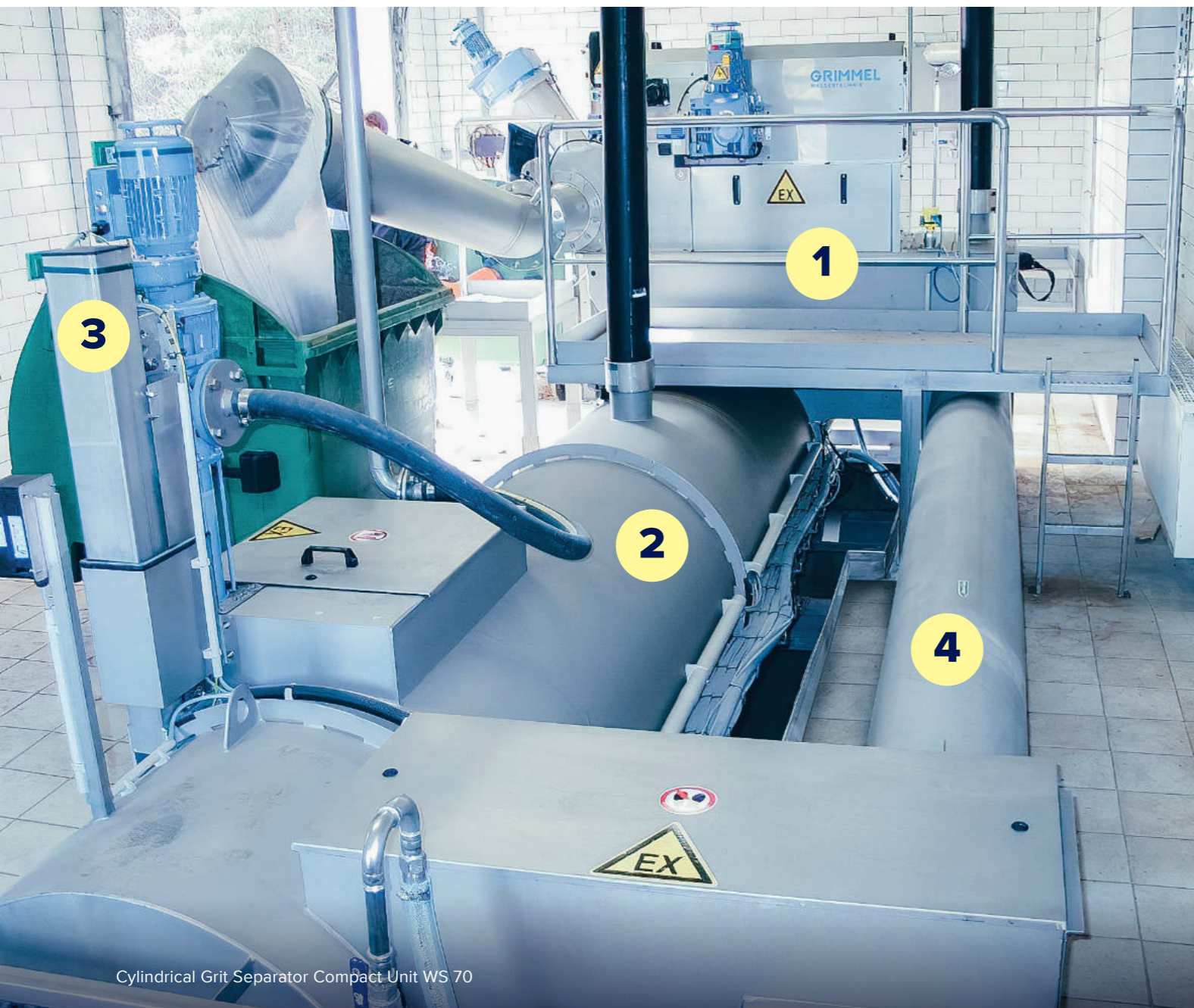
Very easy operator-friendly implementation of grease and floating particle separation

Optional: Integrated emergency bypass line, i.e. no additional structural measures required



System components and function.

MADE IN GERMANY



Cylindrical Grit Separator Compact Unit WS 70

1 / Flat-Fine Screen with Inflow Tank

The inflow tank in the Cylindrical Grit Separator Compact Unit WS usually accommodates the Flat-Fine Screen with an integrated screenings press. Here, the coarser constituents are removed from the waste water inflow, compacted in the downstream wash press and routed to disposal. As early as at this point, the idea of odor encapsulation is implemented, which is likewise applied in the downstream compact unit technology. Large maintenance and inspection openings enable a simple access to all assemblies. In addition, an automatically responding emergency overflow with integrated emergency bypass line can optionally be implemented in the inflow tank. In the case of an emergency or if maintenance activities are performed on the compact unit, the waste water can be routed through the bypass.

The special benefits of the Flat-Fine Screen are well-known in practice and highly valued. The screen grid that may be designed with a variable gap width has very large hydraulic capacities due to its flat slope in the waste water stream. In addition, the modification of the screen grid gap width, which may be easily performed depending on the operating situations, represents a further highlight of the proven technology. The scraper arm used for clearing the screen grid is being moved by a motor drive attached outside the housing.

2 / Grit Separation Tank

The Cylindrical Grit Separator is arranged downstream of the screen system. Due to the tangential inflow of the pre-cleaned waste water to the horizontal Cylindrical Grit Separation Tank arranged underneath, the typical spiral flow is formed to accomplish grit removal. This flow type is optimized through the injection of coarse air bubbles alongside the grit separator and is the basis for excellent grit separation efficiencies. The ventilation systems are implemented without any internal installations, which would be susceptible to blocka-

ges, and can be adjusted individually in view of the air throughput. The grit separated in the sand trap from the waste water is deposited in the base screw and is routed to the diagonally arranged grit discharge screw. The grit discharge screw is variable in its position and length and conveys the separated grit to the downstream grit disposal system. The drying level of the highly varying grit compositions can be optimized through individual operating time settings.

3 / Grease Removal

In contrast to usual grease removal facilities in grit separators, the Cylindrical Grit Separator employs a simpler and easier-to-maintain installation. The spiral flow prevailing in the Grit Separator leads to clear flow conditions also on the water surface of the Grit Separator. The two overlapping flow directions (axial and spiral flow) result in an independent accumulation and increasing concentration of grease and floating particles on the water surface at the side of the discharge area in front of the baffle. Here, a locally limited automatic removal of these separated floating particles occurs with the aid of a vertically mounted eccentric screw pump that is movable in height.

4 / Emergency Bypass

In the inflow tank upstream of the screen and in the outflow tank of the Compact Unit, stop-logs may be inserted in connection with a bypass line. By activating the gates, a shutdown of the entire Cylindrical Grit Separator, e.g. for inspection activities, is possible. In this case, the inflowing waste water passes a spillway positioned in the inflow tank and bypasses the entire Cylindrical Grit Separator through the bypass line towards the outflow. This may likewise occur automatically in the case of an emergency, e.g. a power failure, without activating the gates and does not require any operational activity.



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