



HOBAS[®] **CSO Chamber**

Modular Stormwater Overflow
System for Combined Sewers



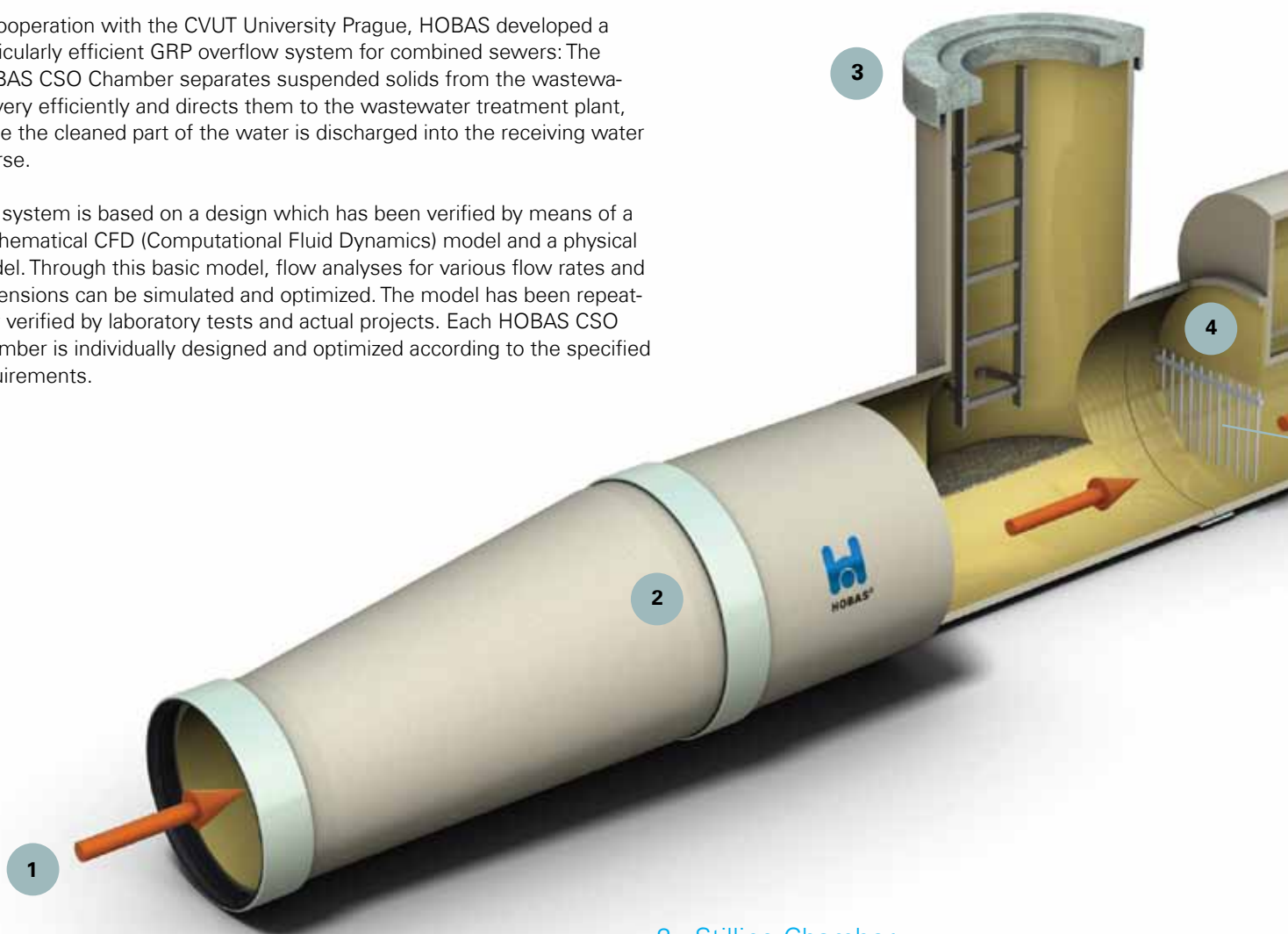
HOBAS® CSO Chamber (Combined Sewer Overflow)

Modular Stormwater Overflow System for Combined Sewers with Low-Maintenance Solids Separation

A combined sewer collects sanitary sewage and stormwater runoff in a single pipe system. During dry periods the system functions like an ordinary sewer system, but whenever heavy rainfalls occur it has to cope with additional water quantities. In order to avoid the surcharge or flooding of the sewage systems, sewer overflows are installed to discharge a part of the combined sewage into a storage system (e.g. stormwater retention tank) or directly into a receiving water course.

In cooperation with the CVUT University Prague, HOBAS developed a particularly efficient GRP overflow system for combined sewers: The HOBAS CSO Chamber separates suspended solids from the wastewater very efficiently and directs them to the wastewater treatment plant, while the cleaned part of the water is discharged into the receiving water course.

The system is based on a design which has been verified by means of a mathematical CFD (Computational Fluid Dynamics) model and a physical model. Through this basic model, flow analyses for various flow rates and dimensions can be simulated and optimized. The model has been repeatedly verified by laboratory tests and actual projects. Each HOBAS CSO Chamber is individually designed and optimized according to the specified requirements.

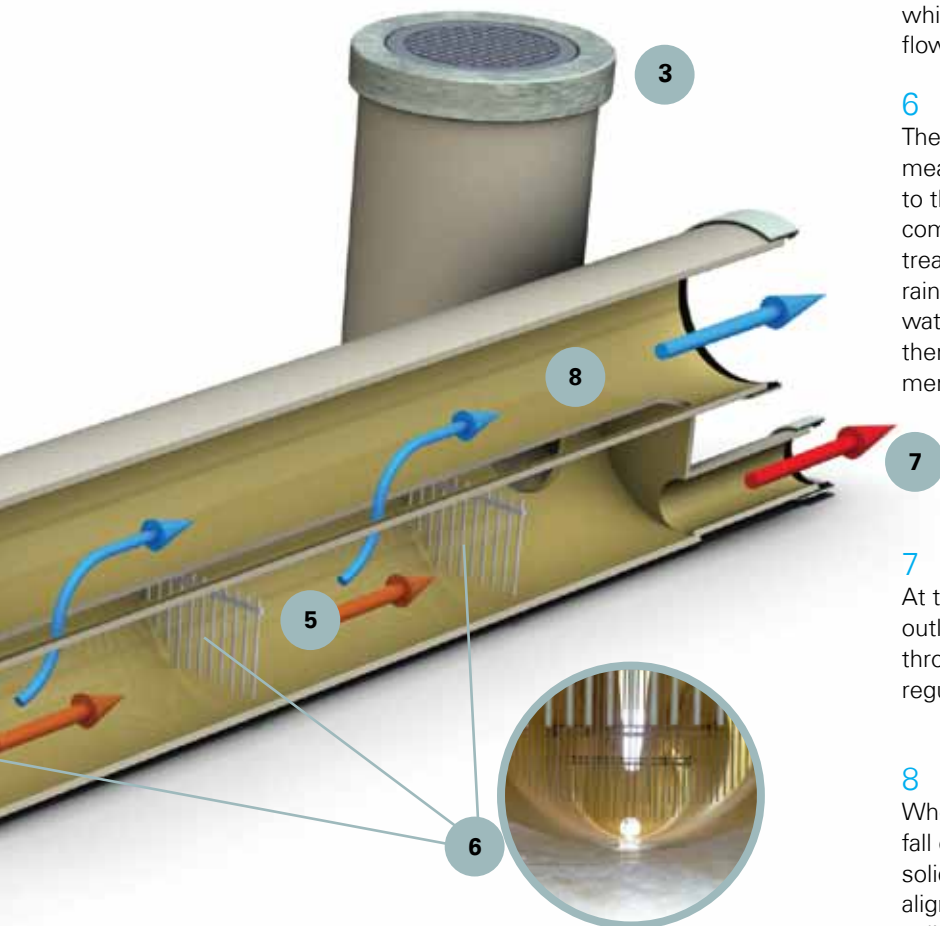


1 Inlet

The HOBAS CSO Chamber is directly connected to the existing sewer. The hydraulic design and necessary capacity of the system is determined by the inflow to the CSO Chamber and the throttled outflow to the wastewater treatment plant. Based on these data, the overflow to the receiving water course is determined .

2 Stilling Chamber

During dry weather conditions as well as during rainfall events, the inflowing combined wastewater is led into the first section of the CSO Chamber. The conic cross-sectional enlargement reduces the flow velocity significantly and thereby supports the sedimentation and accumulation of suspended solids. The size of the stilling chamber can be increased by design, providing additional storage capacity.



3 Inspection Manholes

The chamber can be accessed through factory-mounted HOBAS GRP Inspection Manholes that are equipped with a ladder and a manhole cover. They are particularly important in the area of the scum board and the throttled outlet. Additional manholes can ensure the accessibility of the cleaning elements and any measuring equipment.

4 Scum Board

A non-corrosive GRP scum board mounted perpendicular to the flow direction serves as barrier for suspended solids in rainfall events. As the flow velocity decreases at the scum board, more solids sink to the bottom of the combined sewage flowing below. Therefore the pollutants are safely transported to the wastewater treatment plant after the rain event. Thanks to the scum board's smooth surface there is no danger of deposits.

5 Separating Chamber

After passing the scum board, the wastewater reaches the separating chamber. In dry weather conditions, it simply flows through the chamber. During heavy rainfall, the water level rises and the combined wastewater which is low in solids content rises up through the overflow slit.

6 Flexible Cleaning Elements (optional)

The retention of suspended solids can be improved by means of flexible GRP bars. The bars do not reach down to the pipe bottom, which is why in dry weather the combined sewage passes through to the wastewater treatment plant effluent without touching them. After a rainfall event, the bars start to vibrate in the decreasing water thanks to their flexible mounting and thereby clean themselves automatically. The number of cleaning elements depends on the project.

7 Throttled Outlet

At the end of the HOBAS CSO Chamber, a throttled outlet leads to the waste water treatment plant. The throttled outlet can be individually supplemented with regulation and measuring equipment.

8 Overflow

When the separating chamber is filled due to a rainfall event, the wastewater which is low in suspended solids content rises up through an overflow slit, which is aligned with the flow direction and thereby optimizes the solids separation. The overflow conveys the cleaned water to the receiving water (overflow sewer), a stormwater retention tank or an overflow tank.

Advantages HOBAS® CSO Chamber

- Reliable storm water overflow
- Low-maintenance, self-cleaning system
- Optimum separation of suspended solids (design enhances secondary flow effects)
- Additional storage function
- Modular system
- Quick installation
- Little space and excavation required during installation
- Withstands high traffic loads with minimum covering



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Sustainable Water Solutions

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