



# Amiblu Sand Trap

For small hydropower plants

## Reliable separation of solids at small hydropower plants

The sand trap is a key component for removing solids in small hydropower systems. After large stones and woody debris are held back by a screen at the weir, the sand trap separates smaller solids such as gravel, sand and silt from the river water. It thereby prevents sedimentary deposits from building up in the penstock. This, in turn, extends the hydropower plant's operating time and maintenance intervals, protects the turbine from excessive wear and increases the facility's service life.

Amiblu has developed a particularly effective, prefabricated sand trap which is built out of glass fibre reinforced pipes. Thanks to the precast units and low weight, the Amiblu Sand Trap is transported to the installation site and integrated into the power plant system very easily. A flushing unit reliably cleans the sand trap from separated solids.



### Advantages of the Amiblu Sand Trap

- Reliable separation of solids
- Effective & safe flushing system to remove sediments from the sand trap
- Unhindered operation of the turbine during the flushing process
- Easy mounting thanks to prefabricated units
- Little space and excavation required during installation
- Individual design for optimal performance
- Easy handling thanks to low weight
- Installation in remote areas possible

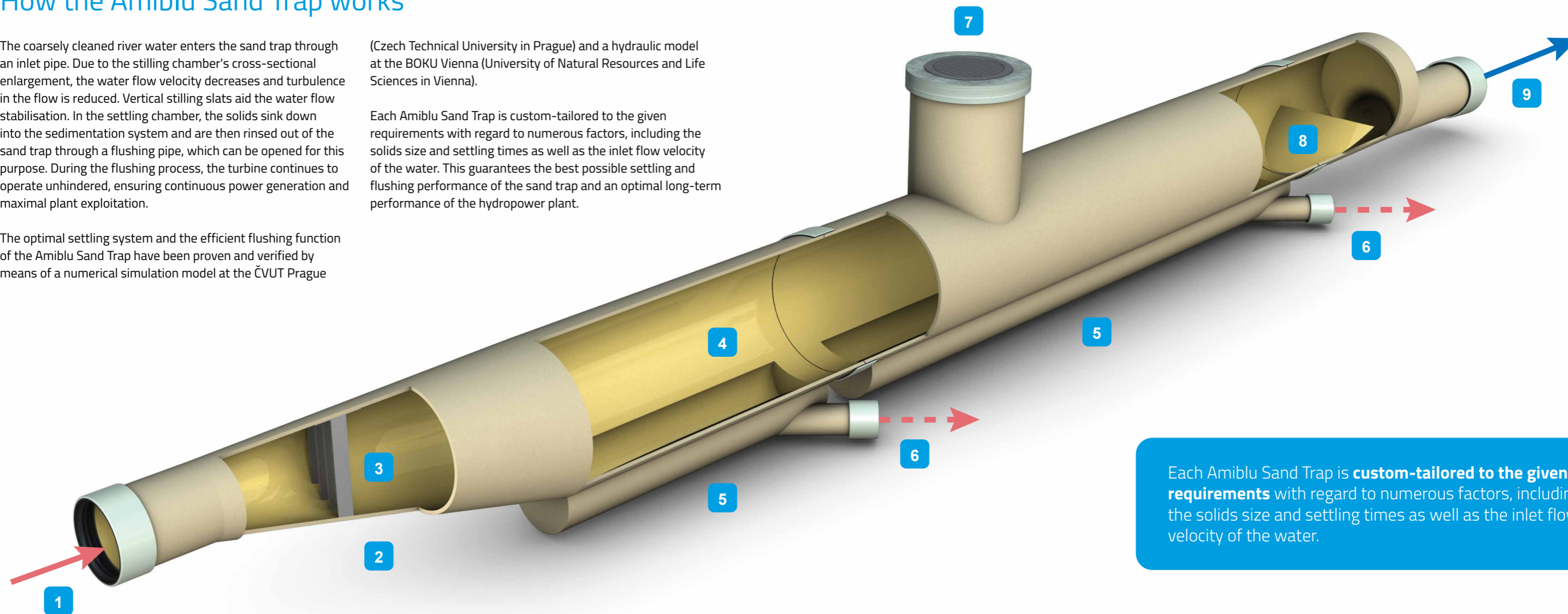
## How the Amiblu Sand Trap works

The coarsely cleaned river water enters the sand trap through an inlet pipe. Due to the stilling chamber's cross-sectional enlargement, the water flow velocity decreases and turbulence in the flow is reduced. Vertical stilling slats aid the water flow stabilisation. In the settling chamber, the solids sink down into the sedimentation system and are then rinsed out of the sand trap through a flushing pipe, which can be opened for this purpose. During the flushing process, the turbine continues to operate unhindered, ensuring continuous power generation and maximal plant exploitation.

The optimal settling system and the efficient flushing function of the Amiblu Sand Trap have been proven and verified by means of a numerical simulation model at the ČVUT Prague

(Czech Technical University in Prague) and a hydraulic model at the BOKU Vienna (University of Natural Resources and Life Sciences in Vienna).

Each Amiblu Sand Trap is custom-tailored to the given requirements with regard to numerous factors, including the solids size and settling times as well as the inlet flow velocity of the water. This guarantees the best possible settling and flushing performance of the sand trap and an optimal long-term performance of the hydropower plant.



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### 1. Inlet Pipe

After the river water has passed the screen and is thereby cleaned of large solids, it enters the sand trap through an inlet pipe.

### 2. Stilling Chamber

A cross-sectional enlargement in the first part of the sand trap reduces the flow velocity considerably. This way, solids can subsequently settle.

### 3. Stilling Slats

The settling of solids is increased by factory-mounted vertical slats. They calm turbulence in the flow, especially that perpendicular to the direction of flow.

### 4. Settling Chamber

As an effect of the water's reduced flow velocity, the solids sink down to the bottom of the settling chamber, right into the integrated sedimentation system.

### 5. Sedimentation System

The particles collect in the sedimentation system inside the settling chamber. The Amiblu Sand Trap is designed to prevent the settled solids from being stirred up and re-introduced into the water very effectively.

### 6. Flushing Pipe

The solids are then rinsed out of the sand trap through a flushing pipe that is opened for this purpose. The turbine does not need to be turned off during the flushing process. This ensures the continuous generation of hydroelectric energy.

### 7. Inspection Opening

The sand trap can be accessed through a factory-mounted GRP inspection manhole that is equipped with a manhole cover. The accessibility of sand traps with larger structural lengths can be improved by means of additional manholes.

### 8. Overflow Plate

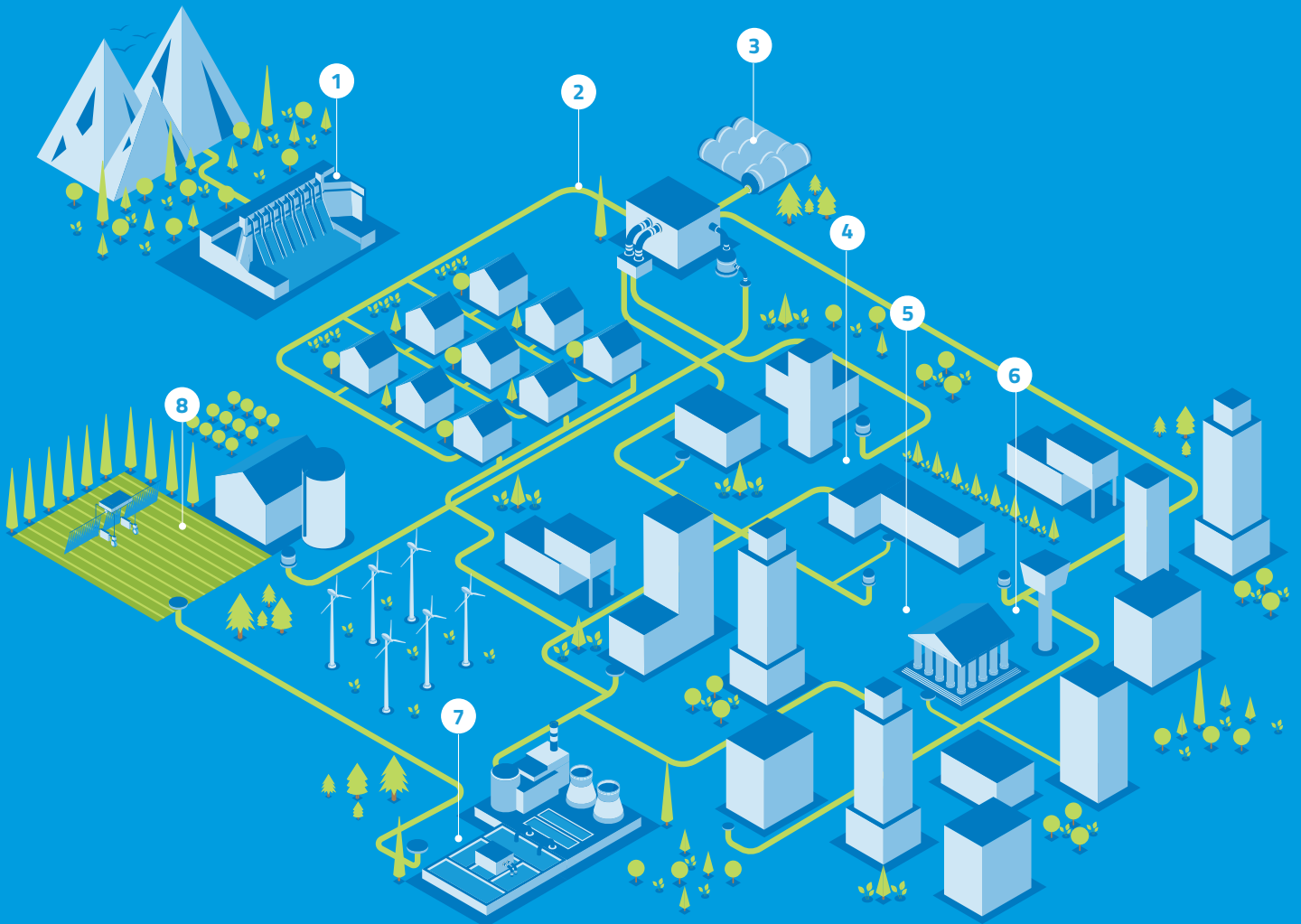
A tilted overflow plate at the end of the sand trap ensures that the suction of the outlet pipe cannot rinse out the settled solids into the penstock.

### 9. Outlet Pipe to Penstock

The cleaned river water exits the sand trap through an outlet pipe which is connected to the penstock. The penstock then conveys the water to the powerhouse.

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