

# Screw Generator

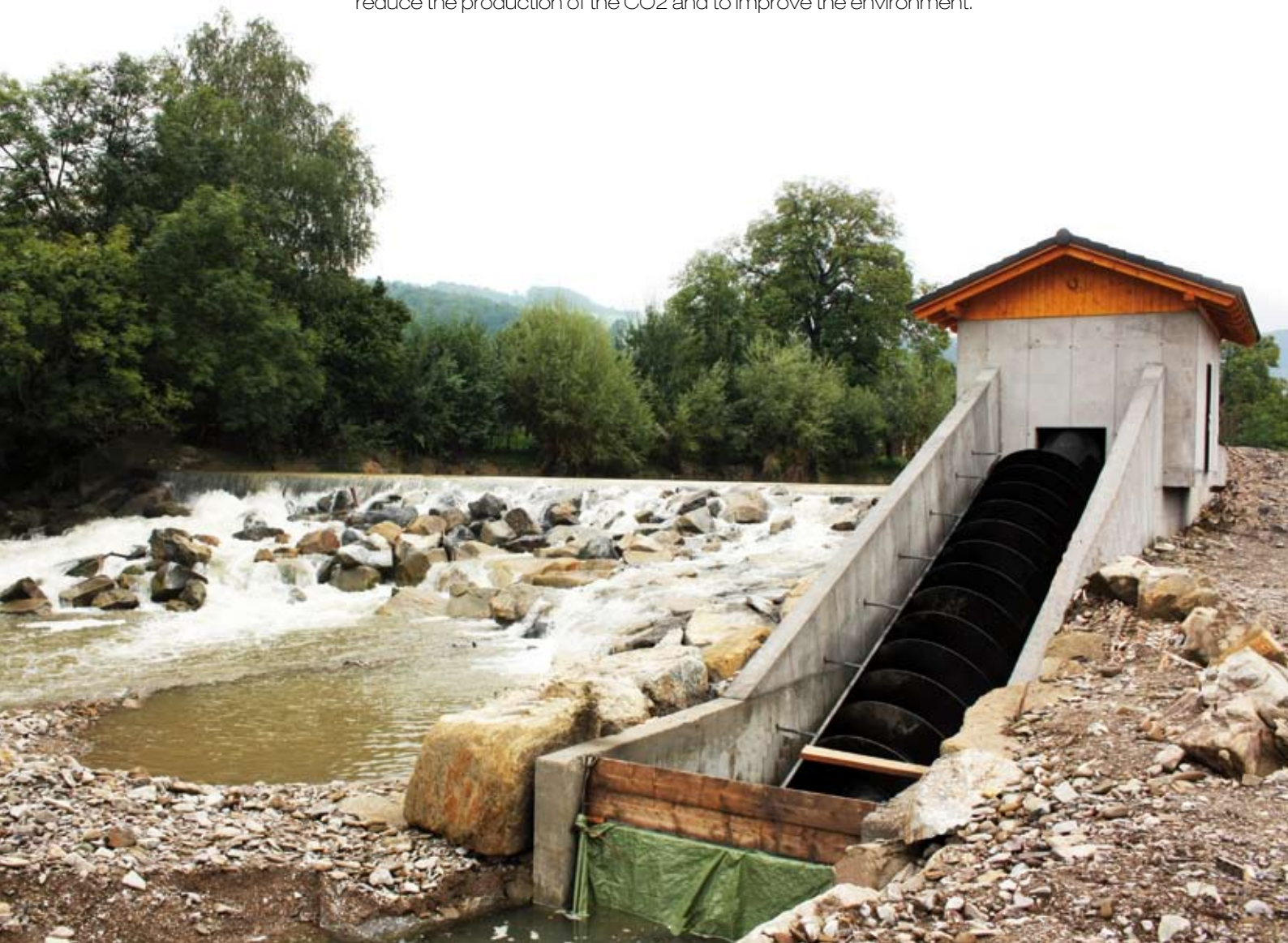


# Renewable energy with a screw

For over a century Spaans Babcock is known as Worlds largest screw pump manufacturer and leading in innovations. The screw generator is known for many years, however Spaans Babcock did some further developments in the last years.

With the introduction of the Spaans Hydro Power<sup>+</sup>® screw, a new age has been started. The screw generator combines high efficiency with extreme reliability, fish friendliness and smooth running. This combination makes the Spaans Hydro Power<sup>+</sup>® screw a durable investment for the future.

With the Spaans Hydro Power<sup>+</sup>® screw, Spaans Babcock helps to reduce the production of the CO<sub>2</sub> and to improve the environment.





The Spaans Hydro Power<sup>®</sup> screw generator works in opposite direction of the Archimedeian screw pump. The screw pump pumps the water up, the screw generator generates durable energy by transferring the flow from upstream to the downstream. The generator screw rotates due to the flow of the water and energy will be transferred to the drive unit. The generated energy will be transformed by a generator into electricity. Spaans Babcock delivers screw generators up to a range of 500 kW.

In the last years, Spaans Babcock have done several researches and tests concerning the fish friendliness of the Spaans screw pump and the Spaans Hydro Power<sup>®</sup>. The outcome of the researches shows, that for both systems, almost all fish past the screw pump and screw generator unharmed (>98%).

The main advantage of the Spaans Hydro Power<sup>®</sup> screw is, especially with limited head, the high energy output with high efficiency (up to 95%) and the fish friendliness. Spaans Babcock can give support from the design of the installation till the delivery of the screw, drive unit, generator, control panel, coarse screen, Gates etc. Spaans Babcock delivers only custom build installations and takes care of all your specific wishes.

## Advantages

- Ideal application of the screw generator with small fall heads
- High and constant efficiency with different capacities and head:  
The efficiency curve shows a flat and high efficiency over a wide range of the capacity. Varying capacities and heads hardly have effect on the efficiency. The Hydro Power+® screw does not need any grease pump for lubrication of the bottom bearing which will improve the efficiency and decrease operational costs.
- High efficiency compared to the water Wheel and small turbines
- Fish friendly: Several tests have showed the fish friendliness of the Spaans screw pump and Hydro Power+® screw. In the Netherlands, Canada, the USA and other countries, the Spaans screw pump will also be used as a fish ladder by pumping fish.
- Robust, extreme reliable and a long life time: The Spaans screw generator, consist of a few wear parts. The combination with the low rotational frequency results in low wear. A lifetime of 25 till 30 years is not an exception, where the efficiency stays the same over the years.
- Open system: Large solid parts such as plastic, wood or small stones can pass the screw generator without having any effect on the screw generator or the efficiency



- Maintenance friendly and low Maintenance costs: Due to the simple and robust design, Spaans screw generator installations require minimum maintenance.
- No fine screen is necessary  
Only a simple static bar screen can eventually be used to prevent large items enters the screw generator. This saves costs, prevent head loss and allow fish passage.
- Can operate with variable and fixed speed
- Power production up to 500 kW
- Wide range of flows  
The Spaans screw generator is capable of handling flows from 100l/s - 15m<sup>3</sup>/s each.
- Multi stage application possible
- Wide range of heads  
Any head up to 12m for a single stage up to 24m for a two stage installation is possible.
- No cleaning necessary  
Cleaning of the screw generator is not necessary. The generator is self cleaning. No efficiency loss due to dirt build up.
- Relatively low civil costs  
Simple foundation with two concrete supports can be sufficient. Units can be specifically designed to suit existing civil layouts.



## Applications

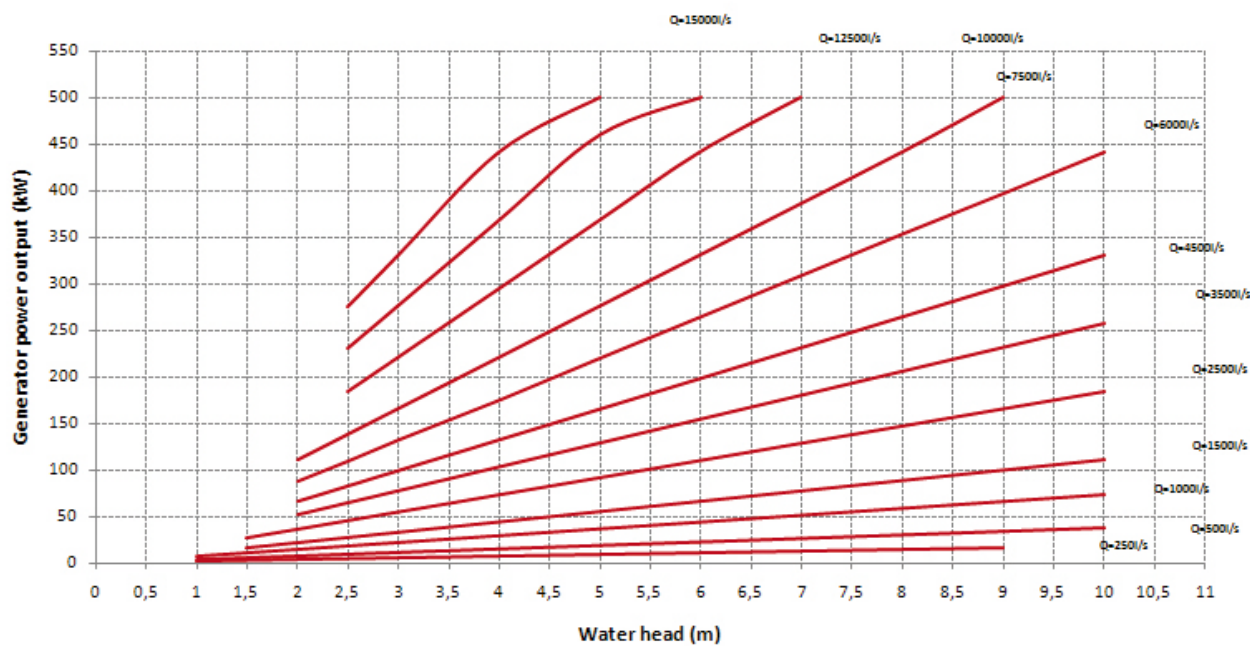
- Rivers
- Cooling water outlets from power stations
- Industrial process water (for example paper or steel mills)
- Water treatment inlets (Municipal and Industry)
- Water treatment outfalls (Municipal and Industry)
- Replacement of waterwheels and other types of generators



## Different types of constructions

- As Compact type: This type has a self supporting trough with integrated drive unit. The advantage of this type is the very simple installation and the low civil costs. The complete unit is pre-assembled in our work shop
- With a steel trough: With a steel trough, the lifetime of the trough will be extended compared to a concrete trough, the adjustment with the screw generator is optimized as the steel trough is pre-assembled in our work shop
- With a concrete trough: For this type the concrete trough will be screeded by the screw generator it selves, the concrete gets its shape by the screw generator

Indication of power output in relation to the head and capacity





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