



**Systems and services
for small hydro power plants**



Two become one – providing more services for you

The demand to generate electricity from renewable sources is a global focus. Hydro power has tremendous potential and plays an important role in emission-free generation. With the combination of 80 years of Kössler's small hydro experience and 140 years of Voith Hydro's business expertise, service to our customers will increase significantly.



Kössler – A Voith Hydro company

Kössler is a full-line provider of small hydro power plants, from engineering, through manufacture and execution.

Founded in 1928 as a repair machine shop for turbines and generators, Kössler later developed its own new turbines and controls. Through continuous improvements, the company strengthened its market position.

In 2007, Kössler became a subsidiary of Voith Hydro. In addition to taking on Voith Hydro's customer-oriented business model and competitive structure, Kössler now has access to the technological background of Voith Hydro.

The company is acutely aware of the significance of hydro power as a source of renewable energy in a world with burgeoning energy requirements, yet is committed to reducing greenhouse emissions. With this in mind, Kössler specializes in the manufacture of water turbines for small hydro power stations up to 15 MW. Services range from design and manufacture of Kaplan, Francis and Pelton turbines to hydraulic steel structures and power station automation.

Voith Hydro

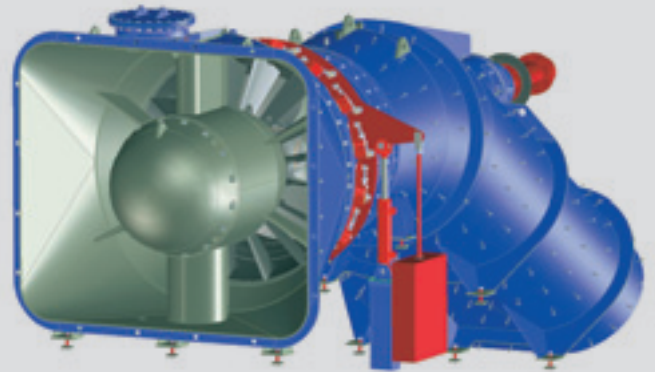
Voith Hydro is a Group Division of Voith and – with a workforce of around 3,000 employees and an order intake of more than 1 billion Euros in the last fiscal year – a global market leader for hydro power equipment and services.

Voith sets standards in the paper, energy, mobility and service markets. Founded on January 1, 1867, the company currently employs approximately 37,000 employees in more than 270 locations worldwide and has a turnover of 4.2 billion Euros. Voith is one of Europe's large family-owned companies.



Our quality philosophy

Kössler is a small hydro company located in St. Georgen, Austria, and offers everything from one location.



We offer a seamless supply chain that begins with engineering and continues through the ongoing improvement of product quality and development. Our engineers use state-of-the-art 3D CAD Systems, Research and Development Analysis and CAM machine programming. Our manufacturing facilities are equipped with the newest CNC machines and more than half of our employees are dedicated to production and service. We have manufacturing know-how, reliable delivery, flexibility in individual customer needs, and lifetime service all under one roof.

Our company is ISO 9001:2000 certified. We have highly trained and qualified employees for quality assurance, and each product undergoes strict inspection guidelines that are on top adapted to customer requirements. We are committed to adhering to our quality standards which are also aligned with current EN, DIN, and IEC standards.

We set the course for future research and development to meet the needs of our customers and to advance clean hydro power energy. Kössler turns water into power.

Turnkey hydroelectric power plants

A successful project needs more than the best equipment – it needs the coordination of many interfaces to be completed on time and within budget.



Kössler designs, engineers, manufactures, supplies and services a full range of hydro power equipment for small hydroelectric power plants.

We supply

- Electrical engineered components.
- Generators.
- Accessory instruments.
- Coordination and monitoring of planning.
- Strict on-time management.

Our experience ensures that our customers are served with the most optimized solutions. From initial feasibility studies, through design, manufacture and installation to final commissioning, plant control and management, Kössler is a partner you can truly rely on.

Our small hydro competence

Our goal is to provide the highest return on investment for the benefit of our customers. To achieve this, we offer:

- A standardized platform concept as a basis for customized solutions.
- Cost effectiveness.
- Integrated solutions with minimal interfaces.
- Low civil construction cost.
- High performance.
- Reliability and top quality control.
- Environmentally friendly solutions.
- Factory pre-assembly and reduced erection time.
- Rapid commissioning of overall systems, training of operating and maintenance staff, and after sales service.

We combine the following requirements:

- Safety and high availability.
- Long life and adaptability.
- Proven solutions and concepts.
- Standard and flexible solutions.

Everything from a single source.

Economy is assured by innovative, standardized concepts. The excellent price-performance ratio is a result of the latest software engineering and application of modular principles, as well as of specific focus on the requirements of hydro-electric power stations.

This offers additional advantages:

- Clearly defined scope of delivery.
- High availability.
- Trouble-free operation.
- Low operating costs.
- Short payback period.

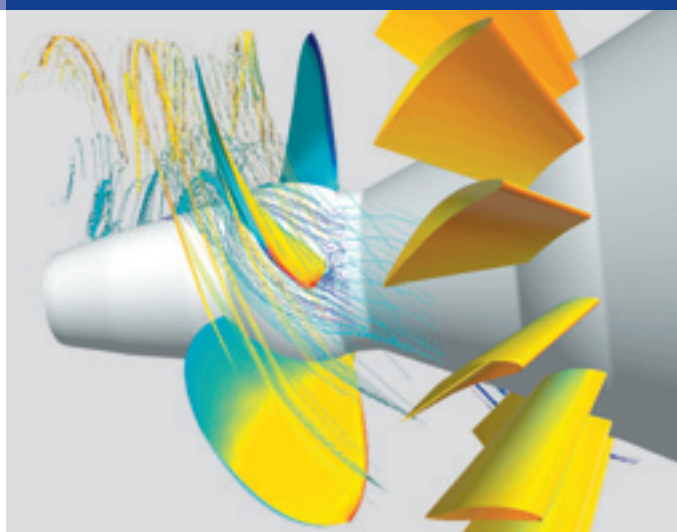


Research and development

Small hydro development has always been synonymous with Kössler and Voith Hydro.

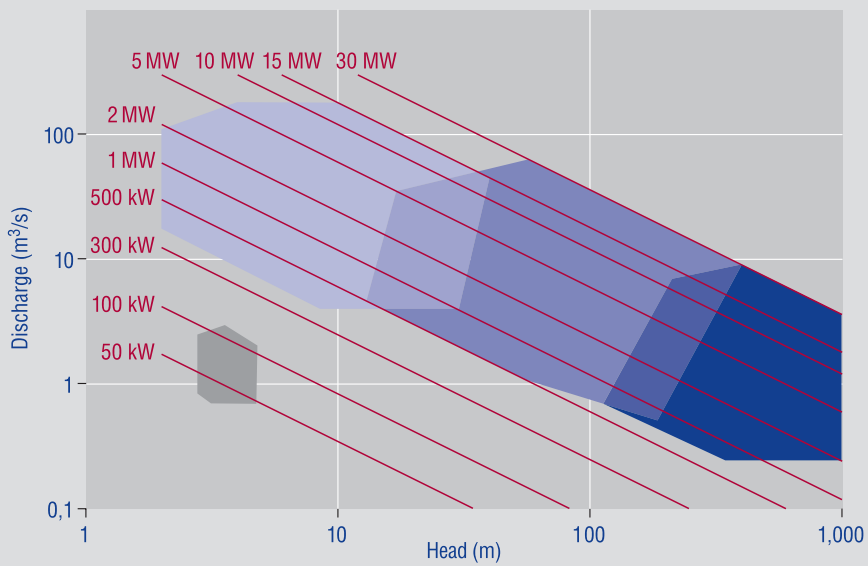
Kössler as a Voith Hydro company can now use the vast resources of the “Brunnenmühle”, the Voith Hydro Research and Development facility which for the past 100 years has developed industry leading hydro power technology.

It is the central knowledge management and distribution center within the global network of Voith Hydro and coordinates its own and the US' highly productive hydraulic test labs. All development can draw on standardized design concepts with fully updated engineering tools, whether for both large and small hydro machinery.



Our small hydro products

The Kössler and Voith Hydro application range



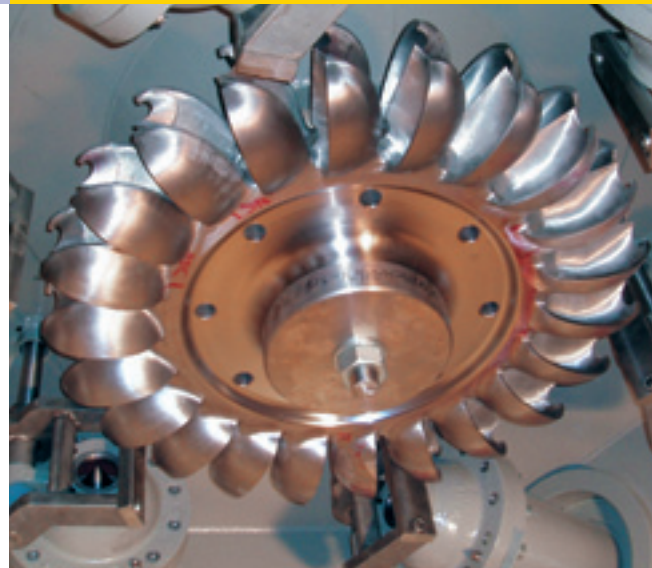
- Kaplan
- Francis
- Pelton
- Ecoflow

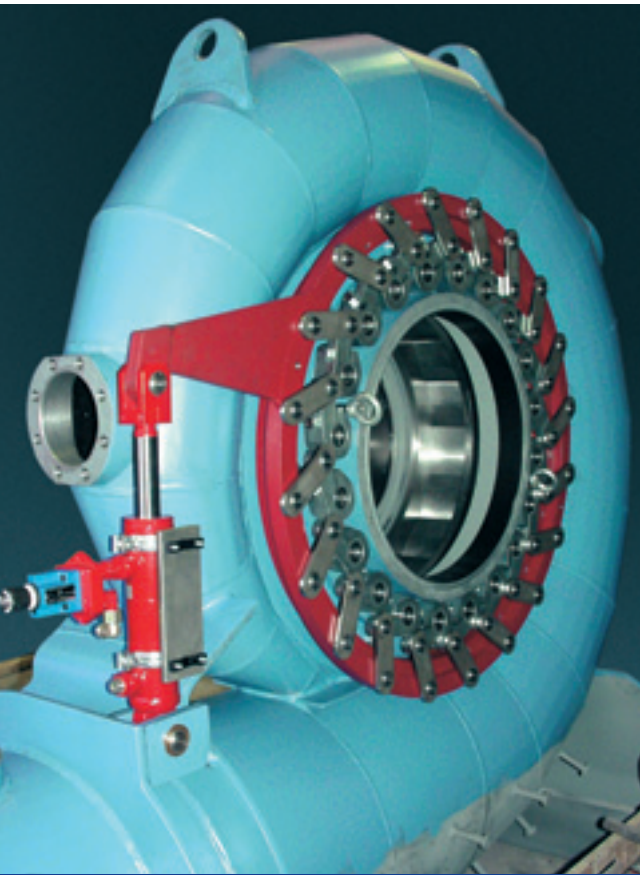
Pelton turbines

Primarily used in high head plants:

- horizontal design with one or two nozzels
- vertical design with three to six nozzels

Compact designs are becoming increasingly popular for Pelton turbines as well.





Francis turbines

Reliable for low and medium-head:

- for low-head power plants with open-flume designs
- for medium-head ranges designed as horizontal or vertical shaft spiral case turbines with horizontal or vertical shaft

Most of the spiral turbines come in a compact design, with the runner directly coupled to the generator shaft.



Axial turbines

Full range of Kaplan turbines mainly used for low-head applications.

Available types:

- S, A, or Z tubular turbines
- conventional vertical Kaplan turbines

Depending on the application, turbines can be offered with three to six blades. Generators are either directly connected, or speed increasers are used.

Electrical equipment

The optimal interaction of turbines, steel intake structures, and electrical equipment will offer the utmost efficiency for your hydro power station.



To perform the necessary controls for water turbines such as water level control, speed control and efficiency optimization, our product range includes a DTC-300 digital turbine controller. Digital turbine controllers and hydraulic governors are perfectly tuned to meet your requirements and to provide maximum operational safety and reliability. The integration of other components such as hydraulic intakes or generators in our automatic controls complete our range of automation systems.

Service and upgrade

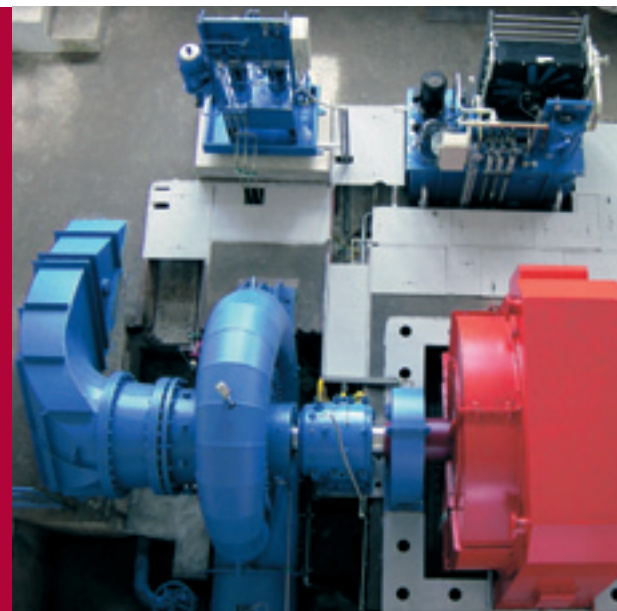
Hydroelectric plants are long-term economic resources. To achieve better efficiency, higher safety, and enhanced comfort for older hydro power plants, we also offer an extensive range of services and spare parts.



Francis runner before modernization.



Rebuilt Francis runner.



Since machine outages have huge financial implications, we know the importance of reacting to emergencies quickly and efficiently to minimize interruptions in service. Therefore, our customers can rely on our modernization expertise and our vast experience in upgrading hydro power plants. This provides the highest quality for the best price.

We have developed optimized solutions for older hydro power stations to improve efficiency and bring the technology in line with current trends. We specialize in efficiency upgrades, maintenance-free system management, safety and system automation.

Kössler Gesellschaft m.b.H.
Hauptstraße 122-124
3151 St. Georgen/Stfd.
Austria
Tel. +43 2742 885272
Fax +43 2742 884626
www.koessler.com

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