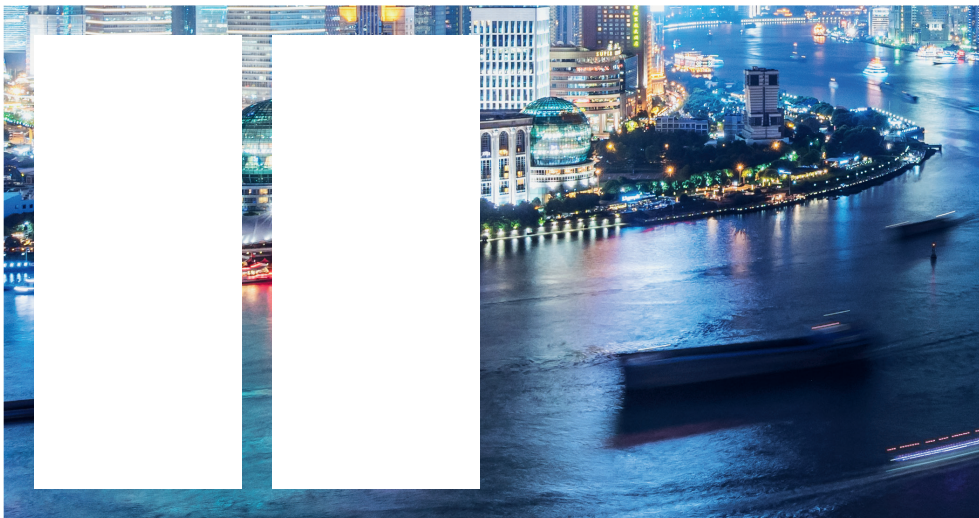


VOITH

Hydropower

Solution to
global challenges



The demand for power is driven by various
global megatrends:

Urbanization / Electromobility / Digitalization

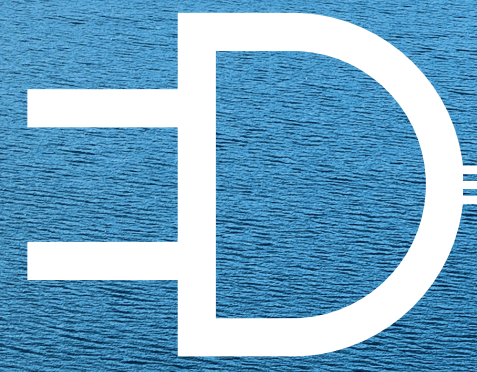
Today, more sustainable and climate-friendly technologies are needed to meet the increased demand while continuing to pursue the goals of the Paris Climate Agreement.

Hydropower is the only renewable energy capable of generating electricity on a large scale. It has proven to be a reliable and clean source for centuries.

Hydropower...

... is a grid stabilizer and trailblazer

Thanks to reservoirs, providers can respond to fluctuations in energy demand swiftly and with unmatched flexibility. This allows a stronger integration of volatile renewables such as wind and solar power, and adds to the grid's stability.



A battery can look this good!

... saves lives

Dams can help make rivers more navigable and even protect flood-prone regions. Reservoirs can also be used for irrigation purposes.



... is clean

The hydroelectric life cycle produces very minimal greenhouse gas.



... is renewable

The power of flowing water is used to generate electricity without depleting it in the process.



... is versatile

Hydropower plants come in a variety of shapes and sizes. While large facilities feed electricity into the public grid, small hydropower plants supply individual companies and localities with power, generating energy precisely where it is needed.



... is reliable

Hydropower is available at all times and can produce low-carbon base load power.



... is affordable

Thanks to their high degree of efficiency, low operating and maintenance costs, and average lifespan of 50 to 100 years, hydropower plants are a long-term investment with a high cost-benefit ratio. In addition, hydropower generation is largely unaffected by commodity-based market price fluctuations.



... promotes economic and social development

The expansion of hydropower generates additional economic value and therefore creates jobs in the country.



Facts and figures

4 billion tons

of greenhouse gases were saved by generating electricity from hydropower instead of coal in 2017; this equates to all the emissions from the EU in the same year. Within the global energy mix, hydropower is one of the smallest emitters of greenhouse gas.

16 %


of the electricity generated worldwide comes from hydropower.

Only approx. **30** %

of the global hydropower potential has been used so far. In addition, existing plants hold enormous potential for expansion through modernization.

Around **2** million people

work in hydropower across the globe – roughly equivalent to the population of Latvia.

 **2** / **3**

of the electricity generated from renewable sources worldwide comes from hydropower. It is the largest renewable energy source in terms of electricity production, which will remain for decades to come.

Up to **90** %

efficiency with a lifespan of up to 100 years makes hydropower one of the most efficient forms of energy generation and storage.

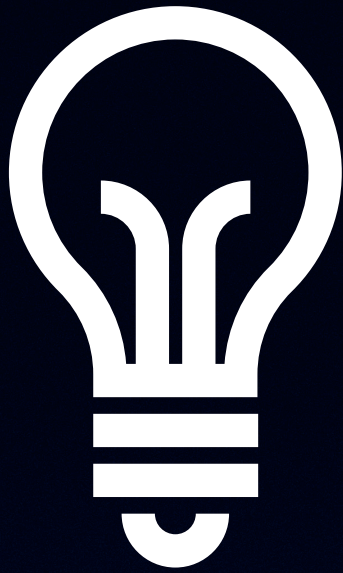
30 seconds

is the time pumped storage plants need to ramp up from standstill. Thanks to its storage potential, hydropower ensures flexibility and grid stability and allows the integration of wind and solar energy.



Voith Group
Voith Hydro Holding GmbH & Co. KG
Alexanderstr. 11
89522 Heidenheim, Germany

Contact:
Phone +49 7321 37-0



So we always have light

■ ■ ■

How the “Hidden Champion”
hydropower prevents
nationwide power outages

Going completely unnoticed by most of the population, the European power grid was severely tested in early 2021, and might even have narrowly escaped a total blackout. After several power plants in southeastern Europe suddenly suffered outages, the operation of the European power grid took a critical turn. Hydropower plants in Austria had to be ramped up rapidly to prevent the blackout.

If vast amounts of energy are suddenly lacking, the power frequency drops and the grid starts to falter. The decarbonization process of the European power system, coupled with the partial nuclear phase-out, is progressing rapidly. This development will be scaled up further over the next few years in order to achieve the tightened EU climate targets but could also provoke potential instability. This is because, as we move away from coal and nuclear energy, the most stable base loads in the grid will gradually disappear.

Wind and solar power, on the other hand, are dependent on weather conditions and therefore volatile. The proportion of demand these sources generate is already highly significant and on the rise, which could herald severe fluctuations in electricity production.

When using pumped storage facilities, however, grid operators can react quickly – modern pumped storage plants start from standstill in just 30 seconds. This is how hydropower was able to help avert the blackout in this case, too.