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VOITH

Energy for Southern Africa
Hydropower

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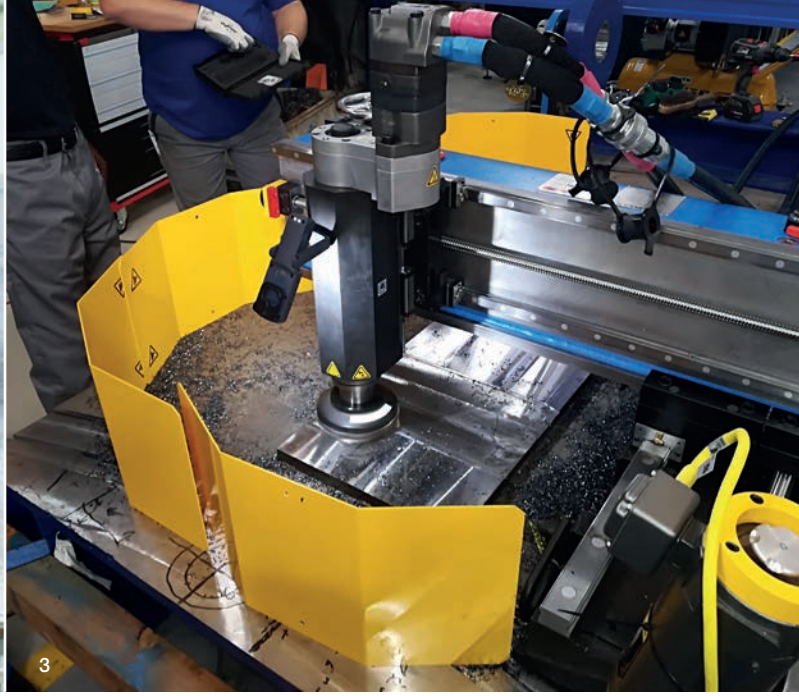
Hydropower potential in Africa

Renewable energy is undoubtedly the most sustainable answer to the rise in energy demand. Hydropower plays a key role in sustainable and environmentally friendly power generation and is the leading renewable source of electricity generation globally. Worldwide it makes an indispensable contribution to a stable power supply and thus to economic and social development – both in industrialized countries and in regions seeing strong growth.

Many African nations focus on hydropower when approaching the necessary expansion of the local energy supply. These countries are aiming to provide a reliable and stable electricity supply to the dynamically growing population as well as the increasingly strong developing economy. Today, only one out of four Africans has access to electricity, and the supply is often patchy and disrupted by major black-outs. Hydropower is very suitable for a stable and reliable energy supply. In addition, it contributes to the local creation of value, supports the regional development and is helping countries in Africa in their efforts to become more independent from energy and fuel imports.

Voith Hydro supports many African nations in making the most of their hydropower generation potential with a wide range of small and large projects in 27 countries. Even so, less than 10 percent of Africa‘s hydropower generation capacity of an estimated 470 GW has been exploited to date. Together with its customers, Voith Hydro is addressing this opportunity through new state-of-the-art plants; the repair, maintenance and servicing of existing infrastructure; and the transfer of knowledge to support African Countries in running their hydropower facilities self-sufficiently.



Voith Hydro in Southern Africa

Voith has been active in supporting the energy development in Africa since the 1940's. There is an enormous potential for clean and sustainable hydropower. In order to support this development especially in Southern Africa, Voith Hydro opened a regional Office in Johannesburg in 2016. Our range of services covers:

- Contact for governmental organizations, developers, consultants and general contractors
- Consulting and supporting large and small hydropower projects
- Optimizing the Voith Hydro offering by incorporating local requirements like:
  – Local supply chain
  – Regional optimized supply of Voith Hydro products
  – Technology transfer
- Strategic partnerships
- Buildup and maintain client relationships
- HyService: Maintenance and retrofitting of existing small and large hydropower plants
- On-Site Machining services to reduce critical outage time

Voith Hydro Southern Africa hub and supported countries

1 The Ingula Bedford Dam in South Africa.

2 HydroSchool training in Germany for the staff of the Mozambican hydropower plant Cahora Bassa.

3 Voith On-Site Machining Equipment in operation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Voith Hydro successes in Africa

Cahora Bassa, Mozambique (1)

For the large hydropower plant Cahora Bassa on the Zambezi River, Voith supplied two Francis turbines (each 415 MW). After alterations had been done to the original design of the rotor poles which caused regular unplanned outages, Voith redesigned, delivered and installed new rotor pole winding connectors which are running successfully and thereby reducing the unplanned downtime for the client.

Cambambe II, Angola (2)

Voith supplied and installed four Francis turbines (each 176 MW), four generators as well as the control technology and the associated systems. The plant generates electricity for up to eight million of Angola's residents and will therefore make a significant contribution to expanding the electricity generation capacities of this nation in southwestern Africa. The new power plant was built next to the existing plant of Cambambe I, which was also equipped by Voith. Cambambe II went into operation in 2017.

Gilgel Gibe II, Ethiopia (3)

Voith supplied four Pelton turbines (each 107 MW) and generators as well as the entire mechanical and electrical equipment and also trained the plant operator's staff. The project raised Ethiopia's hydro capacity by over 50 percent. Before Gilgel Gibe II went into operation, only 15 percent of Ethiopia's villages were connected to the power grid. Now, half of the rural settlements are supplied with power.

Ingula, South Africa (4)

Voith supplied four 342 MW pumped turbines with the associated motor generators as well as the entire control technology and automation. Now, the four pumped storage units at Ingula help to significantly stabilize the electricity network of South Africa. Unnecessary power is removed from the network and used for pumping. After the commissioning in 2016, Ingula has become the largest pumped storage power plant in Africa.

Nkula Falls, Malawi (5)

Voith delivered five Francis turbines (each 20 MW) and 5 generators from 1978 to 1996 and rehabilitated the turbines in 2002. The supply of new turbine regulators took place from 2009 to 2011. Since than Voith Hydro supplies the plant with spare parts and services. The Nkula plant consists of two independent power plants: Nkula A and Nkula B.

Drakensberg, South Africa (6)

Voith modernized three generators of the South African pumped storage power plant Drakensberg. The order covered the manufacturing, installation and commissioning of the three generator stators with auxiliaries. Voith convinced the operator with a technical concept improving the performance of the machines by dedicated measures. These measures ensure a reduction of operating temperature and machine vibrations so that their lifetime can be extended significantly – at least for 40 more years.

About Voith

Voith is a global technology group. With its wide range of plants, products, services and digital applications, Voith sets standards in the markets for energy, oil and gas, paper, raw materials and transport & automotive. Founded in 1867, Voith today has more than 19,000 employees and earns 4.2 billion euros in sales. It has locations in over 60 countries and is one of the largest family-owned companies in Europe.

One company – four group divsions

Voith is active in a wide variety of markets and therefore divided into four Group Divisions: Voith Digital Solutions, Voith Hydro, Voith Paper and Voith Turbo. Each Group Division offers individual solutions with high-quality products.

Voith Hydro

Voith Hydro is a leading full-line supplier and trusted partner for developers, constructors and operators of hydropower plants. Voith Hydro develops customized, long-term solutions and services for large and small hydro plants all over the world. Its portfolio of products and services covers the entire life cycle and all major components for large and small hydro plants, from generators, turbines, pumps and automation systems, right through to spare parts, maintenance, operations and training services, and digital solutions for intelligent hydropower. All with the focus to reduce lifecycle costs.

Global network

Today, a quarter of the hydropower electricity is generated by Voith technologies and services. Voith Hydro has more than 30 locations in 24 countries around the globe. Design, production and installation of our components are done in-house. That's what 5,000 employees are working for. Voith has a global network to support customers and partners locally with the best technical and commercial solutions for their projects.

The modern service and production facility for hydropower plant components from Voith Hydro in Heidenheim, Germany.

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