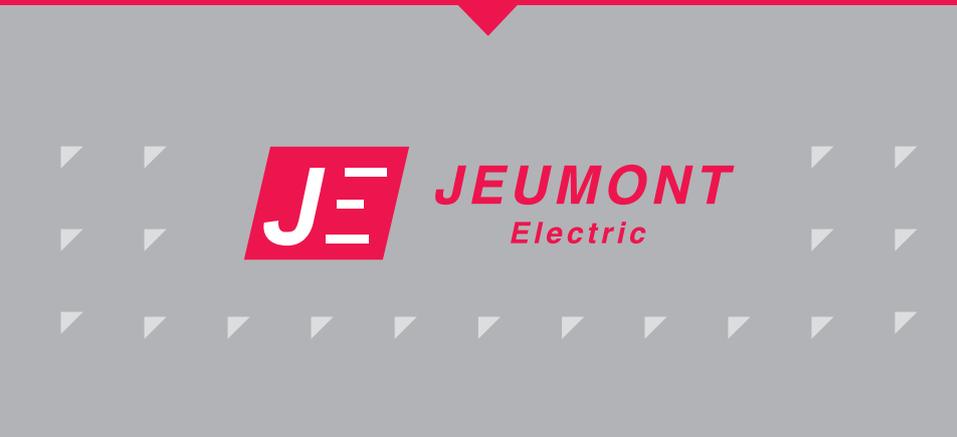


Hydro Generators 4 to 100 Poles

Altawest Group 



 **JEUMONT**
Electric



Hydro Generators

Hydro plant in Africa



Engineering office



Housing for horizontal generator



For more than a century JEUMONT Electric has been supplying generators for all kinds of power generation applications and in particular hydro generators up to 350 MVA.

Combining the use of the latest technology and know-how from an extensive Service experience, JEUMONT Electric is offering a comprehensive range of generators to be driven by hydro-turbines.

Markets and applications

Dams, Run of the river, Turbine – pump systems, tidal,...

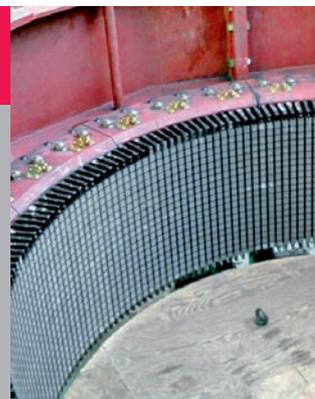
- Pelton Turbines
- Francis Turbines
- Kaplan Turbines

JEWAT: A full range of high quality and cost effective generators to meet your needs

- Synchronous generators — horizontal or vertical construction
 - **Voltage** from 1 to 20 kV
 - **Insulation Class** F with most components exceeding class H
 - **Temperature Rise** B or F
 - **Execution:** air cooled – open circuit or heat exchanger
 - **Power range** from 1 MVA to 300 MVA
 - **Speed range** 4 – 100 poles @50 or 60 HZ
- ~~Asynchronous generators — horizontal or vertical construction~~
 - ~~**Voltage** from 1 to 11 kV~~
 - ~~**Insulation Class** F with most components exceeding class H~~
 - ~~**Temperature Rise** B or F~~
 - ~~**Power range** from 0,3 MVA to 5 MVA~~
 - ~~**Speed range** 4 – 20 poles @50 or 60 HZ~~

JEWAT: Derived from our standardized machines with a wide range of options

- Standard bearings and thrust bearings for small and medium size units
- Slipper pad bearings and pivots (JE design) for large units
- Fire fighting system
- Brushless exciter or static excitation
- Braking system (Slipper pads or disks)
- System of partial discharge measurement
- Sensors: winding temperature/air temperature/bearing temperature/oil flow control/vibration sensors/current measurement/etc...
- JIREN™ AVR for demanding applications or use of third party products for more conventional applications.
- Generator protections - Line and neutral (earth) cubicle etc ...



4 to 100 Poles

Reliability, Robustness and High Performance

Combining state of the art technology and extensive service experience

Stator

For medium to large hydro applications, mineral insulation is used providing better control of iron losses and higher temperature withstand of the core.

For smaller units, the stator core is made of low loss pre-insulated magnetic laminations.

Two types of insulation can be proposed:

- 1) Roebel bars with pre-impregnated insulation for medium and large units.
- 2) Roebel bars, made from pre insulated copper wire, wrapped with dry insulating material and wound in the stator which is processed by VPI (small and medium units).
- 3) Coils made from pre insulated copper wire, wrapped with dry insulating material and wound in the stator which is processed by VPI (small and medium units).

Coils and bars have conductive and, when required semi-conductive, external coating to minimize partial discharge and ensure a maximum lifetime of the machine.

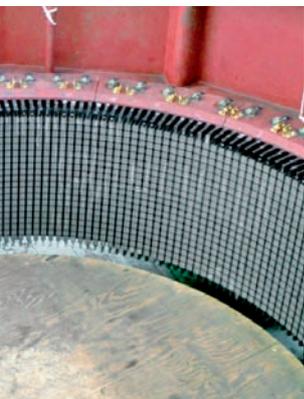
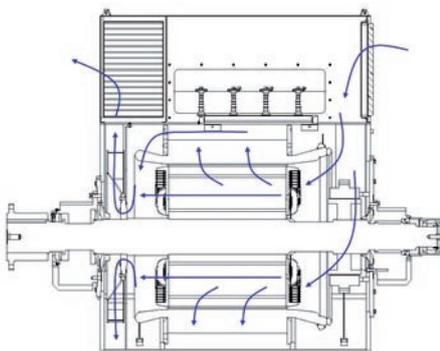
With regard to the size of the stator, and access to the power plant, the stator can either be assembled in the factory or on site.



Cooling

JEWAT generators, (stator & rotor) are cooled by a distributed radial or axial air flow. We ensure a homogeneous temperature rise throughout the rotor and stator windings providing both an optimisation of power density and an extended lifetime of the machine.

For machines cooled by heat exchangers, the air to air system is provided with an outer fan, and for the water to air system, the heat exchanger can be made using an appropriate material: copper, stainless steel etc...



Imagination & energy efficiency



Rotor

A forged steel shaft constitutes the central part of the rotor and drives an intermediate structure on which poles are mounted.

For very high power machines, the constraints related to a site assembly are integrated in the engineering phase. JEUMONT Electric is thus delivering machines that comply with handling and access specificity of the site.

Rotors weighing up to 150 tons can be balanced in our JEUMONT factory and their behaviour at runaway speed can be assessed.

The rotor windings are either made from brazed conductors or from bent conductors according to the case.

For smaller machines, recent developments have been made on the Diesel driven generators and extrapolated for the hydro generators (see below).

Bearings and thrust bearings

Utilization of the standards components from reputed suppliers are systematically sought in particular for horizontal machines.

For particular applications (medium and large vertical machines), we shall use the range of JE design slipper pad bearings and thrust bearings (Diam: from 400 to 1800 mm).

Thrust bearings from 10 tons to 1250 tons.

Final assembly

The JEUMONT Electric factory takes advantage of heavy lift capabilities (400 tons) and of its excellent situation with regard to transportation: road and river up to 250 T and railways lines arriving directly into the factory.

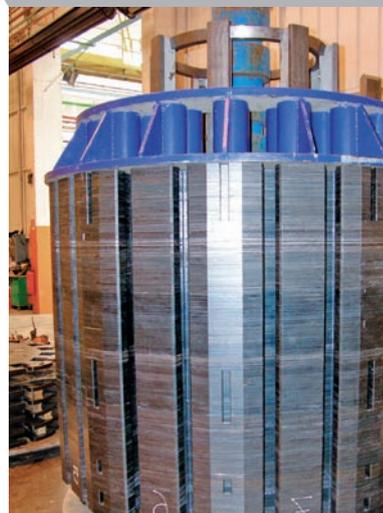
The mode of final assembly will thus depend on the conditions of site access and also on the erection conditions in the power plant.

Site teams from the company are available for erection and commissioning, and performance assessment can be conducted by engineers from JEUMONT ELECTRIC.

Asynchronous generators

JEUMONT Electric's range of induction machines has been recently reengineered and the range of machines for hydro generation will benefit from these developments and extensively use the standards and means used for the industrial range.

Rotor body



Generator assembly (Brasil)



JEUMONT
Electric

4 to 100 Poles

Small and medium size hydro generators

For all horizontal and for some vertical machines, a new range of machines has been designed in a joint effort between the service engineers and the development team of JEUMONT ELECTRIC.

The rotors of small and medium machines are cooled by a radial and perfectly homogeneous air flow. This minimises thermal and mechanical stresses providing thereby a long life time for the equipment.

The copper coils are assembled and locked in such a way that at no point of the winding can there be any direct contact between copper and steel, even through insulation. This feature ensures that the machine is fully protected against rotor earth faults and allows a disassembly on site.

Besides, the active part of the stator (core and winding) is mounted in the housing from the top, allowing to remove easily this active part for replacement, without having to realign the machine.

Rigorous quality follow-up

Throughout the manufacturing process, the machine undergoes regular and continuous checks ensuring perfect traceability of product construction and fulfils the most demanding customer requirements.

Services

Over the last 15 years, JEUMONT Electric has developed an extensive service capability. It covers small and medium size machines (with its subsidiary SARELEM) as well as the biggest power plant generators.

JEUMONT Electric has a firm intention to maintain long term relationships with all its customers

Therefore in addition to designing and manufacturing robust and long lasting machines, JEUMONT Electric provides a strong support to its client throughout the lifetime of its installation

JEUMONT Electric is capable of providing to its customers a complete service on the rotating electrical machines and their auxiliaries, whatever their size. This is valid for machines of its own make as well as virtually any type of motors and generators made by third parties.

JEUMONT Electric can mobilise over a hundred people for site operations and can carry out the most complex overhauls. Together with our partners, operations can be carried out all over the world, at short notice.

In addition to Site resources, the services activities have engineering and logistic support in the back-office: intervention preparation area and specific quality follow-up.

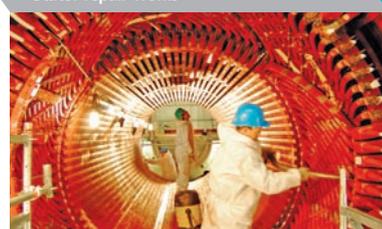
Stator thermal model



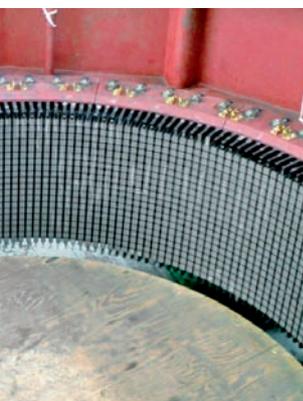
New generation rotor



Stator repair works



250 MW generator rotor



Imagination & energy efficiency

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