

INDAR HYDRO POWER



HYDRO
GENERATION

Indar

Indar

Indar Electric, an Ingeteam company, has worked for over seventy years in the design, manufacture and supply of electrical rotating machines.

The experience acquired over the years has enabled us to produce a wide range of products using in-house technology and to assume a leadership position in both the Spanish and international markets.

The hydraulic power units we have installed worldwide are the best examples of our competitiveness and production capacity.

One of the most important features of **INDAR Electric** is the quality we offer in our products and services, backed up by ISO 9001 and 14001 certification, and the high level of involvement of all the personnel who directly and indirectly take part in the design and manufacture processes.

Ingeteam has made a firm commitment to the EFQM model as a competitive framework for the years to come, with the aim of offering excellence in our products and services.



Hydro power



Custom designed research, development and innovation

The technical department of the **INDAR Hydro** business unit and the R+D+i support unit are staffed by highly qualified personnel and are equipped with the most advanced computer resources for the design and development of the generators, using simulation programs for mechanical finite elements, electromagnetic flows and fluid dynamics simulations.

It also works closely with technology centres and universities in the search for new products. Cooperation with the customer is part of the company's philosophy, with personal treatment and attention as the basis for the relationship and a key joint objective: **to develop products and services that adapt to the characteristics of each project.**



Mechanical Finite elements calculations

Calculation of shafts, finite element simulations of the stresses supported by critical parts (frames, base-plates, covers, shafts, etc.).



FEM Magnetic design

Optimise the electro-magnetic design of our machines and thus obtain higher performance.



Fluid dynamics simulations, Thermal & CFD calculation

Model of current practice in the calculation and design.



3-D Drawing System

The main structural components are analyzed by means 3-D Drawing System.

Hydro generation

- Synchronous generators from **1,250 kVA up to 60,000 kVA.**
- For all machines up to isolation H, **IP-23 to IP-56.**
- **Air and water** cooled.
- Manufactured in different voltages, **from 690 V to 15 kV.**
- For hydraulic turbines of different types, **Pelton, Francis and Kaplan.**
- Different forms of construction, **vertical and horizontal.**
- International standards: **IEC, NEMA, etc.**



10,000 kVA

600 rpm, 13,800 V.
Costa Rica



18,000 kVA

166 rpm, 6,000 V.
Spain

Hydro power



25,000 kVA

500 rpm, 15,000 V.
Italy



14,750 kVA

330 rpm, 6,600 V.
Spain



10,600 kVA

428 rpm, 6,600 kV.
Spain

Three-phase synchronous generators

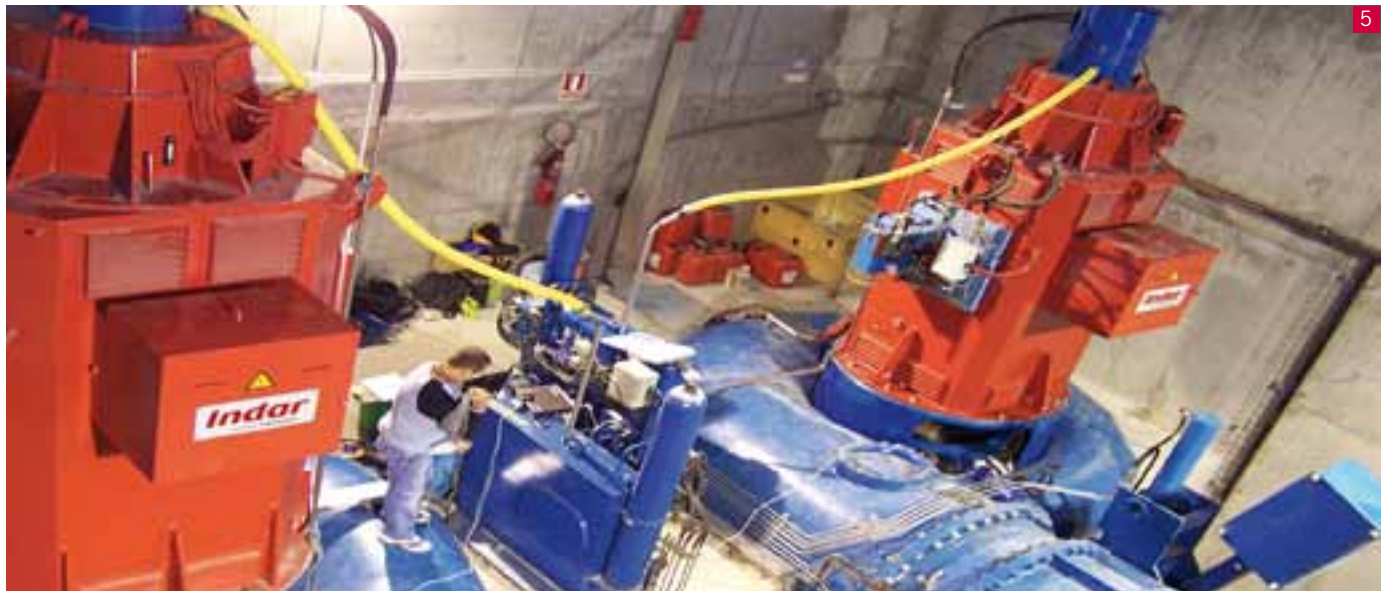
Products and services adapted to our customer's



1 | **32,000 kVA**
600 rpm, 12,000 V.
Italy

Hydro power

requirements



2 | **15,036 kVA**
428 rpm, 10,500 V.
Spain

3 | **4,700 kVA**
166 rpm, 6,000 V.
Italy

4 | **12,057 kVA**
10,000 V.
Turkey

5 | **1,870 kVA**
428 rpm, 6,000 V.
Spain

Indar

An ***Ingeteam*** brand