

CASE STUDY

CHOLOMA - GUATEMALA



KEY STATISTICS

Customer: Hidroelectrica Choloma S.A

Net head: 438 m

Flow: 2500 l/s

Turbine type: Gilkes Twin-jet Pelton

Speed: 600 rpm

Power: 9557 kW

Scope of Supply: Full mechanical and electrical package including main power transformer

The project which generates 9.7MW located in northeastern Guatemala on the slopes of the Santa Cruz Mountains has earned a National Recognition Award in the American Council of Engineering Companies (ACEC) 2012. The National Recognition Award is a prestigious distinction honouring projects that demonstrate exceptional achievement in engineering.

Gilkes was proud to be part of this innovative project. Our involvement included the design and manufacture of a horizontal twin-jet Pelton turbine used to generate 9.7MW of power.

Gilkes scope of supply included:

- Inlet valve
- Generator
- Hydraulic system
- Cooling water system
- Lube oil system
- PLC control panel
- Speed governor
- Generator switchgear
- AC / DC systems and distribution
- Main power transformer
- Supervision of installation
- Commissioning / start-up and testing

CONTACT

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A unique design approach was necessary to collect water from six small intakes and transport it to one large water storage tank that serves as the intake reservoir for the project. Engineers from the USA, Guatemala, and Gilkes in the UK, collaborated to make the design work. Gilkes scope of supply included equipment supplied from the USA, the UK, France, Italy and Guatemala. Contractors from Guatemala, the USA and the UK built the project, commissioned it and fine-tuned the operation. All the component parts, which came from all over the world had to fit together and operate correctly once they arrived at the project site. It was a truly international effort, made possible by the ability to coordinate and communicate effectively worldwide using Internet resources.

The project is located in a remote mountainous region of Guatemala, so site access and delivery of materials over hundreds of kilometres of steep, narrow unpaved roads was a huge logistical challenge that needed to be overcome. It took 180 truckloads just to deliver the penstock. Gilkes' large items such as the turbine case (40,000 lb), generator rotor (50,000 lb) and generator stator (65,000 lb) had to be transported with extreme care.

Construction work created much needed employment for over 400 local workers for a year, injecting much needed cash into the severely depressed local economy. Ten permanent full time jobs were also created. The completed project not only helps the local residents but provides a reduction in green house gas production by offsetting burning of coal and petroleum products which are two major sources of electricity in Guatemala. The Choloma Project is a strong example of how engineering innovation, cooperation and coordination can be used to create a unique project that is economic whilst at the same time providing real benefits to the local residents as well as the global environment.



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