

Mohammadpur: Ganga, India

Moving to Automatic Operations Increased Output

...A cost-effective retrofit increased power output and changed daily operation from manual to automatic.

Pioneering Hydro Power

India's holiest river, the Ganga, has a cultural and spiritual significance transcending the boundaries of its basin by far. It is worshipped as a living goddess, and since time immemorial people from across the subcontinent have come to the many historic temple towns on its banks to pray and bathe in its waters. In our day and age, the Ganga also serves a very secular purpose in supplying its children with electric power.

A pioneering hydro power nation with plants dating back to the 19th century, retrofits are important parts of the Indian government's concerted efforts to meet India's growing economy's needs for reliable, affordable, and sustainable energy.

Hydro power accounts for upwards of an impressive 12% of India's current grid-connected generation capacity of about 177,000 MW, with coal making up 65% and the remaining 28% coming from other energy sources.

With hydropower potential in absolute terms set at 150,000 MW, only 25% of India's capacity has been harnessed so far. Indian plans to increase generation capacity by 80,000 MW over the coming five years: 16,000 MW will be hydropower.

Application Challenge

In 2011, DEIF India won the job of retrofitting the Mohammadpur Power Plant by the Bhimgoda Barrage near Haridwar in North India.

First commissioned in 1952 with 2.0 MW turbines, the power plant, which sits on the main canal, was increasingly in need of an overhaul of its turbines, generators, switch gear and control systems.

The Mohammadpur Power Plant was operated with a manual hydraulic governor, meaning all operations were performed in manual mode.

Mohammadpur

Built at the head works of the Upper Ganga Irrigation Canal, the Mohammadpur Power Plant sits on the 455 m long Bhimgoda Barrage at the head of a 23,000 km² catchment area. The canal system is immense, consisting of 6,450 km of main canal and branches, providing irrigation for up to 2,023,000 ha.



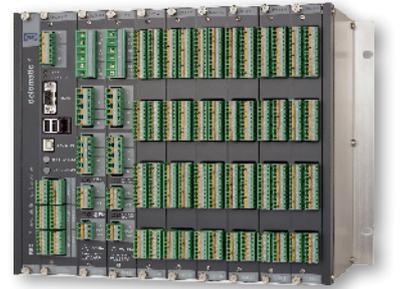
Mohammadpur: Ganga, India

Integrated Systems, DM-400 Hydro

Data

- ✓ Turbine Type: Kaplan
- ✓ Installed Capacity: 3 × 3.4 MW
- ✓ Type of Power Station: Surface Run-of-River
- ✓ Original Commissioning: 1952
- ✓ Year of Retrofit: 2012
- ✓ Design Head: 5.79 m
- ✓ Design Discharge: 255 m³/s

Product



Integrated Systems, DM 400 Hydro

The Deif Solution

DEIF India supplied a comprehensive and up-to-date turbine generator controller solution for a new setup featuring three 3.4 MW Kaplan turbine generators and a 5.79 m design head. The first of the three systems were successfully commissioned in April 2012

Replacing PLC models, the DM 400 Hydro solution now controls sequencings and governor operation. The solution has generated higher output, making it highly cost-effective compared to alternative solutions. Other primary benefits include more user-friendly operation and stable and reliable production with a sequence of event system in place that makes troubleshooting very easy.

Among other features, the engineered solution also introduced a simple and user-friendly single push-button start and comprehensive functionality in one single rack unit Sequence & Start-stop Control, Electrical Protection of Generator & Busbar, and more.

Case Diagram

