



HYDRO TURBINES UPGRADE

Hydro Turbines Upgrade at Major Hydroelectric Power Station

CASE STUDY

Advanced Power Management
Control, Protection & Monitoring
SOLUTIONS



92 Kifissou Av.
Athens GR 10443



www.maseurope.com



info@maseurope.com



[mas-sa-company](#)



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The Problem

The plant in reference was commissioned early 70s and with its 440MW capability plays an important part in Greece's power production capacity. Although very well maintained, the controls of the four turbines showed their age both in their performance and in the maintenance required.

The necessity for better stability, faster response and precise control of the operation of the turbines required the retrofit the existing control systems.

Since the proper and continuous operation of the plant was important in the daily power production program of Greece the solution had to be extremely reliable, and easy to install without interacting in the overall operation of the plant and without requiring extended period of inactivity of each turbine.

The Solution

MAS won the project through an international bid by giving not only the most economical solution, but by offering a technological advanced system which required minimum modifications and assured quick installation.

The solution involved the installation of a new state of the art electronic control system running in parallel to the existing hydro-mechanical control system. By applying correctly engineered modification to the existing installation, the old system was kept functional as a cold backup solution.

The new control system was based on the leading Woodward ATLAS turbine control platform which was programmed by MAS engineers based on each turbine's behaviors and the overall application needs.



The final application consisted of:

- a redundant speed sensing system
- a blade feedback system
- a high accuracy positioning system which acted on the existing hydraulic positioning system
- an Atlas electronic governing control system
- a local HMI with remote indications in the control.



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The Result

The whole operation was completed in 4 weeks with maximum downtime one week per turbine. During the upgrade the plant was operating as usual with the remaining turbines.

The benefits of the new system were immediately evident through the increased stability and accuracy of the turbines operation. The increase of operational safety and response time (0 – 100% load < 20secs) gave added value to the regulatory function of the plant.

In addition, the maintenance free systems that were installed resulted in an immediate cost benefit.



MAS SA is one of the few engineering companies in Europe specializing in the **upgrade, design, development and installation of advanced power management control, protection and monitoring systems.**

Covering a wide area of expertise for over **50 years**, we **provide solutions for complex problems** for both **Maritime** and **Land** (Power Generation, Oil & Gas and Heavy Industry).

For any further information please contact us via email at info@maseurope.com

Kifissou Avenue 92, Athens, 104 43, GR
Tel: +30 210 4014000
Email: info@maseurope.gr
www.maseurope.gr