

REFERENCE CASE REFINERY



Safety Testing of Generators at Dam of Aswan in Egypt

Built in the 1960's, the Aswan Dam in Egypt near the Sudanese border is one of the world's largest artificial lakes and therefore a challenging and strategic structure. In fact, if the mass of water retained by the 111 meter-high dam were to flood the Nile valley, it would be of biblical proportions. Ensuring the reliability and safety of all operating systems at the dam is therefore a vital matter of protection for the local population as well as for the environment.

Basic Facts

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| Client | International joint venture for turbine and generators |
| Involved Companies | Russian partner company for the pipeline construction |
| Timeframe | June 2006 |
| Project location | Aswan, South Egypt |
| Main services | <ul style="list-style-type: none">▪ Welding inspection▪ Visual examination of welding operations▪ Radiography▪ Consulting |
| Involved regulations/standards | Common welding standards (HP 5) |

Initial situation and requirements

One of the largest dammed lakes in the world is the dam of Aswan in southern Egypt. Due to its colossal dimensions, it is also an object of fear; fear of a defect leading to a catastrophic flood. Once in service, defective generator parts can pose substantial repair costs, or worse, lead to historical disasters. It is therefore crucial to conduct regular inspection and replace aging or defective components.

In June 2006 after around 40 years in service, the loops of the air and cooling pipes from generators 9 and 10, which enabled both of them to keep an operating-friendly temperature, were slowly getting old. Welds were scheduled to be replaced by a team of experienced Egyptian welding operators. Two international leading companies in turbine and generator technologies, in charge of the project, chose TÜV Rheinland to provide them independent welding inspection and consultancy services to verify that the welding operations had been conducted properly.

Solutions, results

Once replacement of the generators' loops was complete, our clients were in need of a fast solution to certify proper and safe operations. Thanks to our extensive experience in welding engineering, inspection and certification, TÜV Rheinland was the preferred choice for the international joint venture.

In order to ensure proper installation and operational safety of the newly replaced air and oil cooling water pipes, our TÜV Rheinland experts performed a series of welding inspection services including visual examination and inspection of welding operations to radiography of the generators' loops. To further record welding operations, our experts took pictures deep in the electro-technical heart of the Aswan Dam, which were then evaluated by a local radiography laboratory. TÜV Rheinland also offered consulting services and provided a documented final approval attesting the safety and quality of the conducted replacement operations.

Thanks to several visual and radiography inspections throughout the dam and the two generators, our clients were assured that quality components would properly function for a long time.

Did you know?

The Aswan Dam, also called the High Dam, is 111 meters high, 480 km long and 16 km wide. It provides water for irrigation as well as generates hydroelectricity.

Benefits for the client

TÜV Rheinland supported the international hydro power generation joint venture by:

- Ensuring welding operations were conducted properly and safely.
- Protecting and ensuring the durability of a technical monument and an object of prestige.
- Ensuring compliance with local and legal requirements as well as common welding standards.

About TÜV Rheinland:

Founded more than 140 years ago, TÜV Rheinland is a global leader in independent inspection services, ensuring quality and safety for people, the environment, and technology in nearly all aspects of life.

We inspect technical equipment, products and services, oversee projects and help to shape processes for companies around the world. Since 2006, we have been a member of the United Nations Global Compact to promote sustainability and combat corruption.

Our certified welding inspectors (CWIs) are trained to determine the various lengths, measurements and quality of welded parts and components, and to verify that the product meets the requirements of the specifications – whether within the energy, construction or industrial manufacturing sectors. We also offer a specific visual inspection service for welds used in locks and dams.

TÜV Rheinland can support you with comprehensive engineering services that cover a wide range of welding activities. From welding quality management to metallography, we ensure the quality of your structures.

Your contact:

TÜV Rheinland Group
Industrial Services
is@tuv.com
www.tuv.com