

HYDROPOWER AND WATER RESOURCES DIVISION

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To Whom it May Concern

In 2003/2004 and in 2007 the German company, Bauer Spezialtiefbau GmbH, constructed the temporary and permanent sealing elements at the New Naga Hammadi Barrage and Power Plant in Egypt.

The client for the project was the Ministry of Water Resources & Irrigation. As the Owner's Engineer and Consultant for the project, Lahmeyer International GmbH designed and supervised all construction work carried out by Bauer. Lahmeyer is one of the leading international engineering companies.

The existing Naga Hammadi Barrage is located on the River Nile in Upper Egypt 360 km downstream of Aswan Dam and 135 km north of the city of Luxor. It was commissioned in 1930 and together with the barrages in Esna (193 km upstream) and Assiut (185 km downstream) forms a series of structures in the River Nile which raise the river water levels in order to irrigate the areas downstream of each barrage. A conceptual study comparing rehabilitation against the construction of a new barrage showed that a new barrage with an integrated hydropower plant was the most economical solution. The new barrage was then built about 3,500 m downstream of the existing structure in a confined reach of the river where the geologic conditions enabled the establishment of a large construction pit in the river with a depth of 25 m below the river water level.

The new barrage consists of a navigation lock, a sluiceway with 7 vents and a run-off-river hydropower plant with bulb turbines and an installed capacity of 64 MW.

The details of Bauer's contract are as follows:

Project execution period: December 2002 to December 2007
Location: Naga Hammadi, Egypt
Contract amount: 13 million Euro

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Bauer's work consisted of the following:

- Design of the dewatering
- Construction of a temporary sealing element around the excavation pit (1,800 m long, 40 to 60 m deep, area approximately 92,000 m², two-phase plastic concrete).
- 800 mm two-phase cut-off wall, to depths of 60 m (approx. 20 months construction period). Construction of approx. 23,000 m² permanent double-phase cut-off wall underneath the permanent structures, max. depth 50m (approx. 7 months).
- Dewatering of the construction pit by wells, after completion of the sealing element (Installation approx. 3 months, dewatering approx. 24 months).

Bauer's early involvement in the project and their cost effective solutions provided a high degree of confidence that Bauer's approach was appropriate for the project.

Bauer's communication and cooperation with the Consultant in the preparation of appropriate plastic concrete mixes throughout all stages of the work was a Key point of the success.

Bauer reacted flexibly regarding design changes and contributed in a professional way to further design improvements based on their extensive experience acquired in similar projects.

Bauer fully complied with the tight schedules, completed the construction pit wall 3 months ahead of schedule and reacted proactive and flexibly on any changes imposed by the geological situation. Bauer had a key role in providing a dry construction pit on schedule that remained dry and fit for purpose through all project stages. An inflow of less than 10 l/s demonstrated the integrity of the wall and the quality of construction.

The project was commissioned in time and to date there are no signs for any concern related to the tightness of the permanent structures.

In conclusion, Bauer's professional approach towards the project was excellent. The project was executed within the agreed schedule and even partly ahead of schedule.

LAHMEYER INTERNATIONAL GMBH



Egon Failer
Executive Director

