



■ **Marine Structures**

Reference Details:

Owner Nepal Electricity Authority, Kathmandu, Nepal +++
Main Contractor Joint Venture consisting of DYWIDAG International GmbH, Munich, Germany and China International Water & Electric Corporation (CWE), Beijing, China +++

Consultant/Engineer Fichtner Joint Venture (Fichtner GmbH & Co, Stuttgart, Statkraft Groner, Oslo, CES-Consulting Engineers Salzgitter GmbH

DSI Unit DSI Group HQ Operations, Munich, Germany

DSI Services Supply of 41 temporary DYWIDAG Bar Anchors Ø 26 mm, 528 permanent DYWIDAG Bar Anchors Ø 26 mm, gr 950/1050, 115 DYWIDAG Multistrand Anchors incl. accessories



DYWIDAG Multistrand Anchors tie down a Dam in Nepal

Middle Marsyangdi Hydroelectric Project, Lamjung

In mountainous Nepal the power of water can be seen time and again during the rainy season. The monsoon makes the water volume of the approximately 6,000 rivers in Nepal increase thirtyfold. For centuries the Nepalese have therefore used water power for generating energy.

To this day, their traditional mills (ghattas) for grinding grain are operated by hydropower in a country poor in mineral resources. Electric current was produced by a small water-power plant for the first time in 1911.

Due to continuously rising energy demand, sustained power supply based on the lavishly available, regenerative energy source of water is advanced in that developing country. International funds play an important role in that advancement. The objective of the development aid, which is also financed out of funds provided by the German "Kreditanstalt für Wiederaufbau" (government-backed Development Loan Corporation), is securing the energy supply.

This is a significant contribution to investments in the industrial and service sectors, leading to the creation of urgently required jobs. Furthermore, Nepal may use the increased power production for power exports to India for example, thus opening up another profitable source of revenue in addition to tourism.

Construction of the Middle Marsyangdi Hydroelectric Power Plant located about 170 km west of Kathmandu, began in 2001. Following completion, the power plant that takes advantage of the natural height of fall of the Marsyangdi river of about 108 m on a 5.5 km long section will generate 72 MW or 400 GWh.

As a result, only a relatively small dam is required that mainly serves as an equalizing basin. In particular, the difficult geological conditions of the Himalayan Mountains present certain challenges for all parties involved in the project. Within a few meters very hard and stable quartzite seams alternate with instable and swelling phyllites. Decisions must be frequently made at short notice how the various slopes and the associated tunnel are to be stabilized.

For this stabilization flexible, high-grade geotechnical products are required on short notice. For the slope stabilization of the dam, DSI supplied 41 temporary DYWIDAG Bar Anchors Ø 26 mm, gr 950/1050, and 528 permanent double corrosion protected DYWIDAG Bar Anchors Ø 26 mm, gr 950/1050, corresponding to an overall length of about 5,800 m. In addition, DSI supplied 115 DYWIDAG Multistrand Anchors consisting of 2, 4 and 8x0.6" prestressing strands with a total weight of 16.4 tons as well as accessories for additional stabilization measures.



