



### Spherical bearings supplied for Son La

Custom-made, self-aligning spherical bearings have recently been supplied for the Son La project in Vietnam by GGB, formerly Glacier Garlock Bearings. There are currently four major hydroelectric projects under construction in northwestern Vietnam, the largest of which is Son La, with an installed capacity of 2400 MW, and planned production of 10.2 TWh/year. This

scheme will also be the largest hydro station in Southeast Asia when it goes into operation in 2010.

The spherical bearings for Son La are based on GGB's DBTM material. The bearings will be installed in the cam rollers within heavy roller gates used for the maintenance of the radial gates, which control the reservoir level by discharging water from the dam. Roller gates are typically used where the openings are too large for sliding gates, resulting in lower operating loads and providing for gravity closure.

Hydropower gates open and close only infrequently, but none-the-less they must function reliably and safely when they do. The primary contributors to bearing failure in gates are dirt and corrosion. With this in mind, GGB Brazil designed custom-made DB spherical bearings. With outside diameters of 480 mm and a unit weight of about 400 kg, they are constructed of a corrosion-resistant, stainless steel inner ring and an axially split, seawater-resistant bronze outer ring embedded with

solid PTFE lubricant for easy installation. Running-in film over the sliding surface assures instant full-load capacity, to minimize stick-slip effect. This structure provides ultra-low friction, maximum wear resistance, a long service life and complete corrosion resistance, even in wet or dirty environments.

Since they require no additional lubrication, these bearings are environmentally friendly and maintenance-free.

When the roller gates open and close, the spherical bearings will oscillate on a stationary, stainless steel shaft. For 32 m of the 85 m round trip, they will be subjected to loads of up to 4342.9 kN, with a specific wear rate of 14  $\mu\text{m}/\text{km}$ . For the remaining 53 m, they will be subjected to a lower guide load with a specific wear rate of just 2  $\mu\text{m}/\text{km}$ . Based on these wear rates, a specific load of 51.3 MPa, oscillating speed of 0.02 m/s and pU factor of 1.1, the estimated service life of the bearings was calculated at more than 500 years.

*The spherical valves for Son La in Vietnam.*

