Hydro power

Speed increaser for Pit-turbine
- Power: 1770 kW
- Input speed: 142 min⁻¹
- Gear ratio: 5.05
- Location: Korea

Speed increaser for vertical Kaplan turbine
- Power: 4000 kW
- Input speed: 109 min⁻¹
- Gear ratio: 6.89
- Location: Turkey
The increased interest in economic viability, optimum exploitation of output efficiency and an improved price/performance ratio have recently given rise to many new developments in the small hydro sector. Today, high flexibility in the design of gear units allows the demands of turbine manufacturers to be met as regards footprint and mounting space as well as optimized size and speed ratios. These gear units are specially designed for use in hydro power. They are smooth-running and ensure a high level of efficiency.

Vertical spur gear unit for Kaplan turbine
Series: TKGV (single-stage) or TDVF (two-stage)
Output: 100 to 7,500 kW
Gear ratio: 3 to 7 (single-stage) or 7 to 18 (two-stage)

This gear concept is designed to meet the demanding requirements of a vertical hydro turbine – down to the last detail. For example, the turbine shaft is hollow-bored to enable blade adjustment from the top through the gear unit. The generator bell is solidly built, ribbed accordingly and welded directly onto the housing, enabling it to support the weight of the generator reliably while reducing vibration to a minimum. A special wear-free sealing system on the drive side effectively prevents oil leakage from the gear unit.

Spur gear units for pit turbines
Series: TGU
Output: 500 to 7,500 kW
Gear ratio: 3 to 7

In addition to their rugged design, these gear units for pit turbines are characterized by a high level of efficiency, partially in excess of 99%. This is achieved via a double helical gear optimized for the application, a low-friction bearing and precisely controlled amounts of lubrication oil. In addition, the pinion is accurately aligned with a bearing housed in the center of the shaft, transferring forces directly to the foundations. This prevents bending stress on the housing and guarantees excellent tooth meshing relationships, even under full load.

Bevel and spur gear units for open-flume turbines
Series: TKGV
Output: 50 to 2,000 kW
Gear ratio: 4 to 10

It is often necessary to adapt to local conditions at side and the type of gear unit takes that requirement into account. The bevel gear permits the horizontal position of the generator. Thanks to its built-in lubrication, the unit is compact and can be mounted on the existing plant without difficulty.

Bevel gear for pipe turbines
Series: TKF
Output: 150 to 3,000 kW
Gear ratio: 2.5 to 4.5

Bevel gear units in hydroelectric plants must function reliably for years despite the high loads on the gear teeth. For this reason, high-quality components are essential. The bevel gears, used by Eisenbeiss, are hard-milled in a proprietary process and have an Rz surface quality of less than 3. The layout is also adapted around this application, with a source mounting flange to guarantee ease of installation in the plant. The lubrication components on the drive side of the gear unit are easily accessible and thus maintenance-friendly.