

INDUSTRY
ENERGY**APPLICATION**
HYDRAULIC TURBINE**PRODUCT**
PV RUBBER**SITUATION/APPLICATION**

Hydraulic turbines are propeller-like components of a system used to convert the energy of a flowing liquid (normally water) into mechanical energy. They are commonly used in the production of electricity, used in conjunction with an electric generator. As the flowing water contacts the turbine's circular row of blades fitted to the generator shaft, it causes the shaft to rotate producing electrical power. Hydroelectric and coal-fired power plants produce electricity in a similar way. In both cases a power source is used to turn a turbine, which then turns the electric generator. A coal-fired power plant uses steam to turn the turbine blades while a hydroelectric power plant uses flowing water.

THE PROBLEM

A customer contacted Megadyne requesting drive design assistance for a new hydraulic turbine application with high speed and high drive ratio. The drive needed to be a reliable and compact, smooth running drive system with low noise and vibration that could handle the high torque generated by the application. They also wanted the simplicity of a single belt rather than a drive design using multiple belts.

THE SOLUTION

The Application Engineering Team at Megadyne studied the drive and searched for an appropriate solution for this demanding drive. For long life and reliability it was determined that a special construction Megadyne rubber PV-L ribbed belt with a high performance aramid tensile cord should be used. The high strength of the aramid cord allows for greater loads per rib and is particularly suitable for this high power application. The aramid tensile cord allows for an optimization of the belt width, ensuring a narrow belt drive width while the ribbed construction contributes uniform tension across the entire belt width. The optimum contact area of Megadyne PV belt allowed the design of a flat driven pulley, helping to minimize overall drive cost.

THE RESULT

MEGADYNE PV ribbed belt with high performance aramid tensile cord delivered a highly efficient drive solution with high flexibility and great power performance in a single belt. The ribbed construction guarantees even distribution of the working load throughout the entire belt width and results in a compact, low noise and vibration drive system that assures long life.

