

INDUSTRY
ENERGY**APPLICATION**
SCREW GENERATOR**PRODUCT**
PLATINUM**SITUATION/APPLICATION**

Hydroelectric power plants use flowing water from the reservoir of a large dam to produce electricity. In areas where it is not possible to construct a dam, an Archimedes Screw hydroelectric generator is a popular solution. They are less costly and much easier to install as they can be powered by a river rather than a large dam. These generators extract the potential energy from slowly downward moving water. An Archimedes Screw hydroelectric generator is a water turbine using the principle of the Archimedean screw to convert the potential energy of water on an upstream level into work. The turbine consists of a rotor in the shape of an Archimedean screw which rotates in a semicircular trough. The water flowing through the turbine acts upon the turbine blades to create rotation and turn the tilted screw. The upper end of the screw is connected to a generator through a gearbox via a belt drive to produce the electricity.

**THE PROBLEM**

Due to the great amount of torque required to turn the screw turbine, a very strong belt drive is required. It also possesses a severe duty cycle as it runs constantly, 24 hours per day, 12 months per year. These conditions demand a belt drive that delivers long life with the ability to survive all the extremely high or low temperatures that may exist according to weather conditions. The drive dimensions also need to be compact and occupy a minimum amount of space. The customer also desired that the components of the drive be standard, readily available items.

**THE SOLUTION**

A thorough examination performed by the Megadyne Application Engineer revealed the answer for this drive was Megadyne Platinum Ultra-High Torque, rubber-based synchronous belt. Platinum's "DualCore" Hybrid Tensile Cord technology allowed the highest power transmission capability granting a narrow, compact design while easily handling the high torque. Its nitrile-based HNBR compound body with a wide range of operating temperature ensured the drive withstood the varied weather conditions while the parabolic tooth profile contributed the advantage of being fully interchangeable with all the commonly used deep tooth pulley profile pulleys in the marketplace.

THE RESULT

Platinum provided this application with high power capacity to handle the torque and allow reduced belt and pulley width, ensuring a compact drive with less drive weight and bearing load. Platinum's status as a standard off-the-shelf ultra-high torque product combined with its unmatched pulley interchangeability assured the convenience of a readily available parts supply.

