

CASE STUDY

Mechanicville, NY Hydro Plant

THE CHALLENGE

Albany Engineering Corporation's Upper Mechanicville Hydroelectric plant began operating on the Hudson River in 1897. It is one of the first 3-phase AC power stations in North America and holds the unique distinction of being the oldest 3-phase power plant still in operation today using original equipment. Lignum vitae had been the original bearing material in this plant, but changes to shaft configurations and eventual transition of all bearings to newer, composite materials created ongoing issues with vibration, damaged and broken shafts and misalignment. The Mechanicville plant team worked to research original design tolerances, dimensions and alignment, and found that bearings engineered with lignum vitae performed for 50 years without issues, compared to newer, composite material bearings that experienced repeated failures over a similar time-frame.

In 2003, Lignum Vitae N.A. provided the material to return all of the plant's 66 water-lubricated bearings back to the original design specifications - lignum vitae - to ensure the continued viability of this important run-of-river facility.

THE PROJECT

- Reconfigure and repair shafts to address vibration and poor performance in dirty river water
- Address lack of filtration and secondary water feeding to bearing
- Return all units to original design specifications

THE RESULTS

- Bearings replaced with lignum vitae material
- Work on final unit began in 2019
- Limited bearing wear in 10 years since replacement project began
- Annual preventative maintenance includes bolt tightening, dewatering; restores operation within hours
- Reduced maintenance costs generated return on investment within 2 years

EQUIPMENT

Seven, 7-9" Horizontal Francis unit turbines
40 cycle, 12,000 volt generators



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TYPE

Lignum Vitae Water- Lubricated Bearings



Lignum Vitae

Water Lubricated Bearings