CASE STUDY
AMEREN OSAGE PLANT

THE CHALLENGE

Ameren Missouri's Osage Energy Center produces enough clean energy to serve more than 40,000 households annually, making uptime and cost-effective maintenance critical. In service since 1931, the Osage facility struggled to manage extensive premature wear of synthetic turbine guide bearings on original and more recently installed vertical turbines. Bearings that had lasted for up to 10 years were experiencing rapid shaft runout, failing in as little as a few months and requiring frequent adjustments that led to costly shutdowns and expensive repairs. The plant needed to find a reliable and proven long-term solve to avoid costly and ongoing shaft sleeve replacements.

Ameren engaged Lignum Vitae N.A. to engineer a durable solution that could withstand the extreme raw lake water conditions and maintain uptime at this important facility – and return the plant to its originally specified bearing material.

TYPE

Lignum Vitae Guide Bearing

EQUIPMENT

Vertical Turbine

THE PROJECT

- Engineer durable, replacement guide bearings for original, 1930s vertical water turbine, as well as newer turbines replaced in 2007:
    - Rated speed:112.5 RPM
    - Net head of 90-100 ft with 32 MW output
    - Raw water-lubricated
    - Carbon guidewear surface
    - Original and newer units
    - Cut onsite to adapt to dove-tail shape of bearing housing

THE RESULTS

- Single, four-segment water cooled/lubricated guide bearing
- Running at 3-4 mils, well under 20-30 mil excessive limit, since 2013
- Saved $250,000 in shaft replacement costs
- Plant has reverted to 100% lignum vitae bearing material

Lignum Vitae
Water Lubricated Bearings