

ECO FLUID CENTER LTD. (FORMERLY UTILITY SERVICE ASSOCIATES)

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**POWER GENERATION ACCOMPLISHMENTS
(LARGE* NORTHERN UTILITY)
KEN BROWN**

With the existing bearing components used an innovative pressure dam geometry that solved serious problems with failures. This was for the LP steam turbines on eight 500 MW units at a large coal fired station. The estimated savings were \$4.4 million.

Prepared separate reports on the in-service requirements for steam turbine oils and phosphate ester control fluids. These were very extensive and required contact with suppliers, manufacturers, other utilities and the agreement of other stakeholders. These gave limits plus provided guidance on cause and actions.

Organized and provided technical support for the successful use of a non-neurotoxic fire resistant phosphate ester control fluid. This was the first time that this fluid had been used in North America and the first time in the world that it had been used in that manufacturer's turbines.

Championed the successful use of synthesized lubricants in gas turbines for emergency and standby power. This eliminated winter start problems with the previous oils and has improved start reliability. This was the first such use in Canada for these lubes and also in the world for one of the power turbine suppliers.

Prepared for the Candu Owners Group a bulletin on the maintenance of grease lubricated motor bearings. This provided grease specifics, compatibility data, and calculations for quantities. It also provided information on different grease guns and actual deliveries.

Initiated the first specific use of an energy conserving gear oil. This was in coal pulverizer gearboxes and resulted in a proven savings of 8% in reduced electrical power. This was a synthesized hydrocarbon (SHC) fluid and the payback not including longer service lives was less than six months.

Developed ultrasonic inspection procedures and acceptance levels for new and in-service babbitted bearings. At the time this was a first for power generation end users.

Advocated the use of oil analysis as an aid to predictive maintenance and oil changes. This was to increase reliability, improve safety and reduce environmental impacts. The latter by eliminating opportunities for spills because there will be less fluid handling and by significantly reducing the amount of waste oil being generated.

Championed the cause of improved tribological designs, better equipment maintainability and the use of superior tribocomponents. The goals were improvements in efficiency, reliability, life and safety. Plus, initiated the use of a personal computer for trend monitoring and helped develop a prototype expert system for solving problems with steam turbine oils.

With the fluid supplier helped pioneer the use of ion exchange resins to purify phosphate ester fluids. This is now use at several stations and these were the first successful application in North America for power generation.

* 1999 installed capacity of 30,873 MW

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