AEP Shifts To Non-Toxic Lubricant

As part of a shift towards more environmentally-friendly operations, American Electric Power (AEP) recently replaced oil-based lubricants at six of its hydro plants with the non-toxic UCON Trident AW hydraulic fluid. This fluid, manufactured by Dow Chemical, is a fully synthetic polyalkylene glycol (PAG) lubricant and does not contain any chemicals on the Comprehensive Environmental Response, Compensation, and Liability Act (CERLCA) list of hazardous substances.

According to the U.S. Fish and Wildlife Service, UCON Trident AW meets their requirements as “relatively harmless” or “practically non-toxic” to fish and other aquatic wildlife. The lubricant is water soluble, fire resistant and is heavier than water.

AEP’s use of this lubricant varies across the six plants:

- 4-MW Elkhart in Indiana — trashrake equipment and wicket gate actuator tanks for all three units.
- 1-MW Mottville in Michigan — wicket gate actuator tank for one unit, with the other units scheduled to be converted in the summer of 2009.
- 48-MW Racine in Ohio — ejector container of the trashraking system, with plans to convert the trashrake in the spring of 2009, as well as the tail gate screwjack system gear boxes for one unit, with the other unit scheduled to be converted later this year.
- 22.5-MW Reusens in Virginia and 19-MW Winfield in West Virginia — knuckle-boom crane.
- 5-MW Twin Branch in Indiana — trashrake equipment.

Since the equipment was converted at the six plants, AEP has seen no significant change in how the equipment operates. The only exception is in the more northern plants (Indiana and Michigan) where equipment operation upon initial start up was found to be slightly sluggish and slow during the colder months, said Terry A. Benson, maintenance supervisor for the northern hydro generation division of AEP.

However, once the fluid warms up, the equipment operates with no noticeable sluggishness.

One drawback to the use of this hydraulic fluid is that it is more expensive than the biodegradable oil AEP uses and nearly twice as expensive as typical hydraulic oil.

Another added cost for AEP is the company’s requirement to add dessicant breathers for applications in wicket gate actuator tanks. This equipment is designed to remove condensation formed during temperature changes. AEP must perform regular sampling of the lubricant and change the dessicant as needed, which is an added cost, Benson said.

American Chemical Technologies, suppliers of the UCON Trident AW hydraulic fluid, will be exhibiting at the upcoming Waterpower XVI conference and exhibition [1], running from July 27–30, 2009 in Spokane, Washington. The conference will feature new technologies, approaches and services being used to improve hydro. The theme is “New Roles for Hydro in a Changing World,” and the conference’s program and exhibitions will focus on new technologies and innovations.

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[1] http://www.waterpowerconference.com