

Tulsion® Ion Exchange Resins for Phosphate Ester Fluid Treatment

Introduction

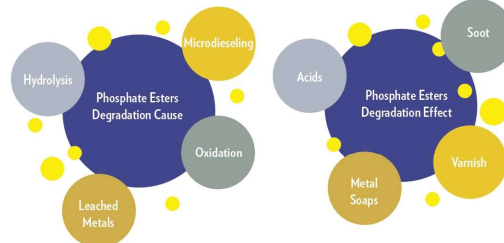
Phosphate ester fluids, commonly used in electrohydraulic control (EHC) systems of steam turbines, are prone to hydrolytic breakdown in the presence of water and heat and therefore require specialized treatment. To help prevent its performance from being degraded by factors such as hydrolytic breakdown, conditioning agents are often added to the fluids. However, some conditioning agents contain extractable metals that can react to form phosphate soaps or salts, which are also harmful to the fluids' performance. To overcome this complication, **Tulsion®** Resin products were found effective in removing acid, water particulates, and phosphate soaps from phosphate ester fluids.

Challenges

Previously, Fuller's earth and activated alumina were two such common conditioning agents used to scavenge acidic species formed in the fluid. But this method was discarded due to the following reasons:-

- **Acid level limitations** - These acid scavengers were only effective in removing acids when acid levels are not too high.
- **Costly process** - Once the fluid does not meet specifications, operators often replace roughly 50% of the fluid in the reservoir. In some cases, the fluid can become so degraded that a full system flush is required.
- **Contains extractable metals** - Fuller's earth contains calcium and magnesium, and activated alumina contains aluminium and sodium. These metals combine with hydrolysis breakdown products to form soaps or salts.

As an alternative, ion exchange resins look particularly attractive because they offer a choice of functional groups that can be used selectively to target fluid parameter. **Tulsion®** Ion Exchange Resins are highly effective in treating phosphate ester fluids by addressing both the hydrolytic breakdown of the fluid and controlling the increased acidity or total acid number.



Thermax Solution

Thermax has developed premium grade **Tulsion®** products customised to suit the treatment of phosphate ester fluid. **Tulsion®** products are approved by the most reputed national thermal power stations for usage in their plants at various locations

- **Tulsion® TAN-21.**
- **Tulsion® A-2X MP (D).**

Benefits

- Prolong fluid life.
- Ensure system reliability.
- Enhance the use of system components.
- Ensuring adequate fluid maintenance to minimize the level of acidity and dirt generated.

Areas of Application



Air Pollution Control



Boiler and Heater



Build-Own-Operate



Chemical



Cooling



Projects and Energy Solutions



Process Heating



Renewable Energy



Water and Waste Solutions

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