PUROLITE®
ION EXCHANGE RESINS

Case History

Purolite® PD206 Regeneration

The Challenge

A mid western USA biodiesel operator producing 5 million gallons (19 thousand m^3) biodiesel per year with 3 proportionally sized towers of 2200lbs (1metric ton); each column using PUROLITE® PD206 in the purification stage needed to reduce the cost of production as well as the waste discharged from the plant.

This customer uses PUROLITE® PD206 a highly effective adsorbent, in 3 columns operated in carousel before demethylation. The columns are designed to remove only glycerin and sodium with methanol and water being removed in the demethylation column. When the lead column passes excess glycerin, methanol is washed through the column to remove glycerin and the column rotated in the lead-lag-standby fashion. This cycle is done several times over a 3-6 month period depending on level of glycerin in the biodiesel before a column exhausts on sodium. After exhaustion soap residue was observed building in the demethylation column requiring the resin to be replaced. Resin replacement increased costs and waste.

The Solution

Purolite developed a process for economically regenerating PUROLITE® PD206. The resin was removed from the column and allowed to drain free liquids primarily bio-diesel. Resin was loaded into lined super sacks for shipment to Purolite. The resin was tested before shipment and found to contain residual methanol resulting in a flash point of 80 ºF (27 ºC) so all shipping containers were labeled to conform to DOT transport regulations

A test procedure was also developed to determine when the resin is spent and needs regeneration.

Purolite received the spent resin, cleaned, regenerated, and dried and returned to the customer within a week

The Results

The regenerated dried resin suffered about 10% losses due to attrition since being initially charged to the customer vessels and regenerated. Also, about 3% of the original capacity was lost. The customer saved 50% on the cost of new resin and reduced waste to landfill by 1000 lbs (450kg) per month. Overall the average cost of polishing per unit volume of biodiesel was reduced by more than 60%

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