A Northeastern Refineries Poly Amine Unit has been challenged with escalating operating costs associated with utilizing a conventional style cored element due to minimal available surface area and an average online life of two weeks, which has contributed to high labor requirements and increased operating costs. In order to validate the performance of Pentair’s extended surface area Compax design, an upgrade was conducted temporarily at the Poly unit. The upgrade was designed to support that the following benefits are achievable on a permanent basis with Pentair technology:

- **IMPROVED PROCESS RELIABILITY** Utilization of COMPAX® technologies o-ring seal and robust locked pore matrix will mitigate potential bypass challenges associated with conventional cored elements.
- **LOWER DISPOSAL VOLUMES** Eliminating the rigid core from the elements at the vessel allows the spent element to collapse when disposed, reducing waste volumes by approximately 50% to 80%.
- **REDUCED LABOR REQUIREMENTS** The coreless design incorporates an o-ring sealing mechanism, eliminating caps and springs or hold down plate devices which results in a quicker and easier change procedure, contributing to reduced labor requirements.
- **ENHANCED ERGONOMICS** COMPAX coreless elements are 45% lighter than their cored equivalents.
- **ROBUST DESIGN** Placement of the core within the vessel rather than within the element allows use of a very robust core. COMPAX cores are rated to withstand in excess of 75 psid, greatly reducing the possibility of collapsed cores during pressure excursions.
- **LOWER OPERATING COST** The enhanced on-line life potential of Pentair’s extended surface area design coupled with reduced disposal volumes and lower labor requirements will provide lower operating costs. In addition, installation of the Compax element within the housing will allow operations to extend the scheduled change out from weeks to months.

**RESULTS**

After the core installation was completed, Pentair came onsite on three different occasions to collect samples for validating the fluid quality, provided below is the analysis.

**MAY 14th** - The total suspended solids at the inlet to the lean amine filter is 105.8 mg/L, however, after treating the material with Pentair’s Compax element, the effluent registered an outlet solids concentration of 45.1 mg/L, equating to a separation efficiency of 57%. It is well known by the refiner that the unit suffers from elevated levels of corrosion activity and the result of 105.8 at the inlet confirms this issue.

**MAY 16th** - The total suspended solids at the inlet to the lean amine filter is 43.0 mg/L, however, after treating the material with Pentair’s Compax element, the effluent registered an outlet solids concentration of 14.4 mg/L, equating to a separation efficiency of 67%.

**JULY 10th** - The total suspended solids in the inlet to the polyamine filter is 419.7 mg/L, and is 100.6 mg/l in the outlet. The filter efficiently removed 76% of all particulates.

Additionally, Pentair’s Compax elements have averaged an online life of 60 days equating to a greater than 3x the life of the conventional technology. Considering all the benefits listed above, Pentair was informed that Compax technology was the ideal solution and would be utilized permanently.

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