

Refrigeration System Improvements



Old Ammonia Refrigeration Condensers



New 134a Refrigeration System

- ▶ The complex, outdated ammonia-based refrigeration system at the Deer Park site generated high operations, maintenance, and energy costs.
- ▶ The old system required daily purging of oil to the wastewater and flare systems, resulting in losses of ammonia to the flare and oil to the waste treatment plant.
- ▶ The more efficient, automated 134a refrigeration system reduces energy use and eliminates ammonia handling risks.

Benefits

- ▶ Reduces ammonia and oil losses by \$110,000 per year.
- ▶ Reduces energy costs \$300,000 per year.
- ▶ Reduces operations and maintenance costs by \$650,000 per year.
- ▶ Reduces NO_x by 70 tons per year.
- ▶ Reduces CO emissions.
- ▶ Avoids end-of-life replacement costs of \$3 million.
- ▶ Improves production quality and capacity by supplying colder, more consistent water flows.



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