Amine Sweetening

Problem: Liquid hydrocarbon and particulates cause foaming and fouling problems within an amine plant.

Products: Pall Seprasol® LG Coalescer to remove liquid hydrocarbons from feed.

Pall NEXIS T® (10–40 µm) filters to remove particulates from recirculating amine.

Benefit: Reduced amine losses, foaming and flaring; improved energy consumption; reduced maintenance, labor and disposal costs.

Tail Gas Treating Unit

Note: Many tail gas units contain an amine unit.

Products/Benefit: Same as amine sweetening, see 1.

Aromatics

Problem: Liquid hydrocarbon and particulates cause foaming and fouling problems.

Products: MCC1401 elements (usually E100) and Nylon Profile (10–40 µm) used to remove particulates from recirculation sulfolane.

Benefit: Process similar to amine; reduced solvent losses and foaming; improved energy consumption; reduced maintenance, labor and disposal costs.

Catalyst Protection*

Problem: Solid particulates plug and deactivate catalyst bed (5–10 µm); water can deactivate some catalysts.

Products: Pall Rigimesh® backwash filters to remove solid particulates.

Pall Epocel® or Ultipor filters to remove low concentrations of solid particulates.

Pall AquaSep Plus liquid/liquid coalescer to remove water.

Benefit: Improved conversion efficiency and profitability; fewer catalyst changeouts; improved conversion/yield; lower maintenance, labor, and catalyst costs.

Final Product Filtration*

Problem: Refinery final products contain particulates and water.

Products: Ultipleat High Flow filter used to remove particulates.

AquaSep Plus liquid/liquid coalescer** used to remove entrained water from gasoline/diesel.

Benefit: Improved product quality; less reprocessing and contamination costs; lower maintenance and disposal costs.

LOCATION OF CATALYTIC PROCESSES:
- Catalytic Reformer
- Dehydrogenation Processes
- Hydrocracker (recycle)
- Isomerization
- All Hydrotreaters

*NOTE: 4 denotes Pall particulate or backwash filter

12 denotes Pall AquaSep® Plus or PhaseSep® liquid/liquid coalescer.

**NOTE: AquaSep is especially effective in removing water from fuels with high concentration of additives and surfactants.
6 Fluid Catalytic Cracking Unit Slurry Oil
Problem: Catalyst fines reduce value of slurry oil.
Products: Pall Backwash filters.
Benefit: Improved product quality and revenue; less downstream equipment maintenance.

7 Amine and Sulfur Recovery Unit
Problem: Carried over amine contaminates catalyst at the sulfur recovery unit. Carried over hydrocarbon and treating chemicals initiates foaming in amine contactor.
Products: Pall Seprasol LG Coalescer [CC3LGB7 to remove carried over amine]
CC3LGA7 to remove carried over hydrocarbons.
Benefit: Less catalyst changeouts; improved sulfur conversion; less equipment fouling; reduced amine losses, foaming and flaring.

8 Refinery Fuel Gas
Contains light hydrocarbons used to fuel refinery equipment such as furnaces, boilers, and turbines.
Problem: Fuel gas composition changes rapidly and contains condensable hydrocarbons. Liquids and solids will foul and plug burners and combustors. Low NOx burners are very sensitive to plugging.
Products: Pall Seprasol LG Coalescers (CC3LGA7 and CC1LGA7) used to remove heavier (liquid) hydrocarbons and particulates from fuel gas.
Benefit: Improved reliability; lower maintenance costs; improved burning efficiency.

LOCATION OF LARGE FURNACES:
- Catalytic Reformers
- Atmospheric Distillation Unit
- Vacuum Distillation Unit
- Hydrogen Generation Unit

OTHER EQUIPMENT:
- Boilers (check with utilities engineer)
- Fuel Gas distribution compressor (check with utilities engineer)

9 Hydrogen Compressor Protection
Contains light hydrocarbons similar to refinery fuel gas.
Problem: Hydrogen composition changes rapidly and contains condensable hydrocarbons. Liquids and solids will foul internals of compressors; must know composition of liquids being recovered by coalescer.
Products: Seprasol LG Coalescers (CC3LGA7 and CC3LGO2–H13) used to remove heavier (liquid) hydrocarbons and particulates from hydrogen to protect compressor.
Benefit: Improved reliability; lower maintenance costs; improved efficiency.

LOCATION OF HYDROGEN COMPRESSORS:
- Catalytic Reformer (recycle and production)
- Hydrogen Generation Unit (recycle and production)
- Isomerization Unit (recycle)
- Hydrocracker (recycle)
- Hydrotreaters (feed hydrogen, in some instances)
- Dehydrogenation Processes
- May be a large hydrogen distribution compressor within the refinery

10 Catalyst Recovery from Gas Streams
Problem: Catalyst fines discharged into flue or elutriation gas causing catalyst losses, opacity problems, maintenance problems with downstream equipment. Particularly a problem in processes where catalyst is continuously regenerated.
Products: Pall Blowback filters.
Benefit: Less catalyst losses; less maintenance on downstream equipment; compliance with environmental standards.

11 Treating Processes
Problem: Caustic or amine carries over into product stream causing off-specification product. Carried over caustic can form a precipitate downstream resulting in equipment fouling.
Products: Pall PhaseSep liquid/liquid coalescer to remove carried over caustic
Pall Nylon Profile to remove solid contaminants.
Benefit: Improved profitability; lower reprocessing costs, reduced maintenance and labor costs.

---

Pall Corporation has offices and plants throughout the world in locations including: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, France, Germany, India, Indonesia, Ireland, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Poland, Puerto Rico, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom, United States, and Venezuela. Distributors are located in all major industrial areas of the world.

© Copyright 2005, Pall Corporation. Pall, Pall® are trademarks of Pall Corporation. ® Indicates a Pall trademark registered in the USA. Filtration. Separation. Solution.™ is a service mark of Pall Corporation.