

### 1 Amine Sweetening

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

**Products:** Pall Seprazol® 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.

### 2 Tail Gas Treating Unit

**Note:** Many tail gas units contain an amine unit.

**Products/**

**Benefit:** Same as amine sweetening, see (1).

### 3 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.

### 4 12 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.

\* NOTE: (4) denotes Pall particulate or backwash filter

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

### LOCATION OF CATALYTIC PROCESSES:

- Catalytic Reformer
- Dehydrogenation Processes
- Hydrocracker (recycle)
- Isomerization
- All Hydrotreaters

### 5 11 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.

\*NOTE: (5) denotes Pall particulate filter

(11) denotes Pall AquaSep® 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 Seprazol 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 NO<sub>x</sub> burners are very sensitive to plugging.

**Products:** Pall Seprazol 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
- Hydrocrackers
- Hydrotreaters
- Isomerization Unit
- Dehydrogenation Processes

### 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:** Seprazol 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.

## 13 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.



### New York - USA


888.873.7255 toll free in the USA  
516.484.5400 phone  
+01 516 484 0364 fax  
fuelsandchemicals@pall.com email

### Portsmouth - Europe

023 9230 3303 phone  
023 9230 2509 fax  
name@pall.com email

### Visit us on the Web at [www.pall.com](http://www.pall.com)

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, , are trademarks of Pall Corporation. ® Indicates a Pall trademark registered in the USA. *Filtration. Separation. Solution.<sup>sm</sup>* is a service mark of Pall Corporation.