



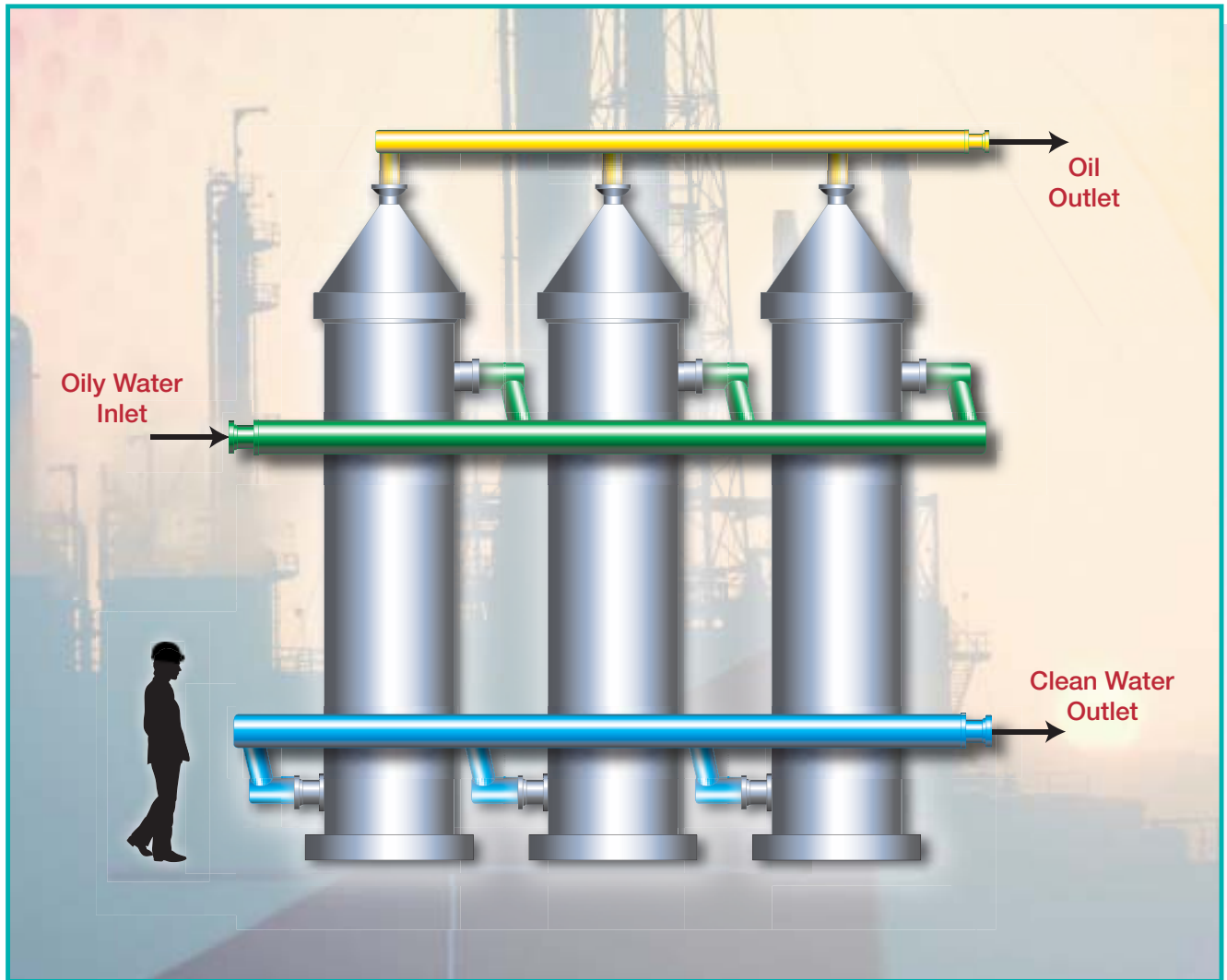
Pall Corporation

The Lucid™ Separator

Optimizing the Separation of

Oil/Water Dispersions

The Lucid Separator



The Challenge

The industrial world is searching for improved means to treat the oil/water dispersions often found in refinery, oil & gas, chemical, power generation, pulp & paper, primary metals, and mining industries. Highly contaminated oil/water dispersions can involve process feeds, by-products, or valuable liquid commodity products, requiring them to be “upgraded” before they can be sold. These fluids, if left untreated, can negatively impact production, create unnecessary wastes, lead to longer-term performance consequences, disappoint customers, and erode your company’s profits.

The Solution

Pall Corporation has developed new fluid separation technology designed to treat oil/water dispersions. The groundbreaking Lucid™ separator has the ability to effectively remove gross levels of contaminant water or aqueous fluid in droplet form from liquid phase hydrocarbons and/or conversely, remove contaminant hydrocarbons from water or aqueous solutions.

This new separation technology offers a simple “easy to install” solution in a compact geometry that is self-cleaning, requires no auxiliary utilities, electrostatics, controls, or chemical additives to function. The hardware has no moving parts, is compatible with a broad range of fluids, and is resistant to even the most erosive solids. The totally enclosed separation eliminates the chance of foul odors or hazards to operators.

A proprietary internal “separator” geometry promotes low-velocity coalescing or enlargement, with discharge path for continuous separation of discontinuous phase droplets in the fluid. Fine-sized suspended solids are disengaged from the flow and discharged along with the discontinuous phase liquid material.

Description

- Separates liquids from liquids and solids from liquids
- Treats difficult aqueous and hydrocarbon-based fluids with up to 10% dispersed liquid phase
- Processes fluids with up to 1% solids
- Can be sized for particle removal sizes ranging from 20 to 100 microns
- Non-fouling - no replacement cartridges required
- Typically operates in efficiency ranges between a decanter and a coalescer
- Contains no moving parts
- Requires no electricity
- Enables a reduction in chemical additives in some cases
- Features all-metal or all-plastic construction – ideal for aggressive chemical compatibility and high-temperature service

Benefits

- **Improved Fluid Quality and Value:** Reliable separation of hydrocarbon – water mixtures will allow for recovery of valuable products and prevention of fouling and corrosion of downstream process equipment.
- **Low-Cost Liquid and Solids Removal:** The Lucid separator uses permanent separation internal parts that avoid costly replacements of disposable cartridges. This allows for a long life and reliable separation efficiency at a low overall cost of contaminant removal.
- **High-Performance Design Results in Smaller Assembly Size:** The Lucid separator’s proprietary internal parts and compact design promotes improved separation in a small economic assembly size.
- **Lower Disposal and Maintenance Costs:** The Lucid separator does not require any change-out of disposable cartridges and contains no moving parts or need for electricity. As a result the operating costs and maintenance costs are greatly reduced compared to other separation technologies.
- **No Fugitive Emissions:** The enclosed design prevents vapor leaks, reducing environmental non-compliance and improving safety.

The Lucid Separator

Applications

The Lucid separator can be used in a variety of applications, including:

- Underflow brine from crude oil desalters
- Crude oil desalting
- FCC feed desalting
- Slops processing
- Hydrodesulfurization feed
- Sour water feed to strippers
- Combined waste water streams prior to biological treatment
- Decoker cutting water
- Produced water
- Gas condensate de-watering
- Tank cleaning
- Blow down water from cooling towers
- Mining solvent extraction separations
- Quench water recycling
- Spent caustic waste treatment



Improved Separation Performance and Results

Proven Results

The Lucid separator has withstood extensive internal and field testing. The results of those tests indicated that the Lucid separator:

- Will remove chlorides from crude oil down to $< 0.001\%$ - similar to two-stage electrostatic precipitators
- Will remove oil from the underflow brine coming off the crude oil desalter down to a few 100 ppm of oil and grease
- Can process up to 10% liquid discontinuous phase
- Can process 1% solids without fouling
- Can survive repeated mud busts from the de-salter underflow brine without clogging



Samples of oil/water emulsion before and after treatment with a Lucid separator

The Lucid Separator

Piloting Capabilities

On-site test rigs are available to help you evaluate and size the Lucid separator to best meet your process needs:

Lucid separator – 35 bbl/day (5.5 m³/day) model



Product Specifications

- Material of Construction: 304 Stainless Steel
- Dimensions: 42" L x 42" W x 56" H
(107 cm x 107 cm x 142 cm)
- Weight: 900 lb (408 Kg)
- Max Pressure/Temperature:
400 psi (27.6 bar)/360°F (182 °C)
- Process Inlet & Outlet Connections:
½" (1.3 cm) NPT(F)
- Drain Connection: 1" (2.5 cm) NPT(F)
- Water Injection Connection: ¼" (0.6 cm) NPT(F)

Lucid separator – 1,030 bbl/day (163.5 m³/day) model



Product Specifications

- Material of Construction: 304 Stainless Steel
- Weight: 8360 lb (3792 kg)
- Connections: 2" (5.1 cm) 300# Flange
- Dimensions: 96" L x 76" W x 142" H
(244 cm x 193 cm x 361 cm)
- Max Pressure/Temperature:
400 psi (27.6 bar)/360°F (182°C)
- Includes water injection capability

Cost-effective Solution in a Compact Design

Part Numbers/Ordering Information

■ ■ ■ LUC ● ● ▲ ▲ ◆ ◆ - ▼ ▼ - ✕ ✕ ✕ (e.g., AAALUCBBCCS8-WO-FFF)

Code	Model
■	
[AAA]	Description

Code	Shell Diameter
●	
[BB]	Diameter in inches

Code	Nozzle Diameter
▲	
[CC]	Diameter in inches

Code	Material of Vessel
◆	
Blank	Carbon Steel
S8	304 Stainless Steel
S3	304L Stainless Steel
L8	316 Stainless Steel
L3	316L Stainless Steel

Code	Separation Type
▼	
WO	Water from oil
OW	Oil from water

Code	Design Pressure
✕	
[FFF]	Pressure in psi

Pall Corporation **A Powerful Resource for Control Protection** **and Teamwork**

Pall Corporation brings over 60 years of filtration and separations experience to your plant's processes. With the industry's widest range of advanced products, Pall can design a system specifically for your plant, based on a thorough evaluation of your needs.

You'll receive technical consultation and support from our Scientific and Laboratory Services Department (SLS), an extensive global network of scientists and engineers.

Pall continues to develop new products and methods to advance the state of the art of phase separation. No other company offers such a strong core competency in coalescing technology to help you reduce operating and maintenance costs through improved product control, plant protection and teamwork.

For more information, contact your local Pall distributor. Additional information on Pall products and services can be found on the web at <http://www.pall.com>.



Pall Corporation

Western Hemisphere

25 Harbor Park Drive
Port Washington, New York 11050
888.873.7255 toll free
516.484.3600 phone
516.484.0364 fax
fuelsandchemicals@pall.com

United Kingdom

Europa House, Havant Street
Portsmouth PO1 3PD
Hampshire, England
+44 (0) 23 9230 2357 phone
+44 (0) 23 9230 2509 fax
processuk@pall.com

Filtration. Separation. Solution.SM

Visit us on the Web at 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 2006, Pall Corporation. Pall,  and Lucid are trademarks of Pall Corporation. ® Indicates a Pall trademark registered in the USA. *Filtration. Separation. Solution.SM* is a service mark of Pall Corporation.