Oil & Gas Products and Services Overview

2015 – Revision 0
A Manufacturing Legacy
Quality and Reputation that Span Three Centuries.

150 Year Legacy of Manufacturing
Founded in 1864 in Elgin, Illinois, Elgin has evolved into a worldwide leader in design, manufacture and service of specialized processing equipment in the Oil & Gas, Mining, Coal, Aggregates, Minerals, Water, and Pipeline Construction Industries.

Multi-Disciplined Manufacturing Team
Elgin is made of four specialized divisions; Elgin Water Solutions, Elgin Separation Solutions (Liquid Separation), Elgin Separation Solutions (Solid Separations) and Elgin Power Solutions.

Fully Certified ISO 9001 Quality Management System
Elgin Separation Solutions was the first solids control company to be certified as an ISO 9001 organization.
Organizational Footprint
Elgin Maintains Manufacturing / Service Support Facilities in Five Countries.
As a division of the Elgin Equipment Group, Elgin Separation Solutions is able to tackle both the small and the big projects, regardless of location or well complexity.
Elgin Value
Experience and Engineering Brings Tangible Value to All Projects.

Unsurpassed Experience
Elgin has become the industry leader in engineered solids control, fluid conditioning, and waste management capital equipment. Shipping to over 50 different countries.

Unsurpassed Durability
With more than 35 years of experience building capital equipment for the oil and gas industry, Elgin has developed a reputation for the most durable systems in the market. The average asset life exceeds 10 years with proper preventative maintenance.

Full-Scale Engineering Support
Elgin’s dedicated Engineering team evaluates system hydraulics, frictional losses, predictive reliability, and failure mode evaluation analysis (“FMEA”) for each product designed. Months of product validation testing is performed prior to the release of any Elgin product.

Elgin manufactures its own spare parts and consumables ensuring 100% integrated accountability for the entire product line.
Elgin is a fully integrated, closed-loop, solids control and waste management equipment provider.

Solids Control Management
Solid/Liquid Separation Technologies Hierarchy.
Shale Shakers and Mud Cleaners
Coarse Through Fine Solids Removal.

Hyper-G™ VFD Shakers
- Hyper-G™ Patented Multi-Functional Mud Cleaners
  - Provides up to 5.0 m² (56 sq. ft) of separating surface area, three panel or six panel with two 1.5 HP, 2.0 HP, 2.4 HP or 2.5 HP vibrators available. G-Forces from 5 to 7.5 can be achieved.
  - Provides up to 3.0 m² (32 sq. ft) of separating surface area with four panels using two High-G 2.5 HP dual-motion, multi-G motors. Utilizes a single-point jacking system & able to generate 4.5 to 7.5 G’s.

Adding a Variable Frequency Drive adjusts the solids discharge velocity. This optimizes fluid recovery and the properties of cuttings with the added benefit of lengthened screen life, therefore reducing operating costs.
Elgin’s barite recovery and solids control centrifuges can be fitted with a host of VFD, FHVD, MVD control options in both explosion proof and non-explosion proof configurations.

<table>
<thead>
<tr>
<th>Model</th>
<th>ESS-1450 HD2</th>
<th>ESS-1655 HD</th>
<th>ESS-1967 HD2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum G Force</td>
<td>2,100</td>
<td>2,300</td>
<td>2,500</td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>3,250 rpm</td>
<td>3,400 rpm</td>
<td>3,100 rpm</td>
</tr>
<tr>
<td>Capacity</td>
<td>200 gpm (12 Lps)</td>
<td>265 gpm (17 Lps)</td>
<td>500 gpm (31 Lps)</td>
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<tr>
<td>Bowl Diameter</td>
<td>14” (356 mm)</td>
<td>16” (406 mm)</td>
<td>19” (470 mm)</td>
</tr>
<tr>
<td>Bowl Length</td>
<td>48” (1,219 mm)</td>
<td>55” (1,397 mm)</td>
<td>67” (1,702 mm)</td>
</tr>
<tr>
<td>Gearbox Ratio</td>
<td>52:1 or 125:1</td>
<td>56:1</td>
<td>80:1</td>
</tr>
</tbody>
</table>
# Centrifuge Controls Portfolio

Available options are dependent on the centrifuge and application.

<table>
<thead>
<tr>
<th>NEMA 7X Cast Aluminum Enclosure (MVD)</th>
<th>NEMA 4X SS VFD Cabinet Enclosure with HMI</th>
<th>NEMA 4X SS VFD with HMI Air Conditioning and Purged Air</th>
<th>NEMA 7X Cast VFD Enclosure</th>
<th>Hydraulically Driven (FHVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Stop/Start with Fluid Clutch Soft Start</td>
<td>Fully Variable Frequency Controlled</td>
<td>Fully Variable Frequency Controlled</td>
<td>Main Drive Variable Frequency Controlled</td>
<td>Fully Variable Speed Controlled</td>
</tr>
<tr>
<td>Push-Button Controls</td>
<td>HMI Touch-Screen</td>
<td>HMI Touch-Screen</td>
<td>Push-Button Controls</td>
<td>Push-Button Controls</td>
</tr>
<tr>
<td>Dual-Sheave Poly-chain</td>
<td>Poly-chain Sheave</td>
<td>Poly-chain Sheave</td>
<td>Standard Sheave</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Dewatering Systems
Colloidal and ultra-fine solids removal.

20’ HMI
Containerized
Dewatering Unit

Designed to be extremely compact for offshore or any restricted space application. Incorporates sophisticated graphical user interfaces, chemical additive injection systems, centrifuge, and in-line mixer system. Can be fully climate controlled.

40’ HMI Arctic
Containerized
Dewatering Unit

Designed within a 40’ container to accommodate Elgin’s ESS-1967HD2 Big Bowl Centrifuge. Incorporates sophisticated graphical user interfaces, test benches, chemical additive injection systems, centrifuge, and in-line mixer system.

Select Floc™ LP3
Portable HMI Polymer Hydration System

By using existing equipment at the rig, the Select Floc™ LP3 allows customers to optimize existing assets, while incorporating the advances of Elgin’s polymer make-down and feed systems to create on-site dewatering.

Elgin has developed a sophisticated level of expertise in the design, integration, fabrication, and commission of dewatering systems.
Waste Management
Managing Oil-On-Cuttings and Water-On-Cuttings for waste disposal.

Elgin’s waste management technologies are designed to help reduce the total disposal costs, while increasing valuable fluid recovery.

- **Vertical Cuttings Dryers for On-Shore and Offshore Applications**
  Capable of lowering the OOC content to less than 3%. Can be fitted with both screw conveyor discharge and/or seawater flushing system. Capable of handling up to 60 tons per hour of cuttings.

- **Hyper-G Drying Shakers with Tank Mount Carriage**
  Provides up to 3.0 m² (32 sq. ft) of separating surface area with four panels using two High-G 2.5 HP dual-motion, multi-G motors. Utilizes a single-point jacking system & able to generate 4.5 to 7.5 G’s.

- **Polymer Dewatering Systems with Touch Screen Interface**
  Capable of removing 100% of the suspended solids, our sophisticated dewatering systems provide ultimate waste management control for water-based drilling fluids.
Elgin’s steel or polyurethane desanding hydro-cyclones remove suspended solids down to 70 microns. Available in a myriad of configurations.

Elgin’s polyurethane desilting hydro-cyclones remove suspended solids down to 20 microns. Ceramic inserts are available. Available in a myriad of configurations.

Elgin’s hydrofoil agitators reduce electrical consumption, while improving mixing efficiency. Each mixing package can be customized to meet customer needs.

Elgin has raised the bar on oil field degassing technology with our patented system creating an industry leading degassing surface area. Available in both 600 and 1,200-gpm models.

Robust oil field construction with additional liquid additive ports to enhance mud properties and opposing double elliptical nozzles for high efficiency mixing. Fully customizable.

Elgin maintains spare parts inventory for all manufactured products to ensure timely delivery.
Pump Packages
Integrated OEM Pump Products Offered by Elgin.

“Mission Style” Pump Packages
Elgin’s rugged Series 250 and 118 pumps are available in a variety of sizes and configurations and capable of being mated with explosion proof motors and starters.

Self Priming Pump Packages
Elgin’s line of 2x2, 3x3 and 4x4 self-priming, solids handling pumps provide for significantly reduced maintenance and solids handling capabilities. Pump impellers can be serviced without disconnecting inlet or effluent plumbing.

Progressive Cavity Pump Packages
Capable of providing highly consistent pump outputs, Elgin’s progressive cavity pump packages are designed to maximum centrifuge performance. Available in both MVD and VFD configurations with Field Skid or Slim-Line Skid.

Elgin can customize all pump package options to specifically fit each application.
Aftermarket Services
Complete remanufacturing and recertification available for all major brands.

Remanufactured Solids Control and Waste Management Products
To ensure that customers have an alternative to new OEM products, Elgin now provides fully remanufactured equipment to customers. Dependent on availability and market conditions.

Rotating Equipment Repair and Recertification
Solids control and waste management equipment takes a constant beating. As the product ages, its performance can suffer. As such, Elgin provides full recertification services to manage the life-cycle of all products sold.

Replacement Spare Parts, Consumables and Screens
In order to provide our customers one-stop-shop support, Elgin has developed a line of replacement screens and spare parts for the industry’s most common solids control and waste management equipment.

Elgin maintains spare parts inventory for all manufactured products to ensure timely delivery.
Mobile Primary Treatment Systems
Highly engineered, full-integrated, solids control management systems.

Generator
Powered by a 100KW prime on-board generator package with remote controls.

Dual Scalping Shakers
Two dual-deck scalping shakers offer 1,500 gpm of hydraulic capacity.

Dual Mud Cleaners
One 1,500 gpm 12” desander and one 4” desilter mud cleaner.

Top-Mounted Agitators
Three top-mounted high-efficiency hydrofoil agitators.

Mud Mixing
Jet shear mud hopper/mud mixing guns installed throughout the system.

Centrifugal Pumps
Four Series 250 high efficiency centrifugal pumps are installed in private pump cabins.

Elgin mobile primary mud systems are specially designed for work-over rigs, top-hole drilling rigs and rat-hole drilling.
Mobile Secondary Treatment Systems

Highly engineered, full-integrated, solids control management systems.

**Pump Cabin**
Four Series 250 centrifugal pumps are installed in a private pump cabin.

**HMI Interface**
On-board HMI controlled VFD control system for management of all on-board systems.

**EEG-1448SL**
Elgin’s slim-line ESS-1448 high-speed decanter centrifuge for ultra fine solids.

**Mud Mixing**
Jet shear mud hopper/mud mixing guns installed throughout the system.

**Mud Cleaner**
Dual deck scalping shaker with integrated 4” hydro-cyclone desilter manifold.

**20’ Container**
Complete mud system is packaged within the envelope of a 20’ shipping container.
Closing the WBM & OBM Loop
Integrated Solids Control and Waste Management Products.

Elgin’s product portfolio provides a “one-stop” shop for any solids control management or waste management challenge.