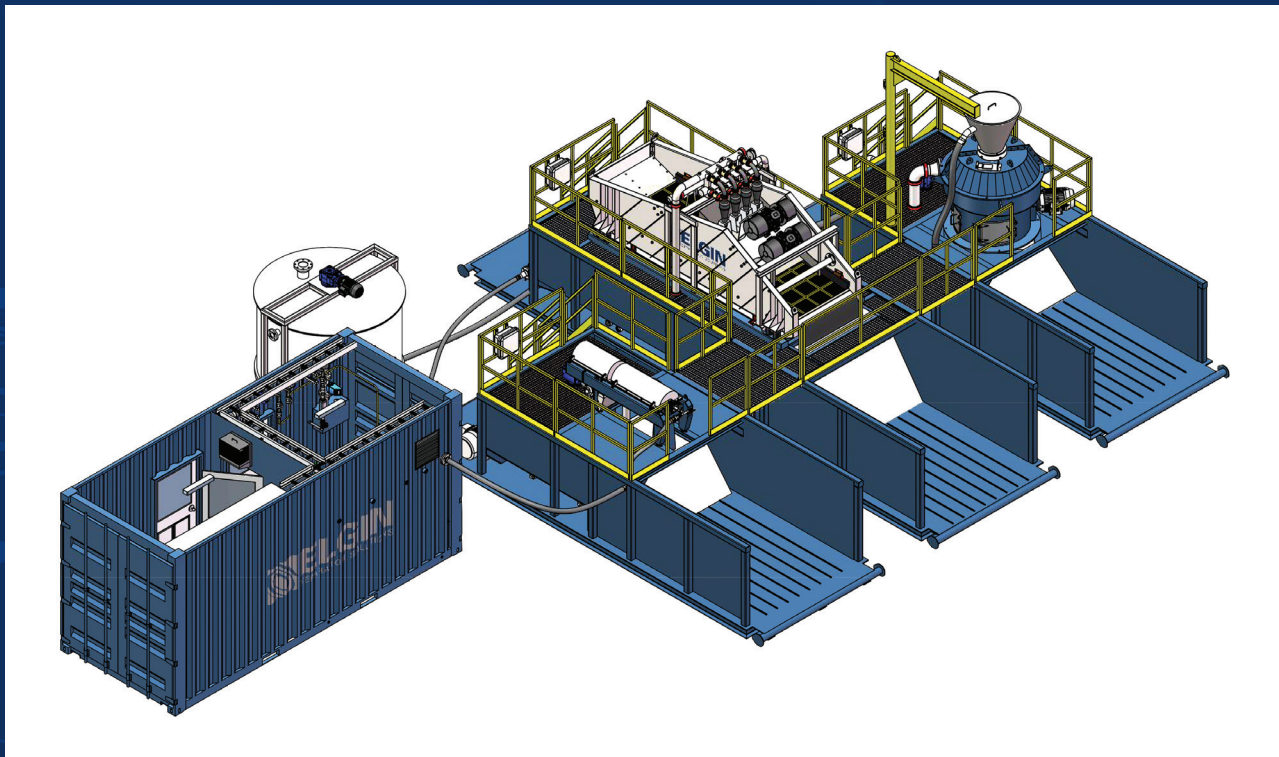


# ELGIN

## Modular Hydrovac Excavation Waste Treatment System



Natural Resource Recycling • Product Classification • Dewatering • Fluid Recovery  
Waste Management • Material Handling • Liquid/Solid Separation • Crushers • Feeders

**TERRASOURCE**  
GLOBAL  
OUR FLAGSHIP BRANDS

**GUNDLACH** CRUSHERS   **JEFFREY RADER**   **Pennsylvania** Crusher   **ELGIN**



# The Hydrovac Challenge

Hydrovac excavation is a precise, non-mechanical, non-destructive process that uses pressurized water and an industrial strength vacuum to simultaneously excavate and evacuate soil. As the pressurized water breaks up the soil it creates a slurry of water, soils and debris that is removed by a powerful vacuum.

In most cases, this process is executed by using specialized hydrovac excavation trucks that are fitted with highly pressurized water and proprietary vacuum systems to excavate or expose buried infrastructure.

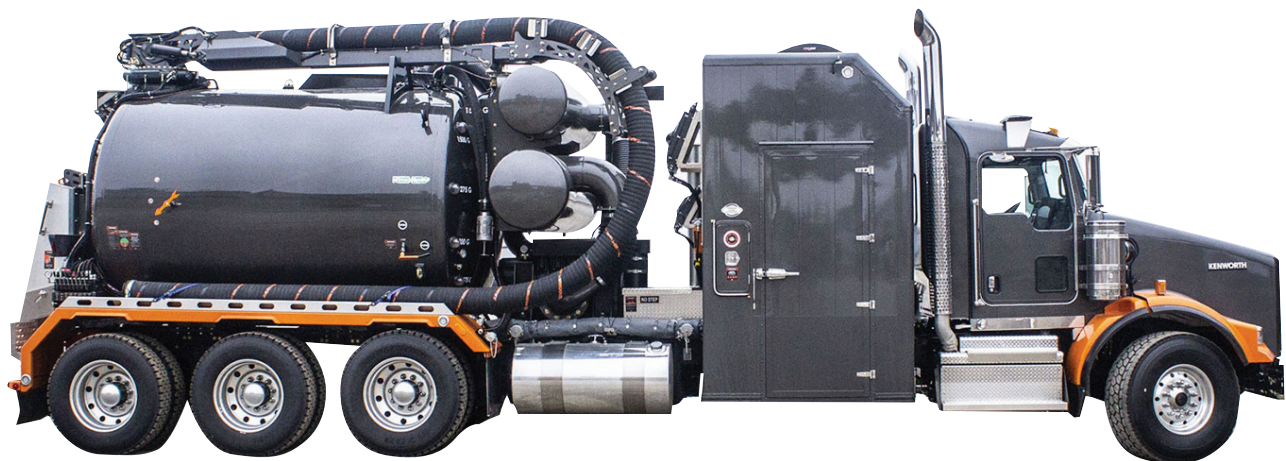
The advantage of the hydrovac process is that it can efficiently and precisely excavate in a variety of soil types and environments, including clay, hard-packed dirt and frozen soil conditions. More importantly, the nature of the hydrovac process allows it to operate in locations with limited access.

Consequently, the hydrovac excavation process also results in varying waste slurry challenges. As dictated by environmental regulations, hydrovac waste slurries must be properly managed. Further, the economics of the hydrovac process clearly show that recovery and reuse of the process water is imperative. Due to the myriad of site conditions,



and variety of lithologies that may be encountered, the treatment systems must be versatile, robust and efficient. This is where Elgin's Turn-Key Hydrovac Fluid Processing Packages shine.

Elgin's objective is to provide a safe and effective treatment process for waste hydrovac excavation that allows operators to deploy a system fit for purpose. Elgin does not believe in the notion that "one size fits all" as no two hydrovac excavation sites are the same. The physical nature of the solids, the potential for foreign debris, and volume of water needed changes from site to site.





# The Elgin Approach: Modular Turn-Key Solutions

Elgin's Turn-Key Hydrovac Fluid Processing Packages are based on individual modular packages that allow operators to configure a complete system to meet their specific needs. Elgin's systems could be as simple as a robust primary scalping shaker with recirculation tank and pumps or it could be an entire treatment plant that starts with the scalping shaker, but ends with the deployment of a clear water recovery system for 100% closed loop applications.

Elgin is in a unique solutions-driven position, as we are the only hydrovac treatment system solutions provider in the market that designs and manufactures its own shakers, shaker screen media, coarse solids vertical cuttings dryers, fine solids decanter centrifuges, slurry pump packages, polymer-assisted dewatering packages, tank packages, equipment stands / skids, screw conveyors, belt conveyors, and integrated control & automation systems.

More importantly, Elgin's systems allow operators to decide how they wish to deploy their capital. As each package is configured to the specific needs of each application, our customers need not be worried that the system will not provide them the solution they are looking for. Our goal is not to sell you equipment, our goal is to provide you a solution.

*No other solutions provider in the market has the ability to provide a turn-key system built around a single in-house standard.*

Because Elgin understands that the problem does not end with simply securing the capital equipment, our engineers will work with your team to help organize site preparation, means of ingress and egress, and truck management.





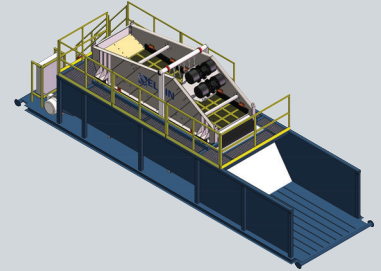
# Turn-Key Solutions

Elgin's Turn-Key Hydrovac Fluid Processing Packages are available as individual sub-systems that can be mated together in different configurations to provide the optimum system. The five individual packages are as follows:

## A

### Mega-G™ Scalping Shaker Package

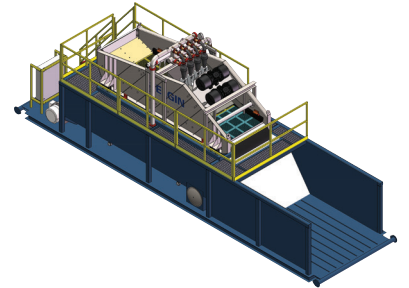
- Remove debris and coarse solids ranging from 0.5 mm to 2.0 mm



## B

### Mega-G™ Scalping Shaker and Hydrocyclone Package

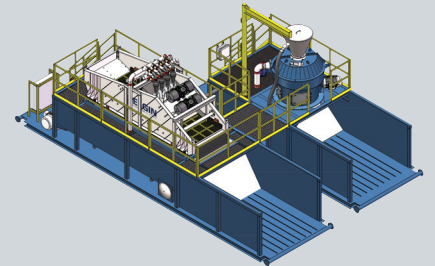
- All of the benefits of System A
- Remove fine solids down to 30 microns



## C

### Mega-G™ Scalping Shaker Hydrocyclone and Vertical Cuttings Dryer Package

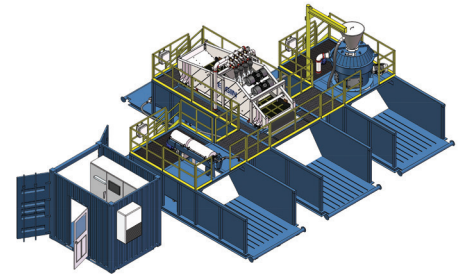
- All of the benefits of System B
- Fully dewater coarse solids and debris as a stackable solid for cost-effective disposal or permitted land farming.



## D

### Mega-G™ Scalping Shaker Hydrocyclone, Vertical Cuttings Dryer, and Ultra-Fine Solids Decanter Centrifuge Package

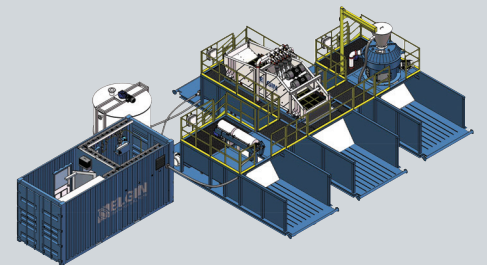
- All of the benefits of System C
- Remove ultra-fine solids, down to 5 microns, from the slurry, leaving a recyclable water for reuse.



## E

### Mega-G™ Scalping Shaker, Hydrocyclone, Vertical Cuttings Dryer, Ultra-Fine Solids Decanter Centrifuge Package and Dewatering Package

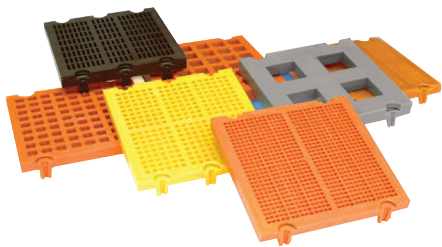
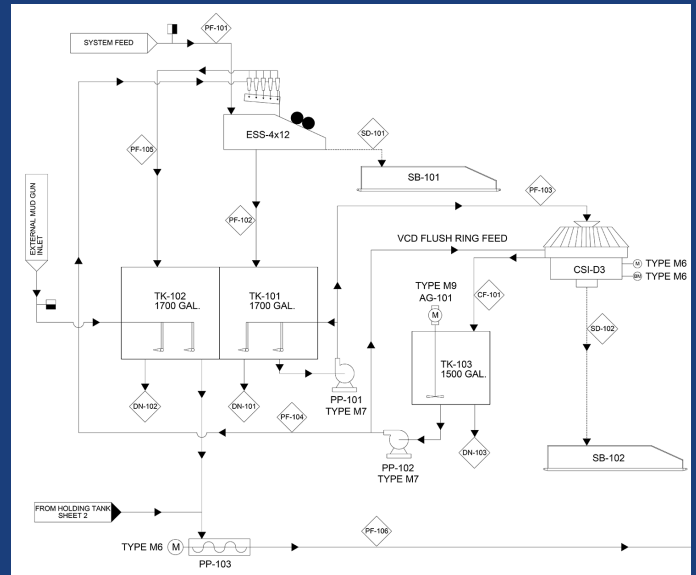
- All of the benefits of System D
- Removal of all suspended solids from the slurry, leaving a clear recyclable water for reuse or cost-effective disposal/discharge.



## Complete Turn-Key Engineering Services

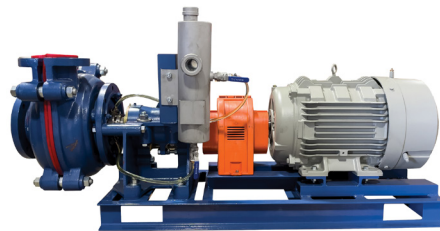
From instrumentation to system interlocks, Elgin has the tools and resources to provide you the most effective system. The level of automation and customization is completely up to you and your budget. Regardless of the size of the system, or the level of sophistication desired, Elgin's Turn-Key Hydrovac Fluid Processing Packages are designed with your goals in mind.

Once the level of treatment is known, our engineers can work with your team to develop a complete treatment plant that takes into account the number of trucks to be managed and the volumes that will be generated on a daily basis. Elgin's goal is to create a treatment facility that is flexible, modular, semi-mobile, and effective.



### Polyurethane Screen Media

The Mega-G™ Scalping Shaker incorporates a modular screen deck utilizing Elgin's 12" x 12" pinless polyurethane screen media. This allows for a multitude of applications with target cut points as low as 250 microns or as high as 5 cm. Designed for maximum user flexibility, modular screen panels can accommodate various screen configurations and hole openings. Panels are easy to install or replace, reducing operational down time and lost production.



### Abrasion Resistant Pumps

Elgin's abrasion resistant slurry pumps are designed to manage abrasive materials associated with pumping operations. Onboard thermal siphon technology protects pump from overheating and run-dry damage. Pump performance is further enhanced with a diamond core mechanical seal that prevents leakage of fluid from the pump while improving performance when processing high temperature and highly corrosive material.



### Spray Bar System

An integrated spray bar is deployed to help move material across the scalping deck. Each spray bar package is designed to support the application and the nature of the material being fed to the Mega-G™ Scalping Shaker. Modular nozzle construction allows for various stem lengths and a multitude of spray nozzle tips. Onboard dedicated pump supplies fresh water feed for spray bar operation.





# Controls and Automation Systems

Elgin has developed proprietary control panel technology that gives operators a new level of operational control. Features such as built-in VFD modules for on-the-fly adjustment of sub-components, integrated safety interlocks to protect equipment from damage, and HMI touch-screen interfaces for managing complete turn-key systems and ancillary equipment.

Depending on system configuration, control panels can be mounted directly to the unit or incorporated into a fully enclosed control room with environmental controls for harsh environments. Panels are built to NEMA 4X or NEMA 7 configurations in either non-explosion or explosion proof with air conditioning and purged air protection systems.

## Optional Variable-G VFD Control System

High G-force can be detrimental to the drying efficiency of fine, reactive or sticky solids. As such, Elgin has incorporated an optional user-friendly, variable frequency drive system that allows the shaker to achieve three different preset G-force levels. This allows the G-force & conveyance dynamics of Elgin's

Mega-G™ Shaker to be adjusted with the simple twist of the wrist at the control panel. This can be done without adjusting the motor weight settings, reducing additional operational headaches and eliminating unnecessary downtime.

## Touch Screen Control System

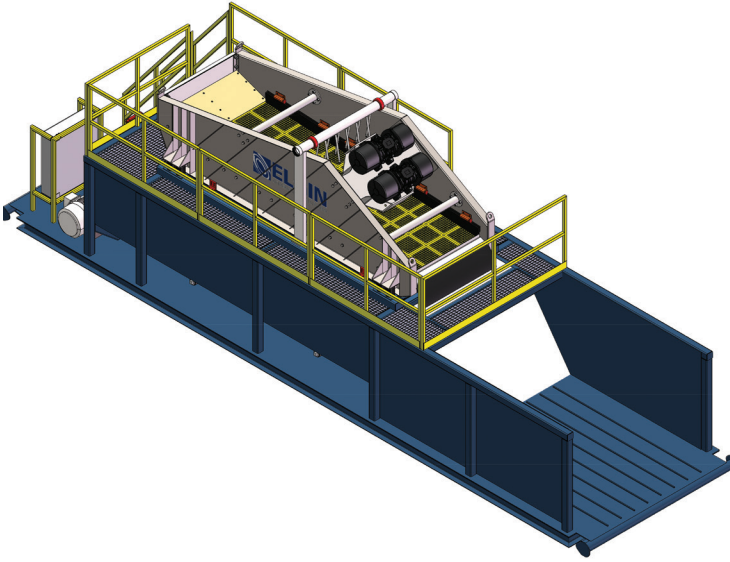
To ensure maximum operator flexibility, Elgin has developed a proprietary touch-screen VFD control system. Each stainless steel, NEMA 4X panel is built from the ground up using the most



sophisticated electrical components and Yaskawa™ variable frequency drives. Elgin's VFD systems include a variety of enhanced features including, internal lighting, ventilation and heating, Ethernet porting for diagnostics and programming updates, and a custom designed user interface that allows for maximum operating flexibility and control. Elgin's proprietary user interface provides complete control of all systems, as well as, a sophisticated set of diagnostic tools, information libraries and read-only fault logs. Class 1 / Division 1 explosion proof panels with air conditioning and purged-air protection systems are also available.



# A Mega-G™ Shaker Package



Featuring Elgin's Mega-G™ 412 scalping shaker fitted with Tabor-Thane™ polyurethane 12" x 12" screen panels, 3,900 gallon (14,763 liters) V-bottom filtrate tank with wrap-around walkway and staircase, abrasion resistant slurry transfer pump, mud gun mixing system, dual spray bar manifold, high/low level sensors, and integrated control panel system.

Elgin's Mega-G™ Scalping Shaker provides power, performance and a new standard in practical design. Capable of producing up to 6.0 G's of force, and coupled with an optional variable frequency drive, the Mega-G™ provides power when you need it.

## Abrasion-Resistant Panels

The Mega-G™ Scalping Shaker incorporate a number of high-density polyurethane wear protection panels. These panels can be found within the shaker interior walls, the inlet impact plate, discharge plate / dam, and discharge tray.

## Replaceable Spray Bar Configuration

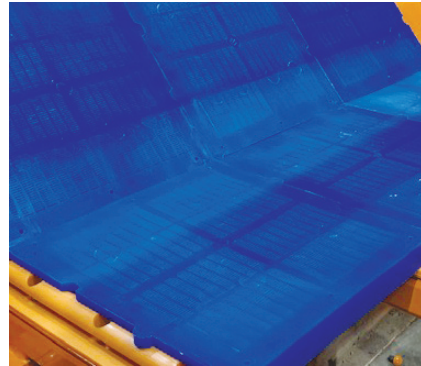
Depending on the rheology of the material being processed, the spray bar system can easily be removed or repositioned along the length of the shaker deck.

## Mega-G™ Package Features

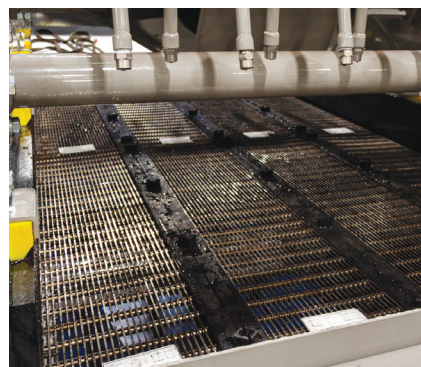
- One (1) Hyper-G™ Tabor-Thane™ 4'x12' shaker with inclined screen with HDPE-lined solids discharge trough
- Forty-Eight (48) 250 um Tabor-Thane™ 12" x 12" polyurethane screens
- One (1) V-bottom centrate tank, 3,900 gallon (14,763 liters) capacity with high / low level sensors
- One (1) 4"x3" abrasion resistant slurry pump with 25 hp motor for transfer operations
- One (1) NEMA 4X shaker control panel
- One (1) spray bar, with eleven (11) 1/2" NPT 1/8" bore nozzles
- Five (5) high pressure mud guns
- OSHA complaint staircase and handrails

## Modular Screen Panel Options

Designed for maximum user flexibility, the Mega-G™ shaker can accommodate various screen configurations and hole openings for maximum operational performance. Mix and match between modular and polyurethane styles.



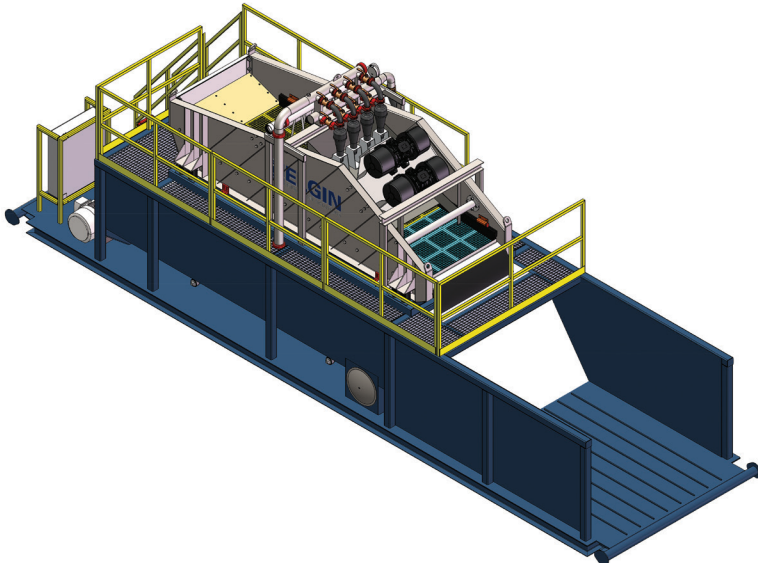
**Tabor-Thane™**  
Pinless 12" x 12" polyurethane screens are available in square hole or slot configurations ranging in openings from .25 mm up to 3"



**Hybrid Panels**  
Profile wire hybrid screen panels offer increased open area compared to polyurethane panels. Diverters, locking dams, on the screen direct the flow of material over the hole patterns for more efficient screening.



# B Hydrocyclone Desilter Package



## Desilter Hydrocyclone Package Features

- One (1) Hyper-G™ Tabor-Thane™ 4'x12' shaker with inclined screen w/ HDPE-lined solids discharge trough
- Thirty-six (36) 250 um Tabor-Thane™ 12" x 12" polyurethane screens
- Twelve (12) 100 um Tabor-Thane™ 12" x 12" polyurethane screens
- One (1) partitioned 3,400 gallon (12,870 liters) V-bottom concentrate tank with high / low level sensors
- One (1) desilter manifold, with 4 x 4" ceramic-lined hydrocyclones
- Two (2) 4"x 3" abrasion resistant slurry pumps with 25 hp motor for transfer/mud gun and desilter operations
- One (1) NEMA 4X shaker control panel
- One (1) spray bar, with eleven (11) 1/2" NPT 1/8" bore nozzles
- Five (5) high pressure mud guns

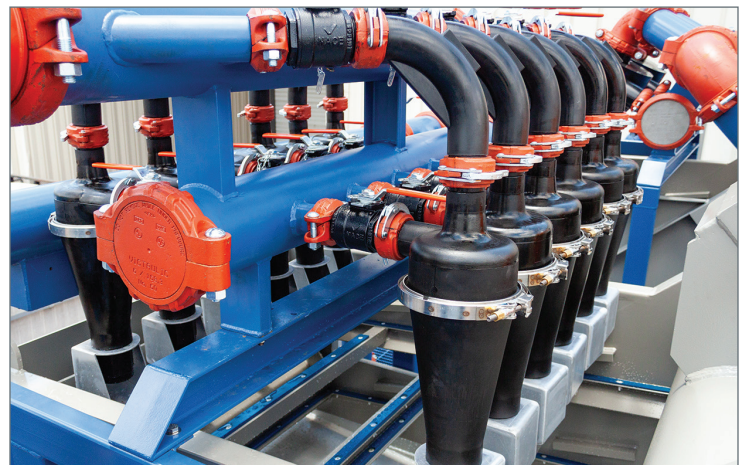
The hydrocyclone desilter package includes all of the components included in System A with the addition of a split scalping zone screen deck to accommodate the hydrocyclone package, a partitioned V-bottom filtrate tank, a 4 x 4" ceramically-lined desilter hydrocyclone manifold, high/low level tank sensors, and abrasion resistant desilter feed and transfer pumps.

With the addition of a desilter manifold, solids are capable of being removed down to 25 microns from the fluid stream. Each hydrocyclone is made of high durameter, durable polyurethane with ceramic insert to maximize equipment life. In addition, hydrocyclones can be fitted with independent valve isolation, discharge deflection devices, and pressure monitoring systems.

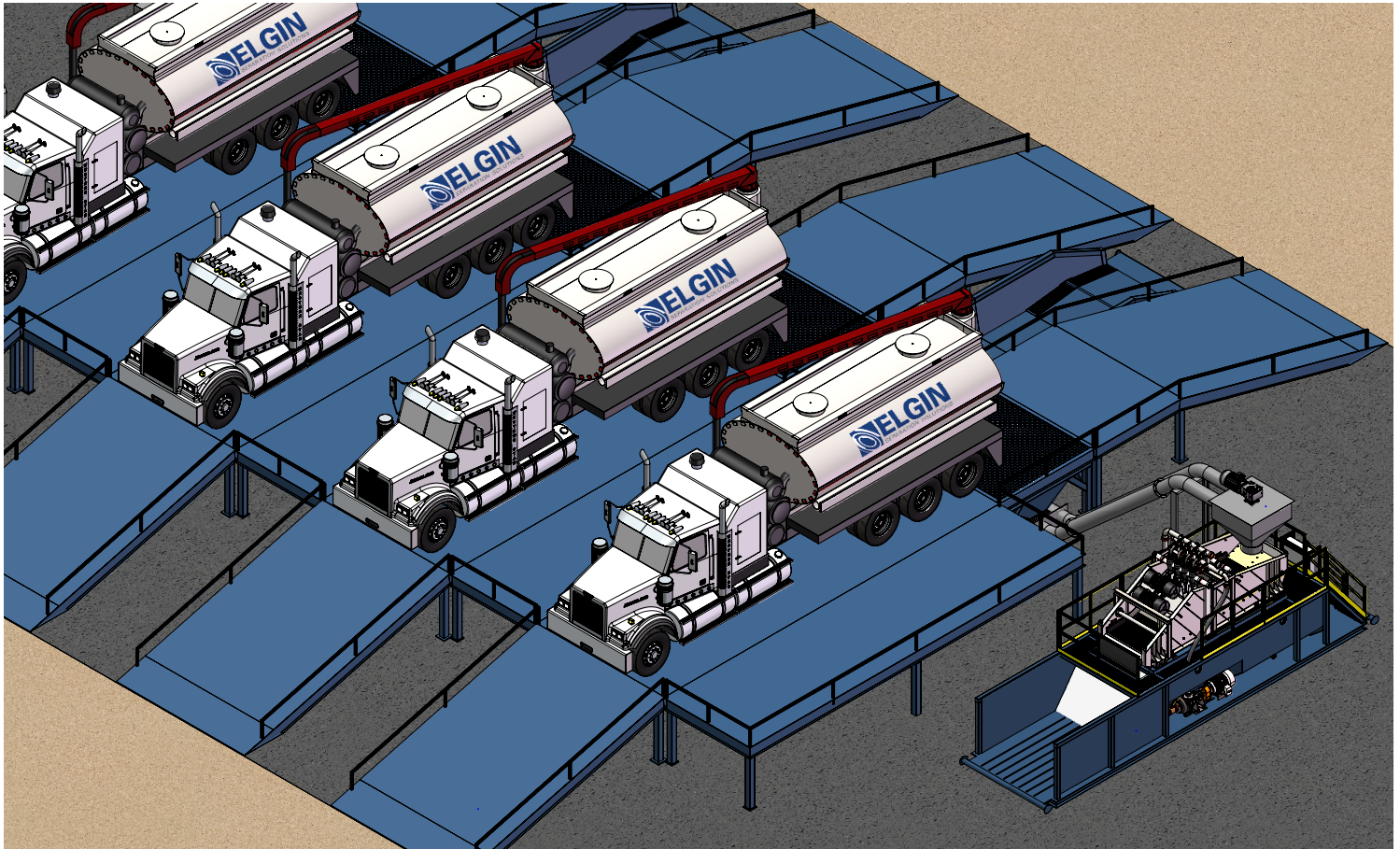
Split scalping zone screen deck configuration maximizes solids separation with the first half of the shaker utilizing 250 um polyurethane screens. Second half of the shaker deck fitted with 100 um polyurethane screens ensures secondary stage

solids separation. Partitioned V-bottom tank design with high/low level sensors provides for auto pump integration to prevent run-dry conditions. Two onboard abrasion resistant slurry pumps allow for independent desilter and transfer operations.

Depending on operational needs, Elgin can customize each desilter manifold with varying number of hydrocyclones to maximize flow rate.



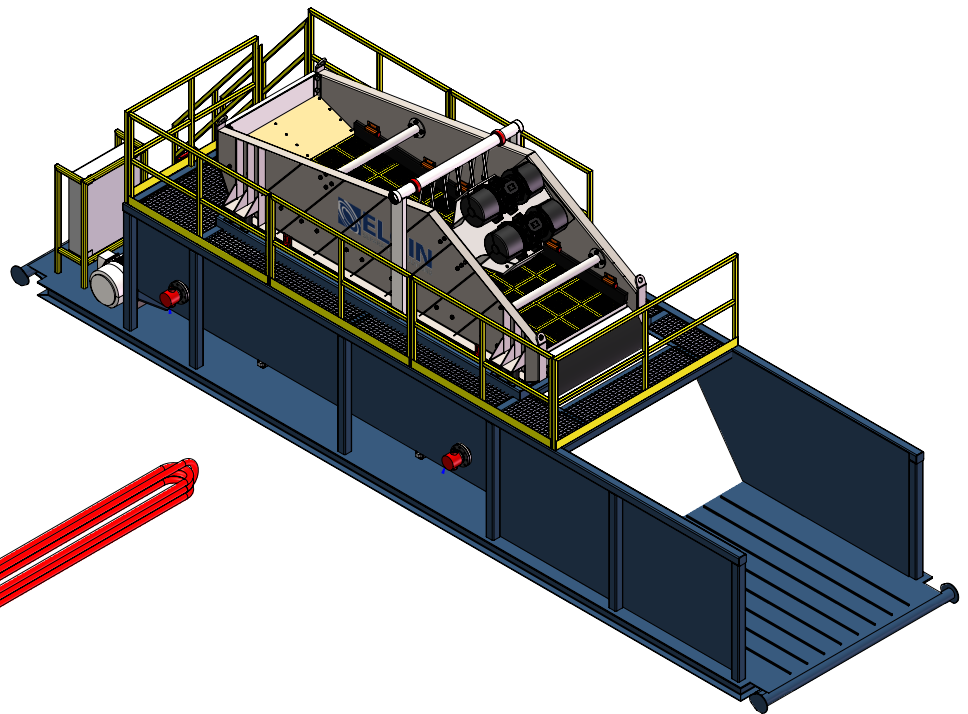
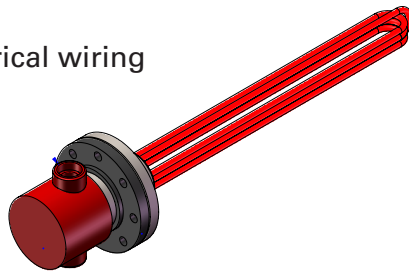




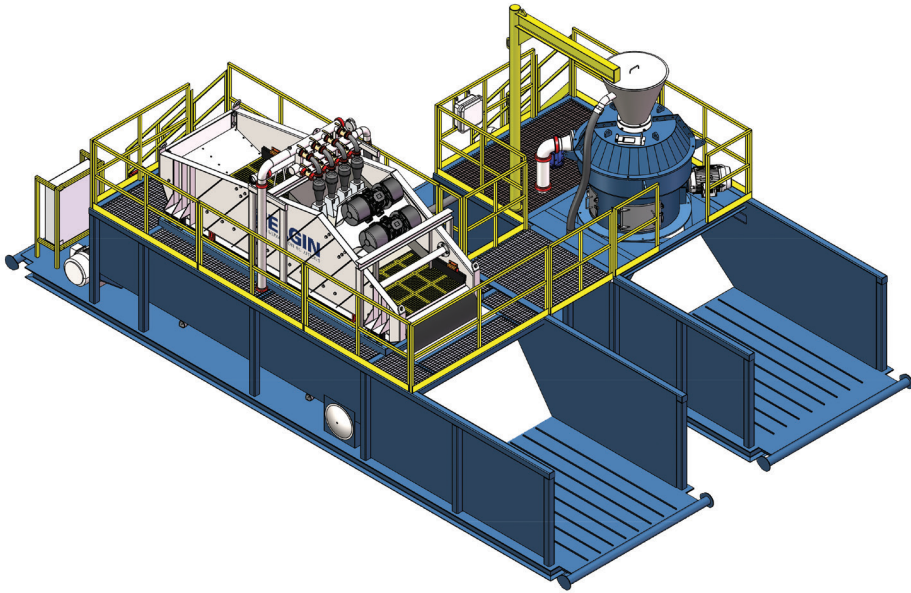
### Optional Winterization Package

When operating in extreme cold environments, Elgin can retrofit each tank unit with immersion heaters to prevent fluid freezing when in standby mode.

- Two (2) flanged immersion heating elements
- 4" 150# flange connection
- 10kw, 480v
- NEMA 7 enclosure
- Two (2) 1-1/2" NPT entrances for electrical wiring



# C CSI-D3™ VCD Package



## Vertical Cuttings Dryer Package Features

- CSI-D3™ dual, direct-drive vertical cuttings dryer
- One (1) 4" x 3" abrasion resistant slurry pump with 25 hp motor for desilter operations
- Integrated CSI-D3™ stand, with HDPE-lined solids discharge trough
- One (1) 1,500 gallons (5678 liters) V-bottom centracte tank with high / low level sensors
- One (1) 5hp agitator for centracte tank
- One (1) NEMA 4X VCD junction box,
- One (1) service jib crane and hoist
- OSHA complaint catwalk, bridge, staircase, and handrails

The VCD Package includes all of the components included in System B with the addition of a separate coarse solids dewatering vertical cuttings dryer package that includes a CSI-D3™ VCD, 1,500 (5,678 liters) gallon V-bottom filtrate tank with wrap-around walkway, service jib crane with hoist, staircase and bridge to System B, 5hp centracte tank agitator, high/ low level sensors, and integrated control system.

With the addition of Elgin's CSI-D3™ vertical cuttings dryer, solids separation down to 250 microns is achieved during secondary stage operations. Fluid from the Mega-G™ primary scalping cut is transferred to the VCD. The clean effluent from the VCD is then transferred back to the hydrocyclone manifold on the Mega-G™ maximizing desilter efficiency separation down to 25 microns. Additionally, the solids discharge from the VCD reduce cuttings moisture by 95% utilizing Elgin's patented dual, direct-drive technology.

Elgin's CSI-D3™ is the only VCD on the market capable of processing water-based slurries without having to change the screen and flite configuration.

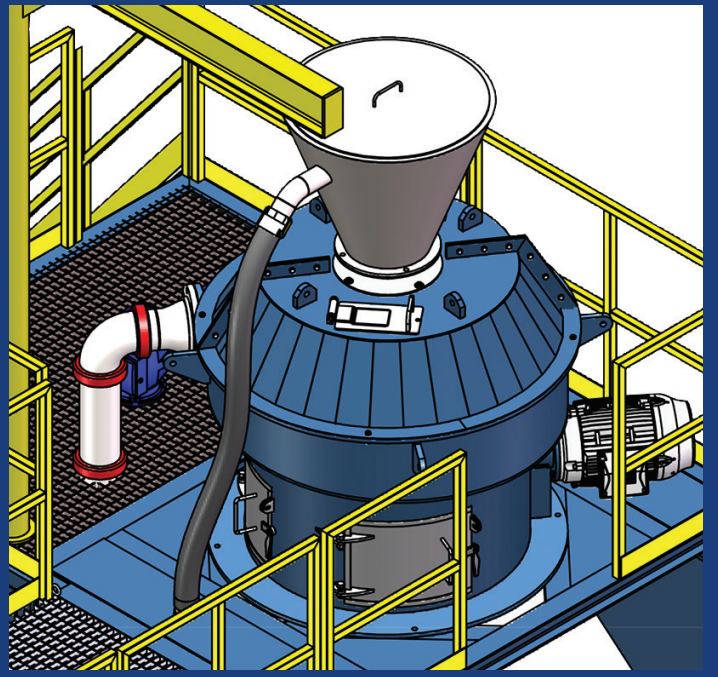
VCD maintenance is made easy with service jib crane and hoist mounted on the top deck. Onboard high/low level tank sensors provide pump automation to prevent run-dry conditions. Control panel communication integration with System A/B utilizing onboard junction boxes. Access to the Mega-G™ shaker platform is accessible via connecting bridge with OSHA compliant catwalk and handrails.

Upgrade to Elgin's CSI-D4™ VCD with patented dual, direct-drive technology for increased processing capacity up to 60 tons per hour.

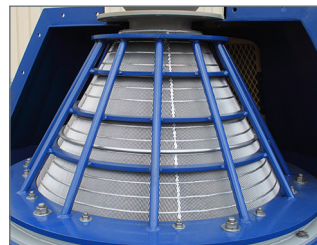


## Perfect Solution for Managing Water-Based Slurries

- Designed to reduce moisture on waste solids by 95%.
- Recover thousands of gallons of fluid that would normally have been disposed of.
- Dewatered waste solids dramatically reduce waste disposal trucking fees.
- Patented direct-drive technology for maximizing liquid / solid separation.
- Reduced maintenance costs and equipment downtime.

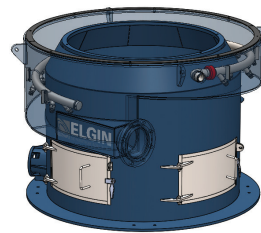


Model Number:	CSI-D3™
Feed Capacity:	30 TPH (500 kg/m)
Maximum G-Force:	300 to 700 G's (VFD) 460V / 60Hz
	300 to 500 G's (VFD) 360V / 50Hz
Screen Opening Sizes:	0.010" (0.25 mm) to 0.020" (0.51 mm)
Gear Box Ratio:	VFD Variable
Screen Surface Area:	7.11 sq. ft. (0.661 sq. m.)
Motor Horsepower:	(1) 25 hp (18.3 kw) & (1) 5 hp (3.7 kw)
Voltage:	460v / 60Hz or 380V / 50Hz 3-Phase (Dual Rated Inverter-Duty Motor)
Electrical Classification:	Class I – Division I VFD Explosion Proof – Group D (Temp. Rating of 55° C)



### Screens

By using a fully TIG welded, hard chromed screen, Elgin customers can experience screen life as long as six (6) months. Screens with a cut point between 250 and 500 microns are available.



### Conical Concentrate Collection Launder

Collected fluids flow more efficiently with cork-screw launder design and significantly lowers the risk of a back-up within the VCD.



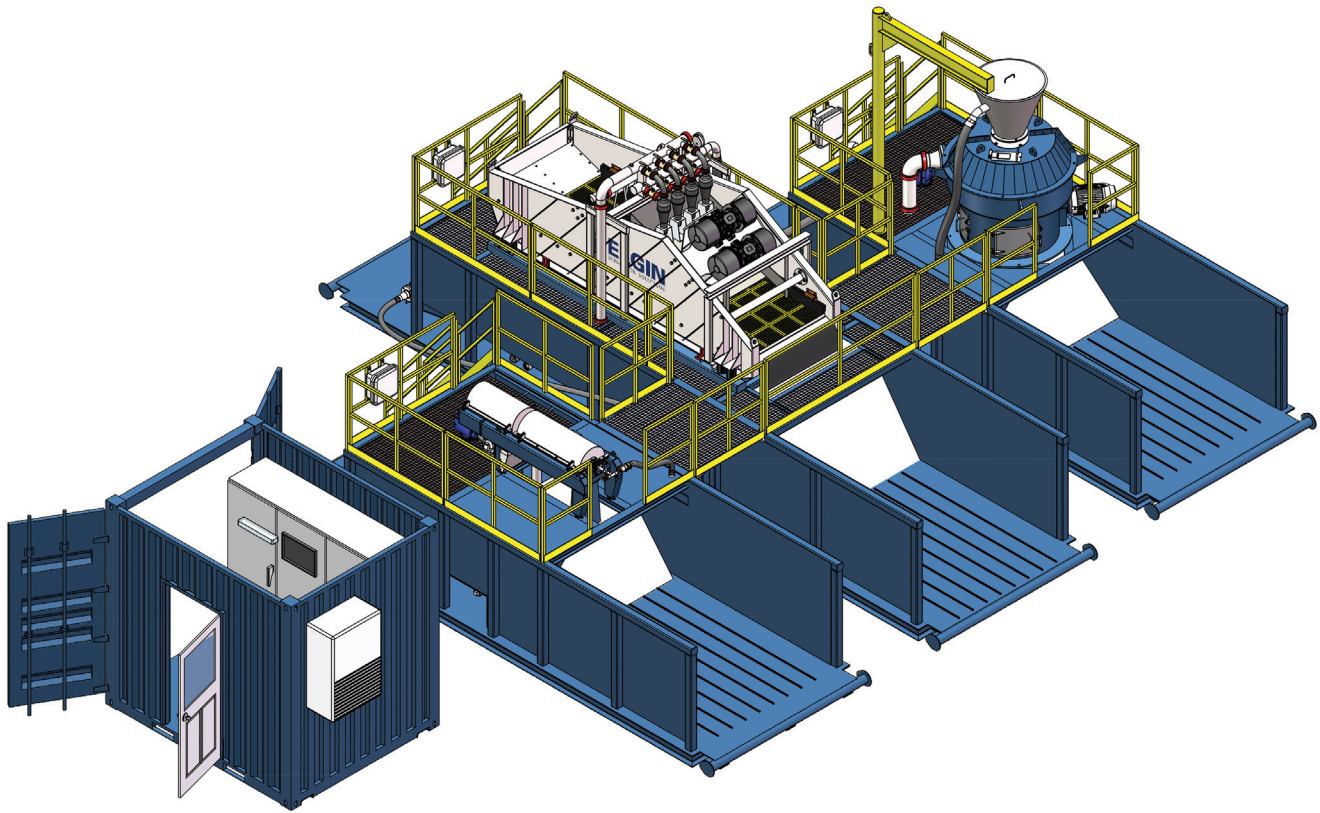
### Spray Nozzles / Bar

By integrating the spray bar into the launder section, Elgin VCD's can withstand longer operating periods between service.





# Decanter Centrifuge Package



The Decanter Centrifuge Package includes all of the components included in System C with the addition of a separate ultra-fine solids removal decenter centrifuge package that includes an ESS-936HD2™ centrifuge, 1,500 gallon (5,678 liters) V-bottom filtrate tank with wrap-around walkway, a 4" x 3" rubber-lined abrasion resistant transfer pump, staircase and bridge to System B, 5HP centrante tank agitator, high and low level sensors, and integrated control system.

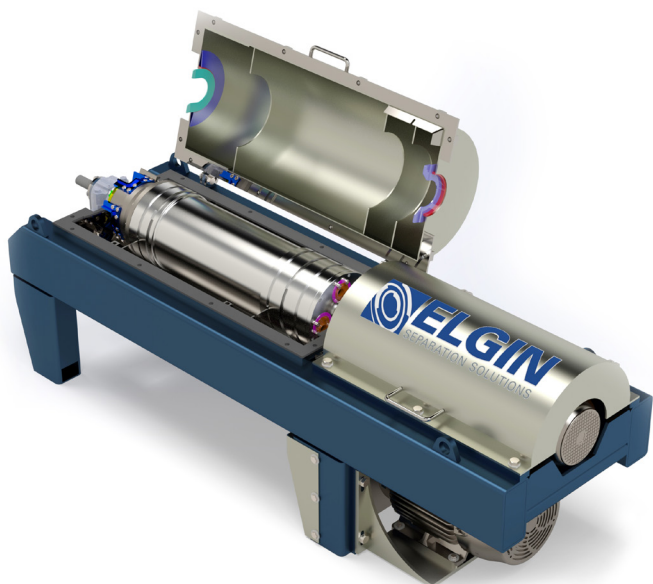
The ESS-936HD2™ decenter centrifuge is designed for low volume separation performance. The slim-line design is ideal for placement in small spaces to meet operational needs. Featuring a 15 hp main drive motor and 5 hp back drive motor, four (4) stainless-steel epicontric liquid-end discharge ports, four (4) wide-mouth solids-end discharge ports, and premium gearbox with 40:1 ratio. The bowl is constructed of stainless-steel with tungsten lined internal conveyor.

Paired with an HMI Touch-Screen VFD control panel, this system offers complete flexibility in adjusting the rotation speed and feed rate for optimum performance during operation.

## Centrifuge Package Features

- ESS-936HD2™ decenter centrifuge
- One (1) 4"x3" abrasion resistant slurry pump with 25 hp motor for centrante transfer operations
- One (1) 3"x3" progressive cavity pump with 5 hp motor for centrifuge feed on Mega-G™ shaker skid
- Integrated ESS-936HD2™ stand, with HDPE-lined solids discharge trough
- One (1) 1,500 gallon V-bottom centrante tank with high / low level sensors
- One (1) 5hp agitator for centrante tank
- One (1) NEMA 4X junction box
- OSHA complaint catwalk, bridge and handrails

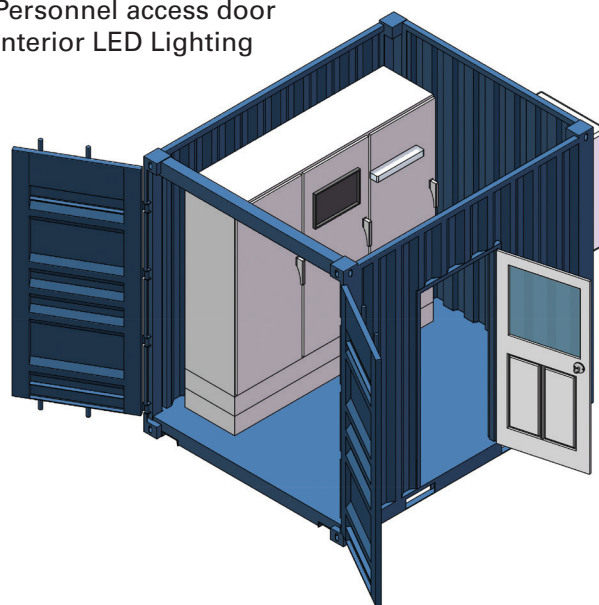




## 10' Containerized Control Room Upgrade



Containerized control room brings together complete operational control of all systems in a single proprietary HMI touch-screen panel. Performance is further enhanced with data logging, routine maintenance alerts, and safety interlock alarms.

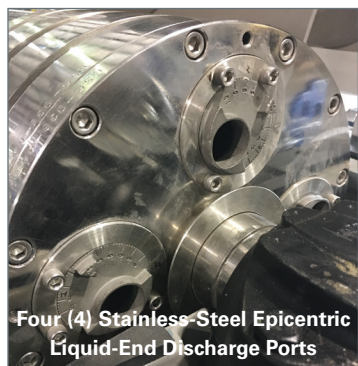
- 10' containerized shipping container
- NEMA 4X stainless steel control panel construction
- Fully insulated with 1-ton dual heater and A/C unit
- Personnel access door
- Interior LED Lighting



Model Number	ESS-936HD2™
Maximum G Force:	2,600 G's
Maximum Speed:	4,500 rpm
Maximum Hydraulic Capacity:	75 gpm (4.7 lps)
Bowl Construction:	Carbon or Stainless Steel
Bowl Diameter:	9" (229 mm)
Bowl Length:	36" (914 mm)
Gearbox Ratio:	40:1

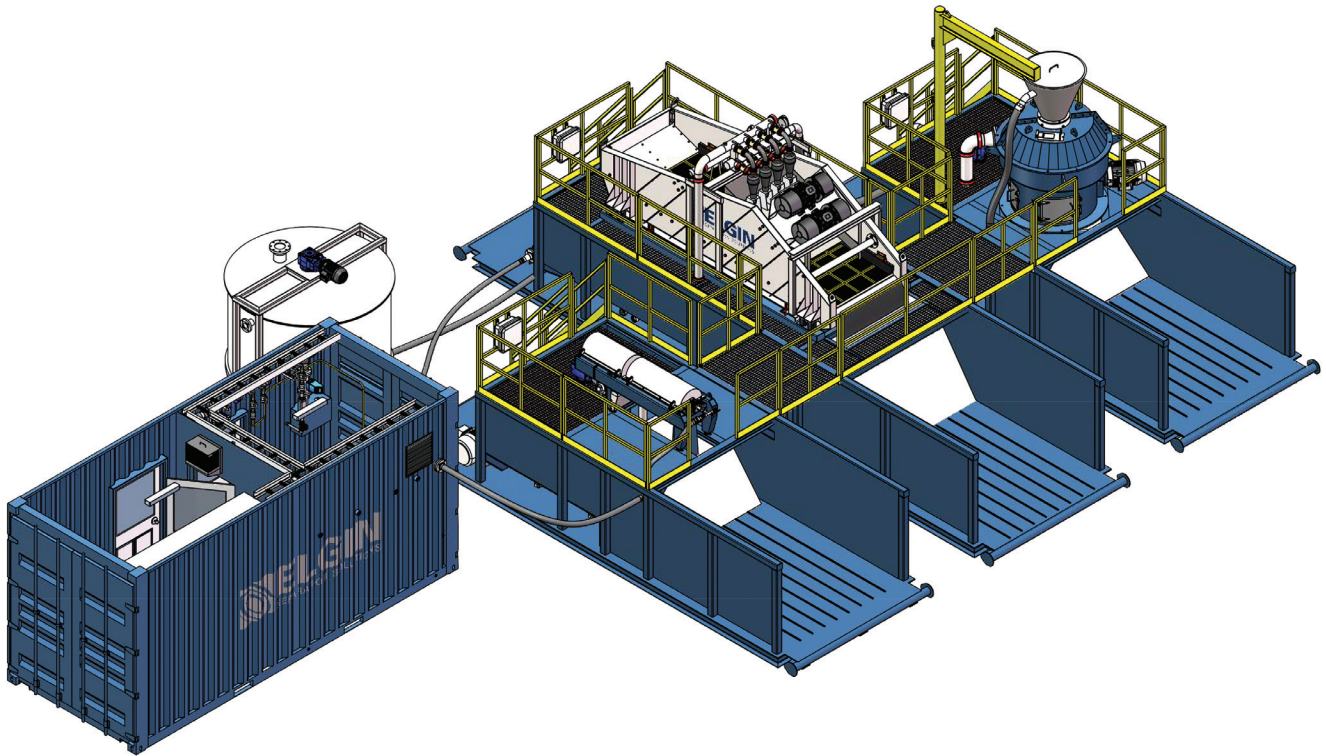
Looking for increased centrifuge processing capacity? Elgin manufactures a full line of high-speed decanter centrifuges capable of processing up to 550 gpm (34.7 lps).

Model Number	ESS-1450HD2™	ESS-1967HD2™	ESS-2272HD2™
Equipment Image:			
Maximum G-Force:	2,100 G's	2,600 G's	2,750 G's
Maximum Speed:	3,250 rpm	3,100 rpm	3,000 rpm
Hydraulic Capacity:	200 gpm (12.6 lps)	500 gpm (31.5 lps)	550 gpm (34.7 lps)





# Polymer Dewatering Package



The Polymer Dewatering Package includes all of the components included in System D with the addition of a polymer injection system and centrifuge effluent collection tank.

Polymer injection is key to efficient liquid/solid separation when looking for dewater in a 'closed-loop zero discharge' environment. Furthermore, the addition of polymers during operation allows the operator to recover water from the fluid.

The Mega-G™ shaker acts as the primary scalping cut. Fluid is then transferred to the vertical cuttings dryer system. Clean effluent from the VCD is transferred back to the desilter hydrocyclone on the Mega-G™. Fluid is then transferred from the clean tank into the polymer injection unit prior to being fed to the ESS-936HD2™ decanter centrifuge for ultra-fine solids removal down to 1 micron in most operations.

## Polymer Injection Package

- 20' high-cube shipping container
- One (1) coagulant tank (400 gallon) with low level sensor
- One (1) flocculant tank (680 gallon) with low level sensor
- One (1) Seepex™ progressive cavity pump for coagulation, 0.05 to 0.5 gpm flow capacity
- One (1) 3 hp 2" VFD controlled progressive cavity pump for flocculation with max flow rate of 5 gpm
- Four (4) 1 hp chemical agitators for coagulant and flocculant tanks
- One (1) 3" mixing manifold with magnetic flow meter, 3 static mixers, 3 independent injection and inspection ports
- One (1) hootenanny with independent inlet for initial mixing / wetting of polymer with water
- One (1) independent freshwater inlet for mixing manifold
- One (1) control panel with VFD controls via HMI touch-screen control panel
- One (1) 2-ton Heater and A/C unit for control room
- Two (2) ventilation fans (one in chemical injection room, one in control room)





Polymer Injection System Technical Specifications	
<b>Container Type</b>	
20' High-Cube Shipping Container	
<b>Control Room/Laboratory</b>	
Yes; Includes Laboratory Wet Chemistry Station	
<b>Container Dimensions</b>	
20' L x 8' W x 9.5' H (6.1m x 2.4m x 3.0m)	
<b>Coagulant Tank</b>	<b>Flocculant Tank</b>
400 Gallon (1,514 Liters)	680 Gallons (2,271 Liters)
<b>Electrical Rating</b>	
460v/60hz or 380V/50hz – Non-Explosion Proof	
<b>Air Conditioning</b>	
2-Ton Heater and AC	

### Polymer Injection System Features

- Fully containerized system with multiple tanks for continuous polymer mixing without system downtime
- Dual injection manifolds allow for fluid processing to multiple centrifuges
- Proprietary control panel with HMI touch-screen interface controls entire system for accurate mixing and processing capabilities

### System Benefits

- Dedicated progressive cavity pumps for polymer injection
- Top-mounted tank agitators
- In-line static mixers
- Flow meter for operation tracking
- Twin-line manifold for multiple fluid feeds



	Mega-G™ Shaker Package	Desilter Package	CSI-D3™ VCD Package	ESS-936HD2™ Centrifuge Package	Polymer Dewatering Package
Mega-G™ Scalping Shaker	✓	✓	✓	✓	✓
NEMA 4X Control Panel	✓	✓	✓	✓	✓
Abrasion Resistant Slurry Pump	✓	✓	✓	✓	✓
Integrated Spray Bar	✓	✓	✓	✓	✓
Tabor-Thane™ Polyurethane Screens	✓	✓	✓	✓	✓
4" Desilter Hydrocyclone Manifold	-	✓	✓	✓	✓
CSI-D3™ VCD	-	-	✓	✓	✓
NEMA 4X VFD Control Panel with HMI touch screen	-	-	✓	✓	✓
ESS-936HD2™ Centrifuge	-	-	-	✓	✓
Progressive Cavity Feed Pump	-	-	-	✓	✓
10' Containerized Control Room	-	-	-	✓	✓
20' Containerized Polymer Injection System with Control Room	-	-	-	-	✓
Wastewater Collection Unit	-	-	-	-	✓