



CSI Cyclone™ Turn-Key Cuttings Waste Management System



The Industry's Most Sophisticated
Waste Solids Management Systems

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



CSI Cyclone™ Turn-Key Cuttings Waste Management System

Elgin's CSI Cyclone™ Fully-Integrated, Turn-Key Cuttings Waste Management System is the industry's most sophisticated waste solids management system available. This system has been designed to reduce drill cuttings and waste solids moisture by >90%. This allows operators to recover thousands of gallons of drilling fluid and/or water that would normally have been disposed of with the waste cuttings. Further, by dewatering the waste solids, waste disposal trucking fees are dramatically reduced. Not only has most of the fluid weight been removed, but the volume of solids that can be loaded into a single truckload can be increased. Finally, by removing the free liquids, solids do not need to be stabilized with polymer binders or stabilization agents. The combination of these three factors, results in a system that can pay for itself within the first year of deployment.

As for the general operation, waste solids are fed into the upper hopper. The hopper itself is fitted with a robust VFD driven screw auger that allows the waste cuttings to be metered into the VCD. Elgin's CSI-D4 Cyclone Pro™ VCD is the world's first patented dual-drive dryer. This technology



Elgin's Proprietary, Rack & Pinion Movable, VFD-Adjustable Feed Hopper

allows operators the ability to adjust the performance of the dryer based on the nature of the solids. Using a proprietary gear box configuration, operators can adjust both the applied G-force and the differential speed between the scraper flites and the screen. This technology allows the CSI-D4 Cyclone Pro™ to be used in both oil-based and water-based environments.

As the solids slurry enters the VCD, free liquids are expelled from the solids via radial acceleration (G-force). A fine profile-wire screen, specially engineered and made by



CSI-D4 Cyclone Pro™

Elgin, retains the larger solids, allowing only fine solids and liquid to pass into the VCD's liquid (a.k.a. centrate) collection zone. The retained solids are scraped from the screen and fall into the VCD's conical discharge chute. The centrate is then collected and gravity drained to a collection tank. The solids that drop from the VCD are routed to a retracting belt conveyor. During operation, the belt conveyor is extended from its resting position and raised into an elevated position using a set of telescoping legs. This allows the solids to be stock-piled, away from the VCD system, or directly into a roll-off or waste containment bin. As for the centrate, it is collected within an agitated collection tank. A bottom drain is then plumbed to a transfer or centrifuge feed pump. Given the concentration of ultra-fine solids within the centrate, a polishing centrifuge is required to recycle the fluid back into the drilling process or active mud system.

The combination of these three factors, results in a system that can pay for itself within the first year of deployment.

All of the noted systems are controlled from a centralized touch-screen control system. This includes the on-board





Elgin's Proprietary Extracting, Fully-Enclosed Belt Conveyor with Telescoping Base Stand

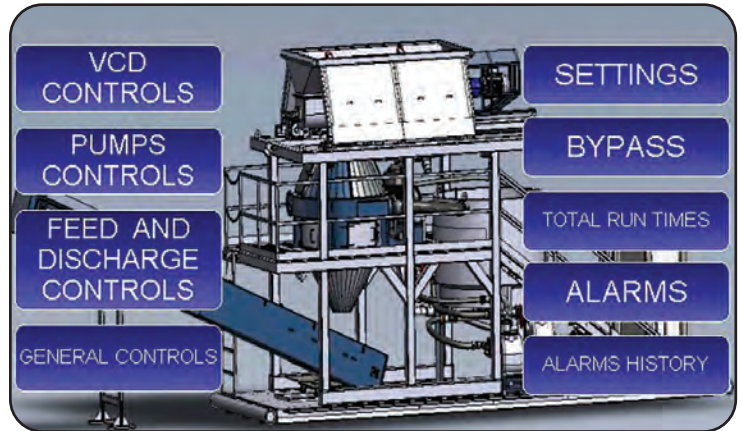
lighting, pumps, conveyors, and the VCD. In addition, a number of safety interlocks have been programmed directly into the system PLC to provide the highest level of system protection. As for the overall infrastructure, Elgin's CSI-D4™ Fully-Integrated VCD Package can be built on a rugged skid or on a trailerized platform. Both configurations include a maintenance and service deck to support the VCD, feed hopper and centrate tank. Further, a complete staircase is provided, along with an secondary emergency ladder. All decks and stairs come fitted with OSHA compliant railings.

No other system in the market can achieve the results provided by Elgin's CSI-D4 Cyclone Pro™ Fully-Integrated VCD Package. More importantly, no other system in the market provides this level of turn-key integration.



Elgin's Sophisticated Centrate Collection System Provides Operators Onboard Transfer Pump, Exterior Level Gauge, and High/Low Level Tank Sensors

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Elgin's Proprietary HMI Control Interface Can Provide Wi-Fi Control of the Entire System

System Benefits

- Designed to reduce waste cuttings moisture on waste solids by 90%.
- Recover thousands of gallons of fluid and water that would normally have been disposed of with the waste cuttings.
- Dewatered waste solids dramatically reduce, waste disposal trucking fees.

System Features

- CSI-D4 Cyclone Pro™ Patented Vertical Cuttings Dryer
- HMI Touch-Screen Control Panel
- Elgin Telescoping Solids Discharge Belt Conveyor
- VFD Driven Screw Auger Hopper Feed System
- Centrate Collection Tank with Mud Gun Agitation, High/Low Level Sensors, and Exterior level Gauge
- Progressive Cavity Feed Pump



Model Number:	CSI-E3 Cyclone™	CSI-E4 Cyclone™
Equipment Image:		
Feed Capacity:	40 TPH (11.11 kg/s)	80 TPH (22.2 kg/s)
Maximum G-Force (Sheave Size Denoted in Inches):	460V / 60Hz 518 (8.0") or 642 G's (9.0") 360V / 50Hz 445 G's (9.0")	460V / 60Hz 403 G's (10.5") or 526 G's (12.0") 360V / 50Hz 426 G's (13.0")
Screen Opening Sizes:	0.008" (0.2mm) to 0.04" (1.0mm)	0.008" (0.2mm) to 0.04" (1.0mm)
Gear Box Ratio:	74:1	71:1
Lubrication System	Oil Sealed Gearbox	Oil Sealed Gearbox
Screen Surface Area:	7.11 sq. ft. (0.661 sq. m.)	13.3 sq. ft. (1.25 sq. m.)
Motor Horsepower:	30 hp (22.71 kw)	75 hp (60 kw)
Voltage:	460v / 60Hz or 380V / 50Hz 3-Phase (Dual rated Inverter-Duty Motor)	460v / 60Hz or 380V / 50Hz 3-Phase (Dual rated Inverter-Duty Motor)
Electrical Classification:	Class I – Division I Explosion Proof – Group D (Temp. Rating of 55° C)	Class I – Division I Explosion Proof – Group D (Temp. Rating of 55° C)
Dimensions (without stand):	7' (2.1 m) L x 6' (1.8 m) W x 5' (1.5 m) H	8.10' (2.5 m) L x 7.3' (2.2 m) W x 5.9' (1.8 m) H
Weight (Without Stand):	4,400 lbs (1,995 kgs)	7,700 lbs (3,492 kgs)

Screw Conveyors

Did you know that Elgin offers a full line of Shafted and Shaftless Screw Conveyors. These systems are ideal for feeding wet cuttings to the VCD or moving discharged cuttings away from the unit for disposal.

Available in 12-Inch or 14-Inch widths in a variety of lengths depending on your operational needs.



Model Number:	CSI-D3 Cyclone Pro™	CSI-D4 Cyclone Pro™	CSI-D5 Cyclone Pro™
Equipment Image:			
Feed Capacity:	30 TPH (500 kg/m)	60 TPH (1,000 kg/m)	90 TPH (1,500 kg/m)
Maximum G-Force:	460V / 60Hz 300 to 700 G's (VFD) 360V / 50Hz 300 to 500 G's (VFD)	460V / 60Hz 300 to 550 G's (VFD) 360V / 50Hz 300 to 450 G's (VFD)	460V / 60Hz 300 to 550 G's (VFD) 360V / 50Hz 300 to 450 G's (VFD)
Screen Opening Sizes:	0.008" (0.2mm) to 0.04" (1.0mm)	0.008" (0.2mm) to 0.04" (1.0mm)	0.008" (0.2mm) to 0.04" (1.0mm)
Gear Box Ratio:	VFD Variable	VFD Variable	VFD Variable
Screen Surface Area:	7.11 sq. ft. (0.661 sq. m.)	13.3 sq. ft. (1.25 sq. m.)	15.5 sq. ft. (1.44 sq. m.)
Motor Horsepower:	(1) 25 hp (18.3 kw) & (1) 5 hp (3.7 kw)	(1) 60 hp (44.74 kw) & (1) 15 hp (11.19 kw)	(1) 75 hp (55.16 kw) & (1) 20 hp (14.71 kw)
Voltage:	460v / 60Hz or 380V / 50Hz 3-Phase (Dual Rated Inverter-Duty Motor)	460v / 60Hz or 380V / 50Hz 3-Phase (Dual Rated Inverter-Duty Motors)	460v / 60Hz or 380V / 50Hz 3-Phase (Dual Rated Inverter-Duty Motors)
Electrical Classification:	Class I – Division I VFD Explosion Proof – Group D (Temp. Rating of 55° C)	Class I – Division I VFD Explosion Proof – Group D (Temp. Rating of 55° C)	Class I – Division I VFD Explosion Proof – Group D (Temp. Rating of 55° C)
Dimensions (without stand):	84" (2,134 mm) L x 62" (1,575 mm) W x 56" (1,422 mm) H	101" (2,565 mm) L x 71" (1,803 mm) W x 76" (1,930 mm) H	101" (2,565 mm) L x 74" (1,880 mm) W x 78" (1,981 mm) H
Weight (Without Stand):	3,900 lbs (1,769 kgs)	8,300 lbs (3,765 kgs)	9,400 lbs (4,264 kgs)

Elgin's engineering team can also provide full plant engineering services for semi-permanent and permanent waste management systems.

Elgin's product portfolio provides a "one-stop" shop for any solids control management or waste management challenge.

