DERRICK®
EQUIPMENT COMPANY

DE-7200™ VFD™ Centrifuge

Part of the Derrick DE™ Centrifuge Series

DE-7200 ADVANTAGES AND OPTIONS

ADVANTAGES

- Electrical control cabinet configured for local/remote, interior/exterior mounting configurations
- Higher operating torque capacity
- Higher throughput efficiency with direct feed pump control
- Conveyor tiles with 93.3 "A" Rockwell scale average hardness installed continuously on flights in high wear area for long life and less frequent conveyor maintenance
- Replaceable tungsten carbide feed nozzles
- Replaceable tungsten carbide solid discharge inserts and case plows
- Direct RPM and torque readouts for bowl and conveyor drive motors
- Direct GPM readout for positive displacement feed pump
- Automatic cleaning cycle initiated during routine shutdown
- Critical temperature points and vibration continuously monitored for abnormal operation
- Rotating assembly speed feedback sensor for precise control and overspeed protection
- Centrifuge suitable for use in Class 1, Division 1, Groups C & D areas
- Troubleshooting and maintenance time significantly reduced with online alarm and fault messages
- Automatic and manual clean-out routines enabling fast recovery from rotating assembly overload

OPTIONS

- Electrical configurations: 400/480/600 VAC input
- Electrical control cabinet available with NEMA 4 (non-explosion proof) rating, U. L. Class 1, Division 1, Groups C & D (explosion proof) rating or European CE/ATEX rating
- Centrifuge available with CE/ATEX rating suitable for operation in the European Union

DE-7200™ VFD™ CENTRIFUGE

INCREASED FLOW CAPACITY THROUGH INNOVATIVE DESIGN

Feed rates up to 500 GPM achieved through innovative bowl and conveyor sections, redesigned discharge ports and a rugged drive system. Bowl and conveyor are manufactured from high tensile strength carbon steel. Liquid and solid bowl heads are machined from forgings while the bowl and conveyor hub are constructed from centrifugally cast stock. The drive system consists of two explosion-proof inverter duty motors. The first is a 150 HP motor connected to the bowl through a 1.2:1 pulley ratio. The second is a 60 HP motor directly coupled to the conveyor gearbox input shaft.

PROGRAMMABLE LOGIC CONTROLLER (PLC)

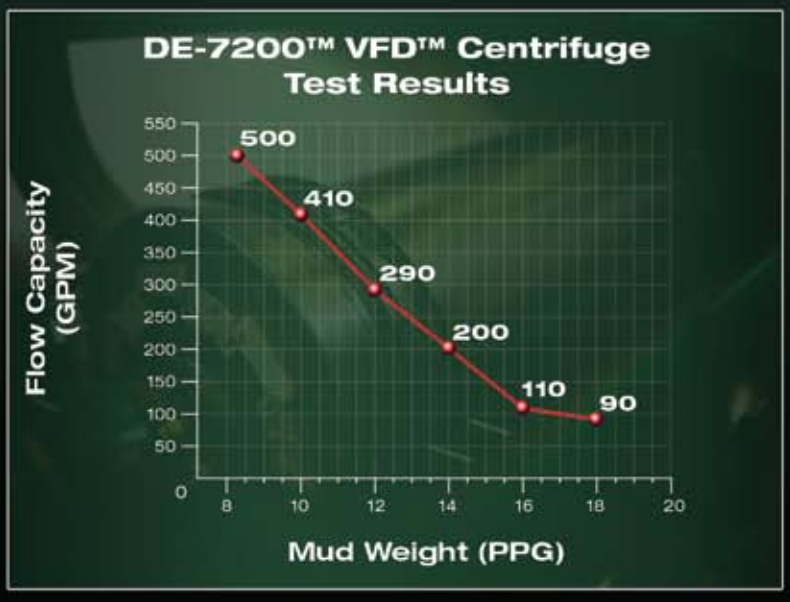
Each motor is powered by a high performance Pulse Width Modulated (PWM) AC drive with Insulated Gate Bipolar Transistor (IGBT) outputs. Each of the motor drives and other peripheral devices are controlled by an environmentally hardened PLC. The PLC and all devices communicate through a high-speed, machine level control network. PLC control offers operating flexibility and short term data storage so that critical parameters can be logged and displayed in trends. In addition, remote monitoring and control of the centrifuge can be accomplished locally or from a control room several hundred feet away.

ULTIMATE FLEXIBILITY IN SYSTEM CONTROL

Automatic load sensing and feed pump control enable automated performance optimization. The bowl assembly can be operated up to 3000 RPM. The conveyor is capable of differential speeds from 1 to 90 RPM accommodating low levels of agitation and rapid solids removal. The operational methodology of the VFD requires the PLC to have complete control over the feed pump through a third AC drive. This enables feed pump control to be automatic or manual. Automatic control maximizes centrifuge throughput by employing a Proportional-Integral-Derivative (PID) loop. This increases feed pump output to the centrifuge until the operator input torque setpoint is reached on either the bowl or the conveyor drive motors. If properties of the feed slurry change, the PID loop will dynamically adjust pump output to maintain the torque setpoint. This enables users to safely and effectively operate and monitor this machine.

DIAGNOSTICS AND TROUBLE SHOOTING

The PLC continuously runs a complete diagnostics program which provides the operator with machine critical status information. Real-time trends of main bearing temperature and motor torque levels can be viewed on demand. Messages inform the operator when minimum and maximum bowl, conveyor and pump speeds have been reached. In the event alarms or faults do occur, a pop-up window immediately notifies the operator and stores the event with a time and date stamp in the alarm history log. Bowl, conveyor and pump VFD status screens provide invaluable realtime drive information for on demand viewing. Continuous monitoring of electronics and machine coupled with predefined safe operating limits make the DE-7200 VFD Centrifuge safe, consistent and reliable for unattended machine operation.



Mud Type:
Water base with 2% drilled solids

Mud Weight:
8.6 - 18 lb/gal

Bowl Speed:
1400 - 2000 (Max. 3000)

Scroll Differential Speed:
38 - 80 (Max. 90)

G-force:
600 - 1220 (Max. 2750)

DE-7200 SYSTEM CHARACTERISTICS AND DIMENSIONS

SYSTEM CHARACTERISTICS

CENTRIFUGE

Type:	Decanter (continuous flow)
Bowl Inside Diameter:	21.5″ (544 mm)
Bowl Effective Length:	72″ (1829 mm)
G-Force Maximum:	2750 G's
Bowl Speed Range:	up to 3000 RPM
Conveyor Speed Range:	1 - 90 RPM

CONVEYOR

Type:	Helical - Radial
Lead Direction:	Left hand
Movement Related to Bowl:	Leading

GEAR BOX

Type:	Three stage - planetary
Ratio:	49:1
Torque Maximum:	88,500 in. lbs (10000 Nm)

ELECTRICAL

Bowl Drive:	150 HP (112 KW) Motor and VFD
Conveyor Drive:	60 HP (45 KW) Motor and VFD
Pump Drive:	30 HP (22 KW) VFD
Control System:	Intuitive color operator interface with PLC control

DIMENSIONS

CENTRIFUGE

Length:	155 13/16″ (3957 mm)
Width:	81 5/16″ (2065 mm)
Height:	Lid open: 62 7/8″ (1597 mm) Lid closed 50 3/8″ (1280 mm)
Weight:	14000 lbs (6351 kg)

ELECTRICAL CONTROL CABINET

Length:	62 1/4″ (1581 mm)
Width:	25 1/2″ (648 mm)
Height:	75 3/8″ (1915 mm)
Weight:	1600 lbs (726 kg)

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