

solutions

Centrifuges The ultimate recyclers



Centrifuges: Horsepower: Up to 4,200 Savings: Up to 20% (Depends on duty cycle.)

Centrifuges use a motor to spin a tube or basket to create an increased gravitational force at the outer perimeter. This causes heavier materials to settle or move towards the outer perimeter with the rate determined by the amount of gravitational pull.

Industry uses centrifuges to separate solids from liquids in either batch or continuous operations. Industries include water & wastewater, oil drilling (where they cleanse the drilling fluid used to carry removed material out of the hole), food processing, and general industry where they are typically used to recycle or cleanse solvents, coolants, and other closed loop system fluids for continued use. Industrial centrifuges move the dirty solution through the drum while spinning the heavier particles to the perimeter. The solution becomes clean and passes out of the centrifuge. Heavier particles build up into a sludge or "cake" until it is scraped out of the centrifuge. Automated removal of solids adds additional motors to the application but dramatically improves productivity. The frequently used decanter centrifuge uses drives and motors on the infeed pump, main bowl, and screw conveyor which pulls solids out of the centrifuge.

Centrifuges have very high inertia yet require high operational rpm's. The combination is a challenging application for electric motors which want to pull 800% or more current until they reach full speed. Traditional across-the-line starting will generally not work for this application.

Look for decanter centrifuges where drives on main bowl and screw conveyor can share energy over a common DC bus for maximum energy savings.

Adding an AC drive, also known as a variable frequency drive (VFD), allows the centrifuge to be accelerated in a controlled fashion to eliminate mechanical stress and over heating. AC drives add the capability to control the speed and relative force applied. They are typically already used to control the infeed pump to optimize system throughput.

CONTROL TECHNIQUES

Centrifuge Solutions

Stopping the centrifuge requires either a very time consuming coast stop or a braked stop. Drives can apply DC current across the motor winding to decelerate the motor.

An AC drive can ramp the motor speed down even faster but the motor becomes a generator and starts transferring energy back to the drive. The AC drive can dissipate the energy into dynamic braking resistors, share it with other drives over a common DC bus, or regenerate it back to the power line. All three configurations provide braking torque to stop the motor. Braking resistors are simple but dissipate heat which adds to air conditioning load. This may be acceptable for continuous process centrifuges but not for larger batch applications which require frequent stops to scrape solids from the basket. A common DC bus is very cost effective for decanter centrifuges or when there is at least one other drive of similar size motoring while the centrifuge is stopping. Full regenerative systems will provide the fastest controlled stops independent of other systems and will put clean unity power factor energy back into the plant electrical system.

Control Techniques can evaluate your application and help you decide which is best for your situation. Control Techniques helps you document energy savings by including a kWh energy, run-time, and running energy cost meters in the drive. Measurement is the first step towards improvement.

Control Techniques has the latest energy savings and integrated control technology. The included PLC functionality, PID controller, and optional advanced machine control modules allow you to eliminate external controls if preferred.

Contact Control Techniques for assistance in identifying energy savings opportunities in your facility.





Drives plus...

World Class Products & Support

- Assistance estimating energy savings
- Worldwide Application & Field Service Network
- 24/7 support line +1 800 893-2321
- Custom software and panel configurations