PULP AND PAPER

Breakthrough Technology for Process Control

...provides innovative sustainable solutions, improves safety and lowers expenses

MagnaDrive™

RELIABLE › EFFICIENT › SUSTAINABLE › SAFE

More than just a coupler

With ever rising cost of inventory, maintenance and energy along with continued safety concerns, MagnaDrive couplings and Adjustable Speed Drives (ASDs) are the answer to many Pulp and Papers process control issues.

We provide a no maintenance replacement to many couplings including processes subject to: vibration, periodic load seizures, pulsating loads, thermal expansion, shock loading, tight spaces and all the safety issues associated with fluid couplings. Our ASD expands upon the mechanical benefits provided by our standard couplings with the added ability to provide speed control on variable torque. This allows the ASD to be applied to centrifugal fans and pumps allowing for process control, significant energy savings, and elimination of problems associated with VFD's, Fluid Drives, and Eddy Current drives.

By eliminating the physical connection between motor and load, vibrations are isolated and reduced so alignment problems disappear, meaning there is no effective wear and tear on the equipment during normal operation. During load seizure or over-torque conditions, the load can be immediately disconnected from the motor. The disconnected, cushioned start is ideal for softly starting and accelerating sensitive, expensive equipment. MagnaDrive ASDs are designed for users of rotating equipment who are dissatisfied with the high Total Cost of Ownership that comes with traditional adjustable speed products. MagnaDrive ASDs are a unique application of rare-earth magnetic technology that provides the Lowest Total Cost of Ownership for our customers by reducing the cost of maintenance, increasing process availability, and improving energy efficiency. In a departure from traditional adjustable speed technology, MagnaDrive Corporation has assembled a portfolio of torque transmission products that reduce vibration and harmonics, thereby increasing equipment life and improving energy efficiency.

The result is minimized life cycle costs of all the equipment, maximized safety and uptime, and the greatest possible return on investment.

Ideal For Applications:

- Vibration Issues
- Pulsating Loads
- Periodic Load Seizure
- Thermal Expansion
- Shock Loading
- Tight Space Constraints
- Higher Starting Inertia/Torque

Benefits:

- No Physical Connection Between Motor and Load
- Eliminates Vibration Transfer Between Motor and Load
- Permits Shock Loading
- Increases Seal and Bearing Life
- Cushioned Start/Stop
- Low Maintenance
- Lower System Downtime
- Accepts Misalignment
- Simple Installation
- Efficient Torque Transfer
- Up to 70% Energy Savings
- Lowest Total Cost of Ownership
- Green Technology

Safe. Rugged. Available. Even in the toughest duty.

Efficient Torque Transfer, Up to 70% Energy Savings, Lowest Total Cost of Ownership, Green Technology

Challenge

A forest products company located in the Pacific Northwest was experiencing repeated failures in their clean condensate pumps.

The repeated failures in their clean condensate pumps occurred due to extremely high levels of vibration in the system that were the result of thermal expansion in the system piping and the pump shaft. Vibration amplitude levels of over 0.4 in/sec (RMS velocity) were literally shaking the pump apart. According to the maintenance crew, the condensate pump was being replaced between three and four times every year as a result of the vibration.

Result

MagnaDrive Corporation installed a magnetic coupling as a replacement for the existing rigid coupling.

Breakeven Point
0.09 years = 1.1 months

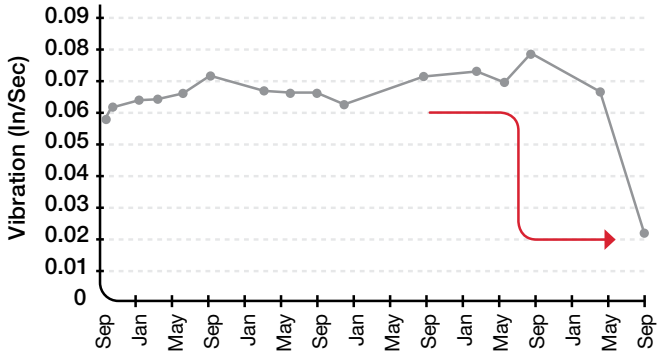
Removal of the original coupling and installation of the MagnaDrive coupling was done without moving either the pump or the motor and took less than an hour to complete. After successful installation of a MagnaDrive coupling the customer reports:

- Vibration levels dropped from 0.431 in/sec to 0.116 in/sec RMS velocity on the inboard side of the pump (down 73%) and from 0.286 in/sec to 0.087 in/sec RMS velocity on the outboard side (down 70%).
- Reduced maintenance due to decreased vibration.
- The pump is lasting longer. Instead of replacing the pump 3 – 4 times each year at a cost of $5,000, the plant has operated over one year with no signs of pump damage!

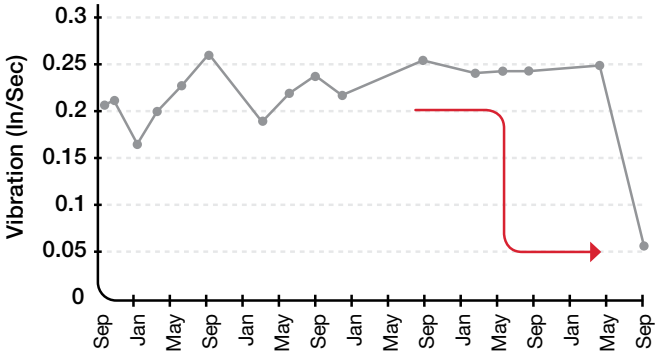
Customer Comments

When asked to summarize their experience with MagnaDrive Corporation, this customer expressed complete satisfaction with both the MagnaDrive Coupling and with the service they received from the MagnaDrive Applications and Sales personnel. Proof of the customer's satisfaction has been shown by additional orders for Couplings.

Vertical Axis Vibration Measurement
75% reduction*



Horizontal Axis Vibration Measurement
80% reduction*



In a real application after the installation of the MagnaDrive coupling, system vibration readings show a 75% reduction in vibration vertically and an 80% reduction horizontally: The MagnaDrive Coupling eliminates the need for precision alignment, a process that is critical for hydraulic couplings. The MagnaDrive Coupling also eliminates the risk of environmental contamination from the hydraulic fluid. Even without taking into account the significant savings from reduced downtime due to the lower vibration levels with the MagnaDrive couplings most customers report an ROI of less than 6 months.

An extraordinary Value for Pulp and Paper Operations

MagnaDrive Couplings for constant or variable torque applications, and ASDs for variable torque applications, are simple, rugged mechanical devices. Because they operate virtually maintenance-free for years at a time, they assure process availability and energy savings 24/7 over the equipment's lifetime. Completely reliable in demanding environments and always durable, they are inherently safe and earth-friendly. In short, there simply is no better solution to fulfill all the requirements of pulp and paper operations.

- Delivers savings in maintenance and operating costs that are not possible with other technologies
- Durable with up to 20+ year lifetime
- No requirement for protection from harsh, humid or dusty environments
- Maximizes uptime for continuous duty operations
- Minimizes vibration
- Tolerates misalignment, increasing equipment life
- Requires minimal infrastructure, simple mechanical installation
- Limited spare parts to inventory
- No endless maintenance
- Does not require special cooling environments, associated wiring and additional power control equipment
- Does not generate harmonic interference that can reduce system efficiencies and interfere with other electronic equipment
- Tolerates "dirty" power and is not affected by electrical storms, surges or drops
- Earth friendly, requiring almost no oil or lubrication and produces no contaminants
- ASDs have no distance limitation
- No inadvertent destruction of VFDs
- No longer need to interlock load disconnect with control system
- Unlike VFDs there is no limit on number of ASDs that can be installed

Green Disconnected Torque Technology

MagnaDrive products continually demonstrate a significant reduction in energy consumption when connected to variable torque equipment. Most of the fans and pumps installed worldwide are oversized by 10%-15%; no engineer wants to run the risk of under sizing equipment! However, when this equipment is oversized, flow must be reduced to reach desired operating capacity. That's why most valves and dampers are always partially closed. This is like running your car with one foot on the gas pedal and the other on the brake; a great deal of energy is wasted. Some operators create a bypass system where the excess flow is returned to circulation; this is also inefficient and consumes even more energy. Another way to reduce flow is to trim the pump's impeller but this reduces the pump's efficiency, can be expensive, and is a permanent change. VFDs (Variable Frequency Drives) are also an option to reduce flow by reducing speed. This can be an expensive proposition, especially since many processes have a fixed load and the VFD ends up operating at one fixed speed; VFD's also do not provide misalignment tolerance or other mechanical benefits. MagnaDrive's standard couplings can be adjusted to reduce the load speed and flow without the expense or waste of other solutions. Where you have a variable load, the MagnaDrive ASD is available. The resulting savings in power can be substantial.

"Green" Energy Saving Product

MagnaDrive Corporation | U.S.
14660 NE North Woodinville Way, Suite 100
Woodinville, WA 98072
425.463.4700

MagnaDrive Corporation | China
89 Jianguo Rd. Huamao Gongyu
Bldg. 4, STE 1506
Chaoyang Dist. Beijing, China 100025

MagnaDrive™

www.magnadrive.com