

WATER | WASTEWATER

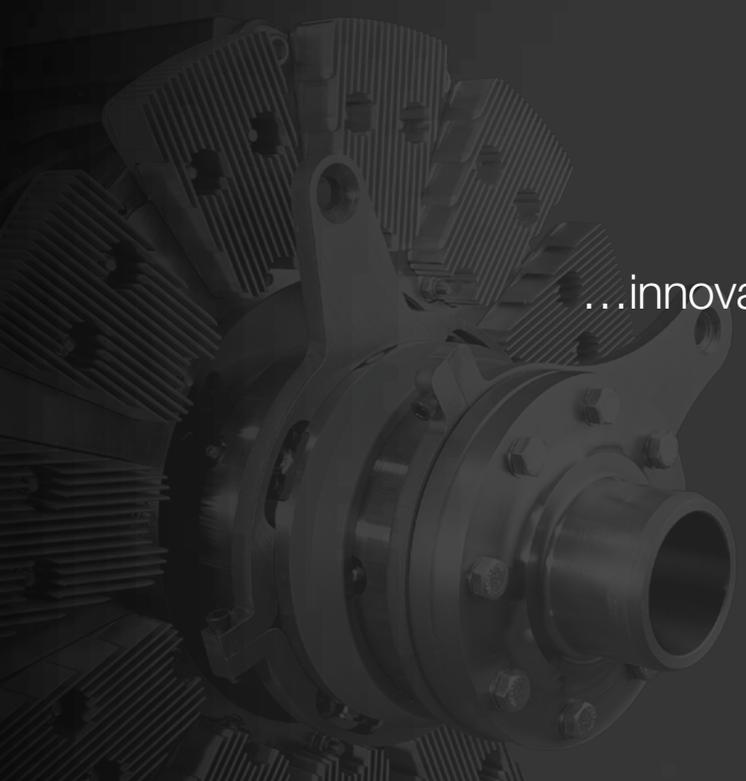


Breakthrough Technology for Process Control

...innovative, reliable, cost effective, sustainable
solutions for rotating equipment

MagnaDrive™

RELIABLE › EFFICIENT › SUSTAINABLE › SAFE



More than just a coupler



MagnaDrive Couplings and Adjustable Speed Drives are unrivaled in providing the highest availability of process with the fastest ROI.

Water and Wastewater operations are always looking for products that increase equipment uptime and reliability, reduce maintenance costs, lower energy consumption and increase energy efficiencies.

With ever rising cost of inventory, maintenance and energy along with continued budget restrictions the MagnaDrive couplings and Adjustable Speed Drives (ASDs) are the answer to many Water & Wastewater 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 providing 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.

MagnaDrive disconnected torque transfer technology for couplings and adjustable speed drives is the right solution for many Water and Wastewater unique requirements.



MagnaDrive robust Couplings and Adjustable Speed Drives are the ideal solution for Water and Wastewater where maximum uptime and equipment life are equally as important as effective, clean, green products with reduced energy cost.

MagnaDrive designs and manufactures rare earth magnetic couplings and Adjustable Speed Drives (ASDs) that are 100% mechanical and improve the uptime and life cycle and reliability of rotating equipment. MagnaDrive patented technology reduces energy consumption, offers a cushioned start, significantly reduces vibrations and lowers maintenance cost, and all with limited wear parts to inventory.

Here are just a few MagnaDrive applications in the Water and Wastewater industry:

Fans & Blowers

- Odor Control
- Water Supply
- Cooling Tower

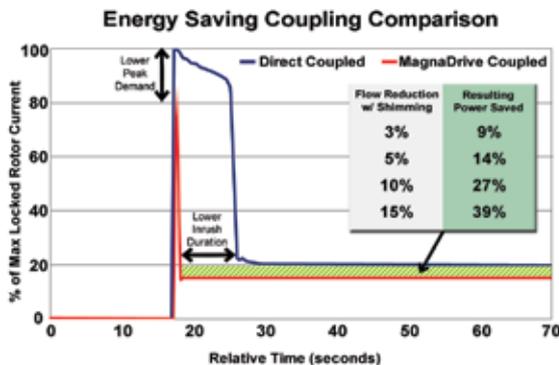
Pumps

- Primary Effluent
- Return Active Sludge
- Raw Sewage
- Water Treatment
- Waste Active Sludge
- Filter
- Slurry
- Turbine
- Wet Well
- Feed

Other Equipment

- Screw
- Chopper
- Hot Water
- Centrifugal
- Vertical
- Filtration
- River Intake
- Centrifuges
- Mechanical Aeration Systems
- Standby Generators

Energy Savings Couplings Comparison



Affinity (or "Fan") Laws

- Torque transmitted and speed are reduced by increasing the coupling air gap
- A 3% reduction in speed and flow yields a 9% energy savings
- A 5% reduction in speed and flow yields a 14% energy savings
- A 10% reduction in speed and flow yields a 27% energy savings
- A 15% reduction in speed and flow yields a 39% energy savings
- Energy savings may be greater due to reduced vibration and misalignment tolerance of MagnaDrive air gap

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
- Accepts Misalignment
- Low Maintenance, Lower System Downtime
- 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.

City Of Eugene, OR – Wastewater Division

Challenge

The City of Eugene, Oregon wastewater treatment facility was experiencing premature wear in the bearings of the gearbox connecting their motor to their double flight, Archimedean screw pump.

Because they were using a belt drive to transfer torque between a 200 hp motor and the gearbox turning a 90 in (2.29 m) diameter, 63 ft (19.2 m) long screw, they were experiencing premature wear in the system's bearings. The lateral forces of the belt drive on the gearbox shaft created an unbalanced load leading to the need for increased maintenance activities.

Result

ROI 3.5 months

The City of Eugene successfully installed their MagnaDrive MGD Couplings and reports the following results:

A 35% reduction in energy required to operate the pump. No wear on bearings resulting from lateral tension of belts, Virtually no maintenance after installation, Longer bearing life, No vibration transmitted between the systems components, High tolerance for system component misalignment, Complete system protection from screw jams due to the MGD's disconnected technology.

When asked to summarize his experience with MagnaDrive Corporation, management said, "The initial price of the MGD was a little higher than other coupling technologies, but when we looked at the total cost of ownership over the life of our system it was definitely the right decision."

Poplar Point Pumping Station – Sludge Pumps

Challenge

The Poplar Point Pumping Station in Washington, DC has been experiencing long term issues with two, 200 Horse Power at 500 RPM motors vertically installed on pumps.

These two pumps are not running at the same time but every 30 to 40 minutes intermittently. When the pumps stop running the sludge pressure builds so fast that the pumps begin to rotate in reverse and the pump shafts eventually break. They have both Check valves and VFDs on the system and had not been able to alleviate the reverse flow difficulties. The issue is so bad they were forced to hire an outside contractor to monitor and operate this station 24/7 because of all the issues they had been experiencing. The cost of the contractor was \$80,000 per month.

Result

Immediate

In February 2011 the Poplar Point Pumping Station installed two 26.5 MagnaDrive Adjustable Speed Drives with non-reversing clutches and has since reported:

Since installing these two non-reversing ASDs this pumping station has become fully automated and no monitoring has been needed. Besides not having the continued maintenance issues with the pumps, VFDs and valves have eliminated the cost of the outside contractor. David Cross, Director/ Organization Development Office of the General Manager, Blue Plains, Washington, DC stated that "since installing the two MagnaDrive ASDs the station has continued running 24/7 and they have saved 2 million dollars."

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 completely thrown away. 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 pumps impeller but this reduces the pumps 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 the 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 do have a variable load, the MagnaDrive ASD is available. The resulting savings in power can be substantial.



"Green" Energy Saving Product

An extraordinary Value for the Water & Wastewater



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 years at a time, they assure process availability and save energy 24/7 over 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 Water and Wastewater operations.

- Delivers savings in maintenance and operating costs that are not possible with other technologies
- Durable with a 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
- Limited spare parts to inventory
- No endless maintenance
- Does not require special cooling environments, associated wiring and additional power control equipment
- Requires minimal infrastructure, simple mechanical installation
- 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
- No longer need to interlock load disconnect with control system
- Unlike VFDs there is no limit on number of ASDs that can be installed

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