The GEARFICIENT program identifies and promotes energy efficient gearing solutions. The goal of the program is to increase the use of energy efficient power transmission products. The GEARFICIENT program sets strict energy efficiency guidelines that precede government efficiency legislation. Grove Gear has worked to determine the rigorous energy performance levels that must be met for a product to earn GEARFICIENT label.

- ✓ Gear reducer exhibits 90% efficiency or greater
- ✓ Up to 60% more efficient than a traditional worm gear product
- ✓ Drop in replacement to a traditional worm gear product
- ✓ Compatible with a premium efficiency motor

gearficient

Reducing Warehouse Energy Costs

Continued from page 1

Worm gear reducers are the most common types of gearing today in the industrial marketplace because of their low initial cost, long service life and ability to withstand high overloads. However, one of the drawbacks of worm gear reducers is their relatively low efficiency: there is a lot of friction caused by the worm gear design and at high ratios this can cause the reducer to be only [approximately] 50 percent energy efficient. Replacing them with in-line helical reducers, for example, offers energy savings from higher reducer efficiency and also provides the opportunity to reduce motor horsepower. Here's why – helical gearing technology delivers a wide range of ratios while maintaining 98 percent efficiency per stage of reduction; helical-bevel right-angle gearing technology delivers efficiencies of up to 95 percent. Conversely, a single stage worm gear reducer's efficiency can be as low as 60 percent.

The reason helical gearing is more efficient is a result of how the torque is transmitted through a rolling action. For a worm gear, torque is transmitted through a sliding action between the worm and the worm gear. This sliding action causes considerable friction and heat, which leads to greater efficiency loss than other types of gearing.

The efficiency of newer products ensures that a high proportion of the energy being input into the speed reducer is multiplied and transmitted into torque rather than being wasted on mechanical losses inside the gearbox. Compact designs are now available to directly interchange to most major brands of worm gear reducers. This provides a unique combination of both compactness and outstanding power transmission efficiencies, and offers the maximum speed reduction in the smallest package.

It doesn't matter whether a distribution center is 100,000 square feet or 1 million square feet, there is a strong business case for sustainable practices and operations: sustainability cuts costs and contributes to operating efficiencies.

About 16 percent of commercial building space nationwide is warehouses, which represents a significant opportunity for improved operations, lower operational costs and reduced climate impact. Energy efficient motors that utilize high efficiency gear reducers help facility managers value these changes not just from an environmental standpoint but from an economical one as well.

1) http://www1.eere.energy.gov/industry/bestpractices/motor_challenge_national_strategy.html 2) Werger, Jennifer. "Food Processing Machinery: Improving Energy Efficiency," Applied Industrial Technologies, Published 2009, Food Processing.com. 3) Fulton, Mike. "Maximizing Energy Savings by Replacing Motors and Reducers," Plantservices.com.

GROVE GEAR
ELECTRA-GEAR

1524 15th Avenue

Union Grove, WI 53182

P: 262-878-1221

E: sales.grovegear@regalbeloit.com

W: www.grovegear.com

ISSUE 2

August 15, 2010

The Gear Gazette

In This Issue

New Plant Manager at Grove Gear

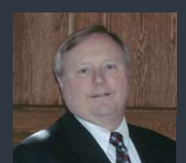
Scott Anderson joined the Grove Gear team as plant manager on April 12, 2010. With nearly 30 years of experience, Anderson brings a solid understanding of all aspects of manufacturing.

Most recently, Anderson was plant manager at General ThermoDynamics. He's held various leadership positions in operations, manufacturing and engineering. He has extensive experience in the Toyota Production System (TPS), the Malcolm Baldrige National Quality Program and the Lean Six Sigma way of life.

Anderson has a Bachelor of Science degree in Mechanical Engineering and a Master's degree in Business Administration from Marquette University in Milwaukee, Wisconsin.

Anderson has a focus on safety, quality and on time delivery and will strive for zero accidents, zero defects and 100% on time performance. As apparent by his goals, he is focused on customer centricity.

Anderson believes, "Sales gets the first order, manufacturing secures the rest."



Scott Anderson

Reducing Facility Energy Costs with Efficient Components

Efficient warehousing and distribution centers are integral components of a business' supply chain strategy, especially in today's competitive global economy. Electric motors are used in everything from driving conveyor belts to operating overhead doors to automated storage systems, and other material handling equipment. Because of the essential part they play in operations, electric motors and accessories are key components to reducing energy and operating costs.

Industrial Sector and Energy Consumption

According to the U.S. Department of Energy (DOE), the industrial sector has been the country's largest energy user, currently representing more than one-third of the country's total energy consumption. One element factoring into this excessive energy use is through electric motors, which account for an estimated 65 percent of industrial electrical use. Additionally, more than $30 billion is spent on electricity dedicated to electric driven systems, of which, nearly 70 percent goes to motor systems.

With the continuing trend of increasing energy demand and rising energy costs, efficiency is extremely important. As you undoubtedly know, electric motors used in warehouses and distribution centers are almost always on, driving the energy bill higher. But what if there was a way to reduce energy consumption and costs while still maintaining the efficiency level? There is; through the use of high efficiency gear reducers, which may be one of the most cost-saving components of a motor system.

When trying to improve overall system efficiency, most people initially look to the electric motor. And while it is true that switching to an energy efficient motor is a smart investment in most cases, this is only part of the overall efficiency equation. According to the DOE, greater attention to motor system management can reduce motor energy costs by up to 18 percent while also boosting productivity, reliability and profitability.

Gear Reducer Options

Rising energy costs dictate the need for energy optimization to help businesses remain competitive. Facility and plant managers are always seeking ways to maximize profitability and minimize total cost of ownership.

Substantial energy and operating cost savings are gained by combining premium efficient motors with highly efficient gearing, and the choice of gearing can have a significant impact on energy usage. Gearing is a common method of speed reduction and torque multiplication; however, during this process the gearing consumes a certain percentage of power. Obviously, as power losses are reduced or minimized, efficiency improves.

Gear reducers are available in numerous materials, styles and configurations, and utilize a variety of gearing, including worm, helical, spur, bevel and planetary. Like motors, high efficiency gear reducers are becoming available to meet increasing standards and efficiency demands.

Continues on page 4

10 Reasons to Purchase Stainless Steel Equipment

1. Cost-efficient with long-term value
2. Low-maintenance, saving labor and repair costs
3. Corrosion resistant
4. Aesthetically appealing
5. Long life expectancy
6. Hygienic, ideal for sterile environments
7. Easy to clean
8. Fire- and heat-resistant
9. Impact-resistant
10. Recyclable and environmentally-friendly

Stainless Steel Gear Reducers Offer a Variety of Benefits

When total life cycle is considered, stainless steel components offer the best investment.

In harsh manufacturing environments, choosing products made from the best materials is imperative to running an efficient and cost-effective operation. In many applications, stainless steel components are the only option. This metal alloy provides a host of benefits over alternative materials.

The initial investment in stainless steel equipment can be costly. While a stainless steel gearbox may cost two to three times more than a cast iron version, in the long run, it proves to be the more economical choice for specific applications. With a life expectancy of up to 100 years, stainless steel can make equipment last twice as long as alternative units.

Painted equipment may chip, leading to a surface covered in rust. To avoid this, facilities can repaint the gearbox and incur repeating labor costs, or replace the unit. Because few remedial measures are required with maintenance-free stainless steel, it is often the least expensive material when total life cycle costs are considered.

Stainless steel gear drives offer superior corrosion protection. Lower alloyed grades of stainless steel resist corrosion in atmospheric and pure water environments and high-alloyed grades resist corrosion in most acids, alkaline solutions and chlorine bearing environments. This is especially valuable in processing plants.

In addition to its functional benefits, stainless steel is also the most aesthetic choice for speed reducers and gearmotors. With managers, customers and government inspectors visiting the facility, its appearance is important. A rusty gearbox gives the impression of a dirty environment, but stainless steel's bright surface provides a clean look. It is available with a variety of finishes, from a rough casting to a highly polished surface, to offer the desired appearance for each application. It will continue to look good through years of service.

In sterile environments, including hospitals, kitchens and pharmaceutical and food processing plants, stainless steel offers a viable solution. Its easy-to-clean surface has no pores or cracks to harbor dirt, grime or bacteria. It is one of the most hygienic surfaces available.

Stainless steel is fire and heat resistant, withstanding scaling and retaining strength at high temperatures. The tough material will also resist impact. In any manufacturing facility, the effect on the environment should always be considered. An environmentally friendly option, stainless steel is 100% recyclable with new stainless steel comprised of at least 50% recycled material.

There are many benefits to purchasing stainless steel gear drives and a variety of manufacturers now offer a line providing different levels of quality. When investing in any piece of equipment there are variables to consider. Stainless steel is available in a variety of grades, with 304 and 316 most commonly used in these applications. Grade 316 is more expensive, but has better overall corrosion resistant properties than Grade 304. It also has higher resistance to pitting and crevice corrosion.

Manufacturers of high-quality industrial gear drives will choose to use 316 investment cast stainless steel for the housing and covers. In addition, they will use the material in all key components, including the shims, output shaft, bolts, plugs and even the nameplate. Ideally, a company will also offer power-matched stainless steel motors. A stainless steel washdown duty motor coupled with the accompanying gear drive is a powerful, high-caliber combination.

The benefits of investing in stainless steel speed reducers and motors far outweigh the initial cost. The longevity and quality of the product will keep machines running smooth, eliminate downtime and increase revenue. Stainless steel products meet many challenges that aluminum and cast iron cannot.

For more information, contact Grove Gear by phone at 262-878-1221 or via email at sales.grovegear@regalbeloit.com. Details can be found at www.grovegear.com.

Reduce. Conserve. Evolve.

Power Transmission Energy Audits Offered

Grove Gear is currently offering power transmission Energy Audits, a strategic approach to energy management. By identifying inefficient power transmission products throughout a facility, substantial energy savings can be realized.

This approach offers a proven energy management strategy that helps in measuring current energy performance, setting goals and tracking savings. During an Energy Audit led by Grove Gear, a skilled professional will show how power transmission products with the GEARFICIENT label can reduce energy consumption and ultimately save equipment users money. Grove Gear will help create a plan for superior energy management that engages the appropriate employees throughout the organization, uses standardized measurement tools, and helps an organization prioritize and get the most from its power transmission efficiency investments.

During a Power Transmission Energy Audit, an Energy Expert may:

- ✓ Take inventory of all gear reducers and motors in product area
- ✓ Provide complete cross reference to energy efficient products
- ✓ Calculate per unit and plant savings
- ✓ Determine ROI
- ✓ Utilize data collection equipment and software to prove savings
- ✓ Work with local utility companies to find available rebates

To schedule a Power Transmission Energy Audit at your facility, contact John Lytle at 262-878-8308 or via email at john.lytle@regalbeloit.com.

gearficient

Frequently Asked Questions

Q: How hot does a gear reducer operate?

A: Gear reducers can generally operate up to 100°F over ambient temperature in normal operating conditions. Even though gear reducers will usually be hot to the touch, they may still be operating well within design limits. The best way to confirm the temperature is with an infrared thermometer. There are also temperature sensitive tape strips that can be applied to the reducer. It is best to measure reducer and ambient temperatures prior to contacting the Factory to determine if the gear reducer is operating within limits.

Q: Can I use a gear reducer as a speed increaser?

A: Worm gear reducers can never be used as a speed increaser because the gearing will lock. Many helical and bevel gear reducer designs can be used as speed increasers, but there are two potential concerns. Heat and noise may become an issue if the reducer does not have adequate lubrication or if the speed is over design limits. Special seals and bearings are typical minimum requirement at speeds over 5000 RPM. It is always best to consult the manufacturer to confirm use of a gear reducer as a speed increaser.

Quality Corner

Tom Gehrand, Quality Manager

The ENVIRO-SEAL feature offers a "Sealed For Life" ventless design option. Recently we have seen several units returned for repair with either twisted or ripped bladders. These components are installed at the factory and sometimes misunderstood. Below are some do and don'ts for bladders.

Do: Order ENVIRO-SEAL units if you want a "Sealed For Life" unit that can be mounted in any position.

Don't: Tighten the nut that holds the bladder to the housing. This is factory installed at 10 inch pounds and loctited. If tightened the bladder will twist and can cause the unit to leak.

Don't: Blow air into the bladder stem or any vent plug. This can cause the bladder to rip due to the air pressure.

Do: Contact your sales representative if you have any questions.

Engineering Update

Hani Al'Moghrabi, Engineering Manager

Staffed with a team of experts, the Grove Gear Engineering Department encourages you to present any gearing challenge. Whether you have a simple modification to a standard gearbox or a more unconventional concept like a speed increaser, our qualified team can assist. Recently a customer wanted to automate a metal hole punch, a job historically done manually with a substantial amount of force and effort. After consulting with Grove Gear, a laborious task is now easy because it is powered with a hand-held drill. No matter what project you are working on, our team of experts is here to help.