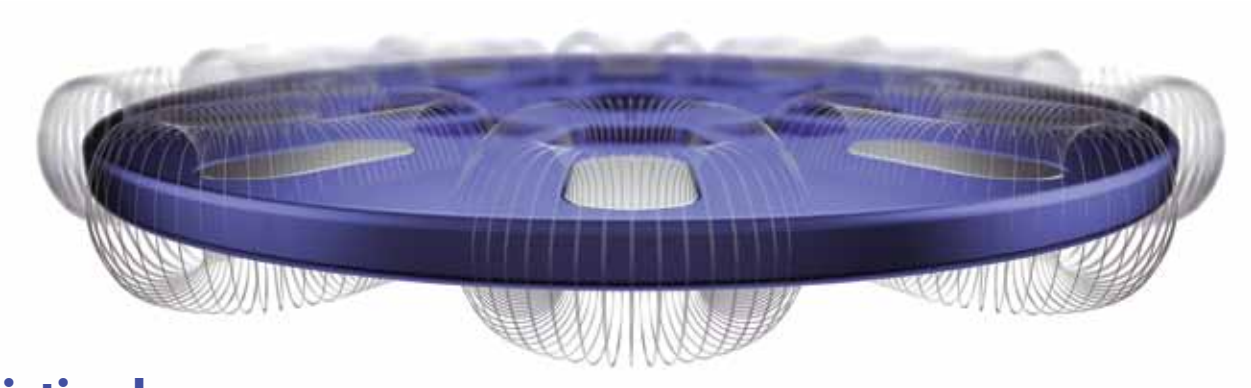
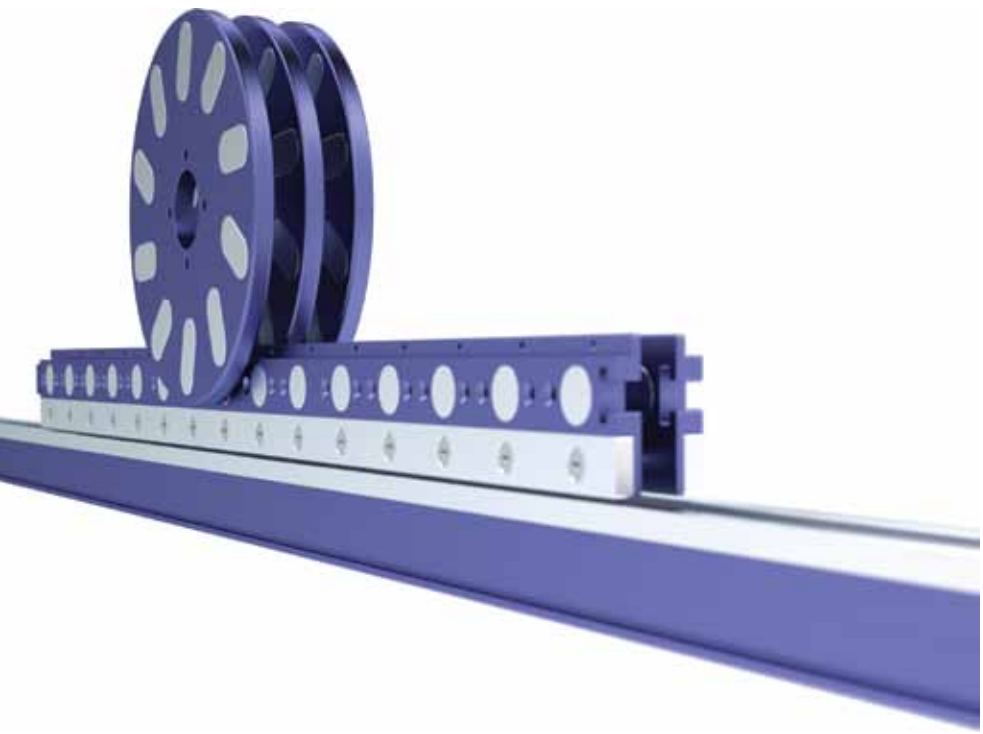


Frictionless, Magnetic Gears and Couplings

GAIN TRACTION

The Magnetic Gearing and Turbine Corp. (MGT), founded by Australian inventor Andrew French in 2000, manufactures injection molded gears and couplings based entirely on magnetic technology. The repulsive magnetic forces are used to transmit power without losing any energy, and drive shafts rotate completely independently of each other. The frictionless gearing and coupling systems operate with higher efficiency, much less maintenance and with little to no risk to the operator, French says.

Lining the circumference of each gear is a series of rare-earth, neodymium magnets, which are stronger than the standard equivalent and more heat-resistant. The gears can be stacked up to transmit large amounts of torque, like having three or four belts on one shaft. The MGT technology has made inroads in various industries including solar water pumps and agricultural machinery, but many other applications are possible.



The latest product from MGT is a DIY (do-it-yourself) range, which does not require installation by trained and authorized MGT agents and suppliers as the other industrial ranges do. This factor makes the DIY range significantly simpler than typical electromagnetic couplers. "They are only 10 mm thick, so they are not too dangerous for people to handle with no experience," French says. "They are the same gears we use on our solar pump range, and they can transmit up to 108 Nm with the 12 disks as a coupling. People can couple or use them as gearing around the farm or in the workshop. Also, a lot of OEMs can use them instead of belts or pulleys or as a coupling in the machines, vehicles, pumping systems, or anything they make."

The industrial range is 20 mm and more in thickness, so they can be dangerous if users don't know what they're handling. The only thing required to use the DIY range of gears and couplings is a basic mechanical understanding. "The DIY market is for farmers, workshops, one-off engineering jobs, water pumps, hydraulics, compressed air, robotics, small production lines and industrial applications; electric boats, electric cars and any other small applications," French says.

Five standard sizes are available, as are custom designs. The standard

magnetic wheels can be used either as gears or couplers. If the system is overloaded, it simply slips, avoiding potentially dangerous situations. Coupler faces don't touch, so no vibrations are transmitted.

The DIY range was tested to consume 22 percent less energy than a belt drive, as assessed by Sydney University and also in South Africa, by using the same MGT Solar Water Pump running with belts and pulleys against magnets. Other tests have been performed by Torque Test, in Holland, which could not define the difference between 99.9 percent and 100 percent efficiency. "This is unheard of, and most people would think it impossible," French says.

"It was believed that losses must occur, but no losses could be found."

The MGT technology has great potential for the mechanical power transmission industry and competition is steep. "We have covered and patented every possible magnetic drive, including linear drives, 90 degree bevel drives, transmitting power through walls, electro-magnetic drives and many more," French says. "We have five different patents, our first two have been granted in the U.S. and other countries, and three are still pending. We know we have companies copying our technology at present, and we intend on taking action to stop them over the next 12 months as we release our products."

MGT is pursuing other uses of the technology aggressively. Sometime this year French anticipates releasing a magnetic, frictionless gearbox for the electric car industry. MGT is also involved in plans to build an International Solar Showcase in Koh Samui, Thailand, which will demonstrate the best solar technology. Developing future transportation systems are also on MGT's radar, such as small electric taxis, like those common in Bangkok. Planetary gear drives for wind turbines are another possible use for the industrial range, since gearbox reliability issues are so critical in the industry.

In discussing the limitless nature of applications possible with magnetic gear systems, French expresses great passion for his technology and its potential. "There is so much more for mankind to explore."

For more information:
Magnetic Gearing and Turbine Corp.
Millenium Park
Pacific Highway
Via Karuah
NSW Australia 2324
Phone: + 61 (402) 383-352
Fax: + 61 (2) 4997-3073
sales@mgt.com.au
www.mgt.com.au

Safety-Oriented Rotary Encoders

FEATURE SMALL FOOTPRINT

Heidenhain Corporation's 1000 Series rotary encoders offer IP 64 protection, absolute position-value formation and functional safety in a 35 mm diameter housing size. These encoders are designed for single-encoder measurement feedback systems in safety-oriented applications.

The 1000 Series encoders with functional safety produce two independently formed position values by means of a serial EnDat interface. They meet EN ISO 13849, EN 61508 and EN 954-1 standards for performance level d, safety integrity level two and category three, respectively. The EnDat 2.2 version with serial data transfer provides a single-turn resolution of 23 bits and a multi-turn resolution of 12 bits. Supply voltage ranges from 3.6 to 14 volts. The 1000 Series is made up of eight rotary encoders.

For more information:
Heidenhain Corporation
333 E. State Parkway
Schaumburg, IL 60173
info@heidenhain.com
www.heidenhain.com