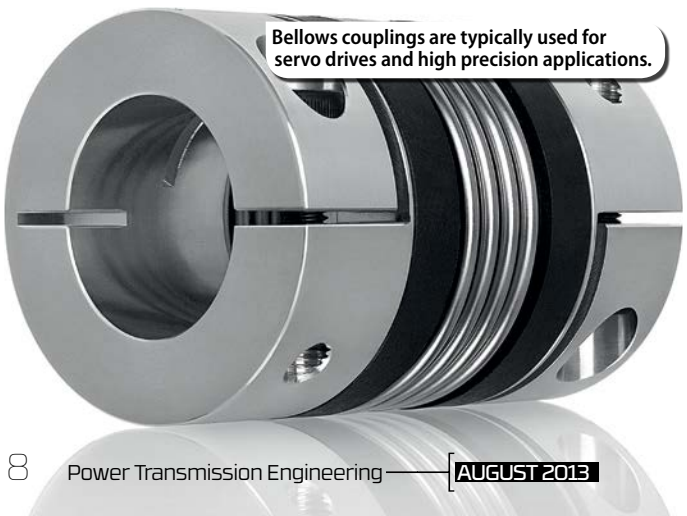
R+W

INTRODUCES SURVIVOR SERIES OF FLEXIBLE DISC PACK COUPLINGS

The concept of fatigue resistance in flexible shaft coupling design has been highly valued by R+W since its inception in 1990. For much of its first two decades in business the company focus was almost exclusively on couplings for high performance servo drive technology. When it comes to machinery that utilizes this type of equipment, professionals at all levels know that shut down for maintenance can be extremely costly, and that unplanned downtime can have catastrophic effects on the profitability of a process. When properly applied, the flexible bellows coupling addresses this and a great number of other concerns in support of high speed, high accuracy machinery. In addition to fatigue resistance it offers the benefits of high torsional stiffness, low moment of inertia, and continuous symmetry, all of which lend themselves very well to motion systems involving rapid indexing and high precision positioning – essentially making it the first choice for servo drives. As R+W has continued to grow and add couplings for higher powered industrial drives to its portfolio, the need for a different type of fatigue resistant metallic coupling has become apparent. In 2013 R+W is introducing its Survivor series of flexible disc pack couplings. Not to be confused with a servo coupling, the flexible disc pack coupling is suited for many of the most demanding industrial power transmission systems.

More than just servo driven machinery demands reliable performance. Engineers in the petrochemical, power generation, steel and paper industries, to name a few, might consider that to be a laughable statement, and might also agree that reliable operation of their equipment is more critical today than ever. Designed to protect drive shafting, bearings and gears from stress related to misalignment and structural changes, a flexible shaft coupling is necessarily subject to a very large number of bending cycles in its life. More traditional designs require either periodic lubrication or replacement of wear parts in order to help relieve this kind of stress. But this kind of frequent maintenance is simply unacceptable in some critical installations. Metallic flexible couplings are a category which is typically designed with the intent to fully eliminate wear, based on the principle of fatigue resistance.

Material fatigue results from a certain number of stress cycles at a certain stress amplitude. In a flexible coupling this



Bellows couplings are typically used for servo drives and high precision applications.

Disc pack couplings are well suited for demanding power transmission applications.

essentially means the number of shaft rotations at certain levels of misalignment and torque. In the case of ferrous materials, when the stress amplitude is known and kept below the fatigue limits of the flexible element in the coupling (i.e. the misalignment and torque ratings), any number of cycles can be tolerated without fatigue. The goal is infinite life for the product.

R+W has been applying this concept to maintenance free bellows couplings for many years on its mission to deliver efficiency through coupling design. While the metal bellows coupling is often scaled up into the megawatt drive power ranges for applications which demand its specific characteristics, many industrial drive applications do not involve the dynamic motion profiles of servo systems, and tend more toward continuous forward rotation. In this category, as loads become larger and drivelines more power dense, a different set of shaft coupling characteristics can come into focus as being more suitable. There are some distinct features of the R+W version of the steel disc pack coupling, the most notable of which makes further advancements toward the goal of infinite service life. R+W Survivor series couplings transmit torque across the disc pack assemblies purely by friction. A series of bushings are pressed together by R+W to assemble the disc packs, while precision locating features in the hubs and spacers present a concentric fit. The bolt assemblies are then tightened through the hubs, spacers and bushings to generate the necessary clamping pressure across the faces of the disc packs to transmit all of the power by friction. This purely backlash free friction fit serves to eliminate problems associated with stress concentration, backlash, and micro-movements, all of which can result from transmitting torque across the shanks of shoulder bolts. The frictional connection of the disc packs further increases service life, in addition to making the complete coupling assembly more torsionally stiff.

The first generation of LP-Survivor series couplings consists of both single and double flex versions to mount by keyway and set screw (LP1+LP2), a double flex version with precision conical clamping ring assemblies (LP3), and a special API 610 version (LPA) which meets all of the stringent requirements for critical centrifugal pumping applications. Two standard spacer lengths are available for each double flex version, with full customization of dimensions and materials available, depending on the specific application

requirements. As with all R+W couplings, the LP couplings are available with either imperial or metric bore diameters ranging from 18 to170 mm (~¾" to 6-5/8") and with torque capacities ranging up to 20,000 N-m (177,000 in-lbs). Whatever the requirements may be, an R+W coupling expert is available to help in the sizing, selecting and customization of the ideal high performance shaft coupling for your requirements.

For more information:
R+W
Phone: (888) 479-8728
info@rw-america.com
www.rw-america.com

Brevini Power Transmission

OFFERS DRIVE SOLUTION FOR THEME PARK

Brevini Power Transmission has supplied a new motor and gearbox package to a theme park in the United Kingdom. The project required a compact drive arrangement to provide power to the rotating ride which could be delivered within a short lead time to suit the tight build schedule.

The Fireball ride, located at The Adventure Island Park in Southend on Sea, Essex, has provided thrills to thousands of children and adults alike. The ride, which stands 9 m tall, consists of a tower which holds a rotating hub with eight arms; each arm has a double seat attached to the end of it. It was designed and constructed by the park's own in-house engineering team, Adventure Island Workshop, who asked Brevini Power Transmission to supply the main drive unit.

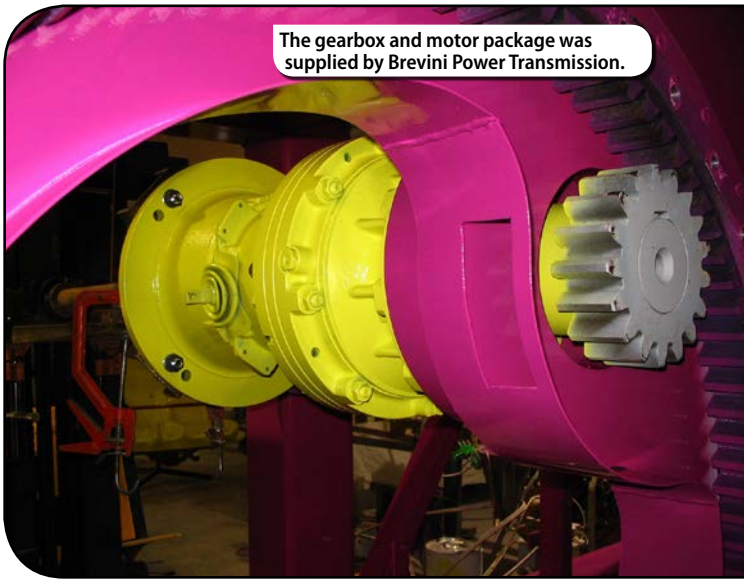
Brevini specified a High Torque S-series reduction gearbox coupled to an electric motor, which allowed the drive system to fit within the main framework of the design. In addition, Brevini was able to ensure the components were delivered on time to meet the build schedule of the ride.

The gearbox and motor arrangement is mounted directly to the main frame of the ride using the motor foot plate and the drive end flange. This design meant that the drive assembly had to be as compact as possible while still being capable of producing the power required. The drive also had to meet the rigorous safety standards demanded on amusement park rides.


The Fireball is located at The Adventure Island Park in Essex, England.

The S-series planetary range has been designed to give optimal performance with minimum size and has the ability to offer a 40–60 percent reduction in terms of size and weight against traditional gear solutions. The result is an extremely robust and yet cost effective solution. The range now spans a torque range from 1 kN-m up to 2,500 kN-m, with larger variants available on request.

S-series gearboxes can provide up to four reduction stages as standard, with both in-line and right-angle versions. Additional reduction stages can easily be incorporated to achieve extremely high reduction ratios while maintaining a high overall efficiency. Output shaft options include female splined, hollow cylindrical, male cylindrical and male splined versions. The gear unit input can incorporate a multitude of different motor adaptions (electric, hydraulic, etc.); can incorporate a multidisc brake; and can of course be a simple male shaft. A wide range of input and output accessories is also available.


The gearbox and motor package was supplied by Brevini Power Transmission.

Brevini is also involved in the maintenance and replacement of drive systems in other theme parks, such as the Pleasure Beach in Blackpool, where it has repaired and replaced various gearboxes in many of the U.K.'s most famous rides. In each case a specialist engineer from Brevini inspected the gearbox and ascertained which should be repaired and which would be more cost effective to replace.

For more information:
Brevini Power Transmission U.K.
Phone: +(44) 1925-636682
www.brevini.co.uk

Ruland

EXPANDS RANGE OF COUPLINGS

Ruland's coupling line includes rigid couplings with precision honed bores and five types of zero-backlash couplings: beam, bellows, disc, jaw and Oldham. This complete range of options gives customers the ability to select the proper coupling based on their design parameters. Ruland has experienced sales and engineering teams with extensive application knowledge in the USA, Europe and Asia to help customers identify the best coupling solutions.

Ruland services many high tech industries including semiconductor, solar, medical, food, packaging, printing, labeling, linear and petrochemical. Each industry requires couplings to have different performance characteristics. Beam and Oldham couplings are good choices for applications that require higher amounts of misalignment with zero-backlash performance, while bellows, disc, and jaw couplings are ideal for applications that require high accuracy, repeatability, and zero-backlash. Rigid couplings are a good fit across many industries, provided there is no misalignment, as they are the stiffest, most accurate, and available in the widest array of sizes, styles and materials. Ruland couplings feature a balanced design that allows them to run at higher speeds with reduced vibration.

Bellows couplings are typically used for servo drives and high precision applications.

"Special couplings can be manufactured based on customer requirements if a standard offering is not suitable," explains William Hewitson, Ruland's vice president of operations. "Our engineers will work directly with customer engineering teams to build a coupling that meets specifications and minimizes cost." Prior specials include custom bore tolerances and geometries, materials for high temperature and chemical resistance, custom screw sizes for installation standardization, 303 or 316 stainless steel coupling hubs for corrosion resistance, and many others.

Couplings are part of Ruland's complete product line, which features a wide variety of shaft collars, including one- and two-piece clamp-styles, threaded, heavy duty, double wide, and keyed. Ruland has recently released quick clamping shaft collars for easy adjustment without tools, and washdown shaft collars for food processing and other hygienic applications. More new shaft collar styles will be released in 2013 to better match customer needs.

"All products are manufactured in our Marlborough, Massachusetts factory for manufacturing flexibility, control of proprietary processes, and to allow for a high level of service. Raw materials are sourced from specified mills to ensure the consistency, integrity and performance of the finished product," adds Hewitson.

For more information:
Ruland Manufacturing Co., Inc.
Phone: (508) 485-1000
www.ruland.com

Bauer Geared Motors

POWER UNDERGROUND MONORAIL

A large hospital complex can often resemble a small town in its size and complexity; many separate wards are joined by a narrow corridor system where the smooth transfer of supplies is often interrupted by busy doctors and nursing staff. One of Europe's largest hospitals has solved the problem with an automated underground monorail that supplies medicine, food and linen with minimal effort and at low cost. Bauer geared motors drive the vehicles and operate the track points.

The hospital in question, located in Southeastern Germany, now employs over 8,000 staff who work in 110 wards, providing healthcare to almost 55,000 in-patients each year. With each ward needing regular supplies, it is vital that the hospital's logistics model is as modern as its medical equipment. It is for this purpose that there is a complex network of underground tunnels under the University, one that has been developing since the 1920s.

The tunnel network was first built to allow service staff to push supply carts between wards without holding up the medical activity taking place above them; the network has continued to grow over the years and now stretches to 6.7 km in total. As the hospital has grown in size, so too has the delivery system grown in sophistication, and in 1969 a monorail system was implemented to speed up the delivery process.

The hospital regularly invests in new technology for the tunnel network. This investment has led to the automation of the monorail by one of Germany's leading transport technology experts. The automated rail system is now able to deliver meals, medicine and linen from nine dispatch stations to 101 destination stations around the hospital, making 16,000 trips per week. Labor costs are kept to an absolute minimum as the entire network is operated and maintained by a team of eight people.

With such a small team manning a system whose smooth operation can quite literally mean life or death, it is important that all the components on the vehicles and rail system offer superb reliability and long life. Geared motors from Bauer, part of Altra Industrial Motion, have been specified to drive the vehicles and operate the points.

A member of the team tasked with updating the tunnel system says: "When a problem occurs with the monorail, a supervisor has to cycle to the point of the problem to repair it; we try to make sure that these problems are as infrequent as possible. There are 140 vehicles in operation on a track with many points along the way. Some of the first Bauer drive units to be used are now nearly 40 years old and still running

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smoothly, it is very rare that they provide the team with a source of exercise, so it made sense to us to continue to specify Bauer units as the newer parts of the system were being developed."

To operate safely and efficiently, the vehicles need to accelerate smoothly to a pre-determined velocity, even when loaded with heavy supplies. Bauer's BG series of helical geared motors were used as they offer torque values of up to 18,500 N-m with high output speeds. The motors can be easily integrated with an inverter to ensure that the acceleration curve is constant in every journey. The gears are designed with ingress protection of up to IP66 and lubricant changes are only required after 15,000 operating hours, which is ideal for an application located underground.

At various stages throughout the rail network, the points are driven by Bauer BF shaft-mounted geared motors, BK bevel geared motors and BS worm geared motors for lower speed applications requiring higher torque values.

For more information:
Bauer Gear Motor
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IMx systems can run on an existing LAN or WAN and network with computers, printers, and servers, or over the Internet.

For more information:
SKF USA Inc.
Phone: (267) 436-6000
www.skf.com

Rexnord

INTRODUCES THOMAS XTSR DISC COUPLINGS

Rexnord recently introduced its new Thomas XTSR52 and XTSR71 Disc Couplings. "Committed to evolving with customers and their needs, Rexnord has advanced the Thomas Series 52 and 71 with the launch of the Thomas XTSR Disc Coupling offering," explains Santanu Debnath, director, commercial operations, coupling. The Thomas XTSR Disc Couplings are used by rotating equipment engineers in industries such as oil and gas, petrochemical and power generation.

Combining compact size and powerful performance, the Thomas XTSR52 and XTSR71 provide customers with:

- Optimization for the industry — the offering features higher torque, lower mass and an all-metric design.
- Simple installation and maintenance — the combination of modular components, ability to retrofit to Thomas and John Crane Metastream hubs, tapered bolts, unitized disc pack, integrated balancing hardware, and clear product markings, allow for ease of installation and maintenance.
- Strengthened operation and safety — multiple features, including an anti-flail ring, overload bushings, standard manganese phosphate coating and optional torque overload protection system provide increased equipment operating safety.

"We continually seek out customer needs and find ways to add value to the Rexnord coupling product line that our customers demand, and this new design has helped us achieve that," explains Michael Skowronek, director, global portfolio management, bearings and global coupling.

For more information:
Rexnord
Phone: (414) 643-3000
www.rexnord.com

Aerotech

OFFERS RANGE OF ADDITIVE MANUFACTURING SYSTEMS AND COMPONENTS

Additive manufacturing and 3-D printing are set to revolutionize multiple areas of technology and manufacturing. The dispensing of compounds and coatings requires a 3-D motion system to move either the printing head or the substrate with up to six degrees of freedom. Overall system accuracy and throughput are vitally important to creating complex structures with a commercially viable process.

Component to custom system-level solutions

Aerotech offers a full range of additive manufacturing motion systems and components to fit any application. Aerotech manufactures motors, drives and motion controllers that can be used to develop a customer's own system. Aerotech's selection of linear, rotary, lift and Z-

axis stages and goniometers are complemented by advanced drives and controls. Aerotech also manufactures a variety of linear motor gantry systems that are available with all electronics and a machine base and are ready to produce immediately upon installation.

A variety of choices to suit your needs

Whether the customer requires the speed and accuracy of a ball-screw or linear-motor solution, Aerotech can provide the best choice for a particular application. Controllers are available in both stand-alone and software-only versions with from 1 to 32 axes of synchronized control. Aerotech offers both mechanical and air-bearing stages, depending on the requirements. Motors can be brush, brushless, torque, linear or rotary. Steel or granite machine bases are available and easily integrated into the system. And of course, Aerotech can engineer and build a custom system designed to exact specifications.

For more information:

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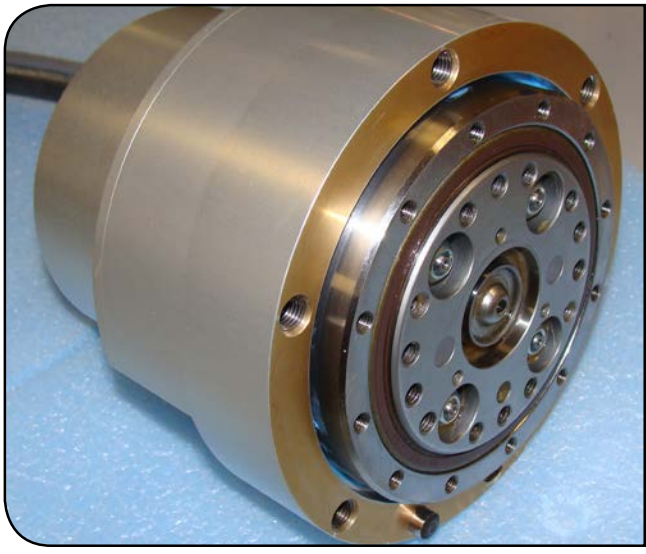
Applimotion

CUSTOM GEAR MOTORS OFFER HIGH-TORQUE ALTERNATIVE

Applimotion introduces custom gear motors for high-torque, low-speed and low-profile applications. The assemblies combine precision gearing and direct-drive frameless motor kits to form a new high-torque alternative to coupling a servo motor to a traditional gear box.

Applimotion combines its ULT, UTH, and UTS low-profile frameless motors with the right gearing solution for the customer's project. Combining direct-drive motor technology with the appropriate gearing solution may be the best alternative for smoothness, low speed, high torque and a low profile package. These assemblies include precision bearings and high resolution encoders, and they can run with any traditional servo controller meeting your power and communications needs.

Applimotion can create custom gear motor assemblies ranging in size from 25 mm to 800 mm diameter. For example; a 150 mm diameter unit can produce 50 N-m of continuous torque and up to 150 N-m peak torque. A traditional servomotor this size would only produce about 5 N-m of continuous torque, and if you couple it to a gear box, it would add 2× to the overall length.



For more information:
Applimotion, Inc.
Phone: (916) 652-3118
info.applimotion.com
www.applimotion.com

Voith Turbo

DELIVERS FLUID COUPLINGS IN MALAYSIA

Voith recently delivered 36 fluid couplings for an iron ore distribution center in Malaysia. Starting in 2014, the couplings will be used in the drives of 16 belt conveyors supplied by the Beumer Group. The supplied Voith hydrodynamic fluid couplings are applied to drives ranging in powers from 200 to 800 kW. They have been selected to softly start and protect all conveyor system components and minimize unplanned system downtime. Voith fluid couplings have a rugged design and are well suited for use under the most extreme environmental conditions. They dampen torsional vibrations in the driveline and protect it against overload. This extends the lifetime of the entire system.

The belt conveyor drives are equipped with TVVS-type couplings. Voith is delivering special TVVS designs to match the start-up and operating conditions of the drives.

The TVVS constant-filled fluid coupling is particularly suited for medium and long belt conveyors with start-up times up to 45 seconds. Fluid couplings automatically match the demand torque of the driven conveyor. The smooth application of fluid coupling torque provides a smooth belt start-up to protect the belt from damaging stresses, thus reducing system downtimes.

Thanks to the mechanical separation of the motor and machine through the fluid coupling, the motor can run up to speed without load. In addition, systems that use multiple motors can be switched on in a staggered sequence to limit the current demanded during the motor acceleration. This avoids grid overloading caused by simultaneous motor starts. In the most demanding belt conveyors, the TVVS is deployed with centrifugal force valves to further protect the electric grid. Centrifugal valves control the filling and draining of the coupling working circuit, and thus the power transmission, as a function of the drive speed. The motor starts up virtually load-free, even in the event of voltage drops. The coupling torque is applied continuously and without shocks up to the required breakaway torque of the system.

The TVVS can also use water as the operating medium. This environmentally-friendly operating medium is particularly well-suited for use in the belt conveyors that transport iron ore above the ocean.

In the future, the Malaysian iron ore distribution center will supply customers in the Asian-Pacific region with iron ore from South America. The belt conveyors transport the iron ore from the terminal to the harbor.

For more information:
Voith Turbo
Phone: (717) 767-3200
www.usa.voithturbo.com