

The High Points of Low Speed

An overview of three low-speed coupling types common in the paper industry

By Frank Mathews, Motion

A top priority in the paper industry is improving the reliability of mechanical rotating equipment. Regarding low-speed couplings (typically connecting gearbox to roll), many options can greatly reduce operating costs and improve reliability. Below is an overview of three types.

Flexible Gear Couplings for Floating Shaft Assemblies

Gear couplings are used widely in the paper industry. These couplings can be reliable if proper maintenance and installations are performed.

Pros:

- Can fit in very short DBSE (distance between shaft ends) applications
- Are widely available

Cons:

- Must be frequently greased
- Give little warning of imminent failure
- Require good alignments to ensure long life

For high-speed applications, a problem often arises where these couplings cannot be inspected. This is typically due to a short gearbox or motor shaft preventing movement of the geared sleeve so that wear cannot be inspected on the internal teeth. A simple solution for this would be implementing the **Mi Mill Services Ultimate Coupling (Figure 1)**.

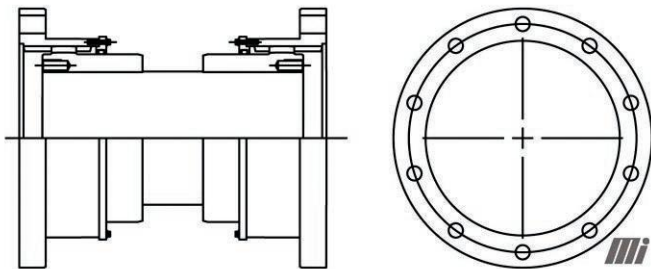


Figure 1. The Mi Mill Services Ultimate Coupling features large maximum bore capacity.

This coupling has these unique attributes:

- Large maximum bore capacity
- Split removable seal ring (allows removal of sleeve in both directions)
- Nitro-oxidized components
- Full-length sleeve teeth with high travel capacity
- Puller holes in flex hubs are an Ultimate Coupling standard
- Special grease channel porting allowing grease to distribute to both sides of teeth while installed
- AGMA (American Gear Manufacturers Association) or metric pattern options are available to couple to all other manufacturers' rigid and flex halves

These are also a great fit for refiner applications requiring a removable seal ring.

Universal (Cardan) Shaft Assemblies

Universal driveshafts are another common type used widely in the paper industry. They are very reliable with proper implementation and maintenance performed.



Pros:

- Flexible lengths due to slide section
- Ample warning of failure
- Flexible alignments (0–15 degrees)

Cons:

- Frequent need for greasing
- Limited, short DBSE applications

In the paper industry, where electric motor prime movers are prominent, a universal driveshaft can be installed in almost all positions. A common misunderstanding is that the driveshaft must have a three-degree operating angle. However, a theoretical zero-degree operating angle can have great results. Mi Mill Services can analyze for optimum driveshaft sizing to address common oversizing problems and design a solution.

Disc Coupling Shaft Assemblies

Disc couplings are a popular upgrade choice in the paper industry. They have no backlash and are maintenance-free. When properly implemented, a very long service life can be expected.

Pros:

- Maintenance-free
- No backlash
- Visual inspection

Cons:

- Critical alignment and length

These couplings have very little acceptability of length change, which sometimes makes installation very difficult. A solution is a disc coupling assembly with built-in splined length compensation. Mi Mill Services specializes in these units and has provided such solutions to many customers.



A certified mechanical engineer, Frank Mathews is the branch manager of Motion's Mill Services and has ten years' experience with driveshafts and their applications. For more information, visit Motion.com/paperage or Mi Mill Services' webpage (motionind.biz/3gjJZPb).