

# ROTARY UNIONS

## What is a Rotary Union?

Also known as rotary couplings or swivels, rotary unions are versatile and crucial components in various applications across many industries.

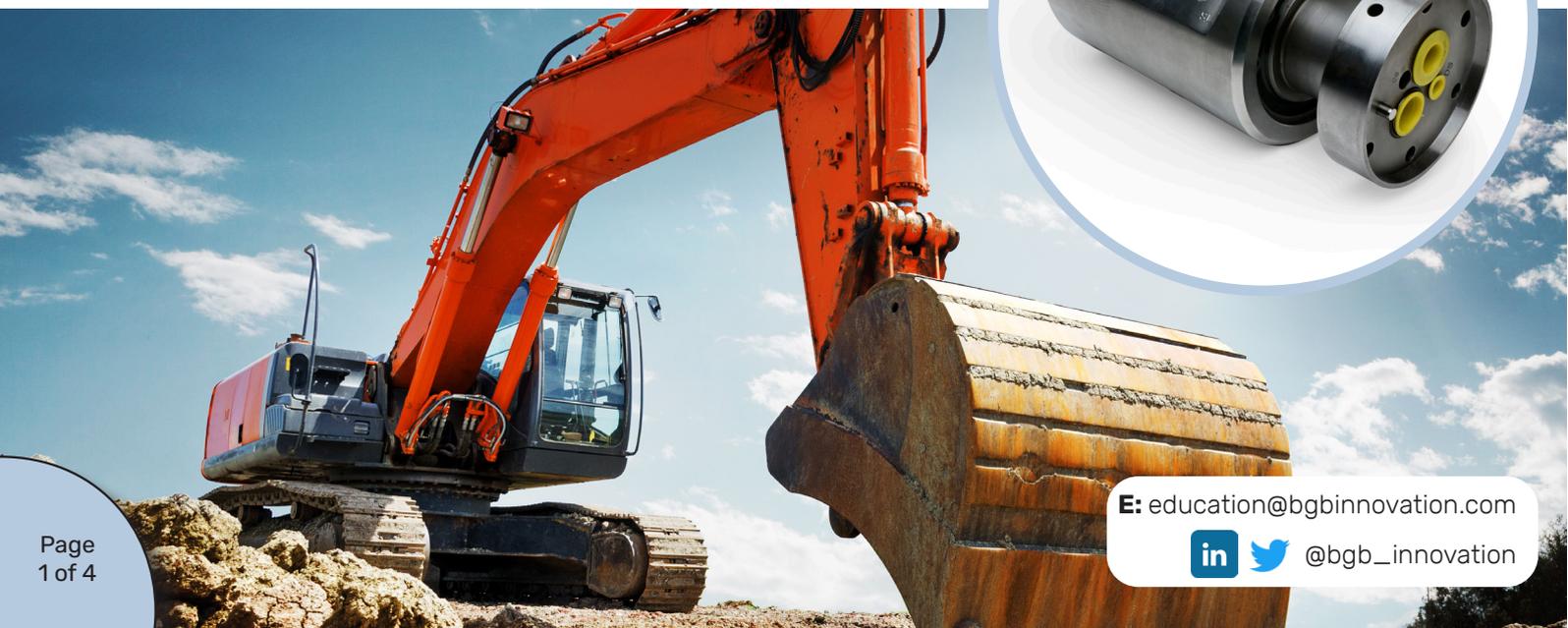
In this article, we will explore the purpose and functions of rotary unions, their integration with slip rings and their significant roles in specific applications such as cranes, wind turbines, excavators and more.



## How Does a Rotary Union Work?

A rotary union is a mechanical device designed to transfer fluid (like air, water, oil or coolant) from a stationary source to a rotating part, all while preserving and maintaining a hydraulic or pneumatic seal. Each rotary union is tailored for specific types of fluids, pressure ranges, temperatures and speeds, allowing them to meet varied application requirements.

Rotary unions feature an inner shaft and outer body, where the outer body attaches to the stationary supply line and the inner shaft connects to the rotating component. The inner and outer parts can rotate relative to each other without breaking the fluid connection, thanks to precise seal technology.



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### Incorporation of Slip Rings with Hydraulic Rotary Unions (HRU)

A beneficial aspect of rotary unions is their compatibility with slip rings. Slip rings are electromechanical devices that enable the transmission of power and electrical signals from a stationary structure to a rotating one. When combined with hydraulic rotary unions (HRU), they

create a holistic solution for transferring various types of media, both fluid and electrical, simultaneously.

The coupling of high quality parts enables complete control and monitoring of rotating systems, even in demanding environments. Integrating both can be necessary and valuable to an application, but can add complications which can lead to increased maintenance and downtime. This makes quality parts and a good supplier particularly important. It's generally recommended to get a package of HRU and slip rings from a single supplier, so that they can be properly engineered to work together without causing any issues. By doing so, you also save the time it takes to diagnose and remedy any future problems.



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### Rotary Union Industry Applications

Rotary unions find their utility in a wide range of applications, especially in the construction industry where high-performance and robust equipment are prerequisites. Here are a few key examples:

#### Cranes

In cranes, rotary unions are essential for their smooth and safe operation. They enable the fluid transfer required for moving the crane's boom, winch and other hydraulic parts.

The integration of slip rings with HRUs in this scenario ensures the simultaneous transmission of electrical signals for controls, sensors and other equipment. This enhances operational reliability and safety while ensuring consistent performance.

#### Wind Turbines

Wind turbines also use rotary unions. The yaw and pitch control of the turbine blades, crucial for optimising power generation and preventing damage during high winds, are managed by hydraulic systems that hinge on the functioning of rotary unions.

Furthermore, the combination of HRUs and wind turbine slip rings facilitates the transfer of electrical power and data signals. This is necessary for system control and communication, making them essential wind turbine parts.



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### Excavators and Other Construction Equipment

Excavators, along with other construction machinery like backhoes and loaders, heavily rely on rotary unions for their hydraulic operations. Well engineered HRUs provide precise, efficient and dependable fluid transfer for their various moving parts, tasks performed impeccably by rotary unions.

Coupling rotary unions with slip rings in these applications also allows for electrical signal transmission, vital for system controls, lighting and data transmission.

### Summary

In conclusion, rotary unions are essential pieces of equipment in machinery and systems across various industries, due to their ability to sustain the continuous transfer of fluid under various operating conditions.

When combined with high-quality slip rings, they offer an effective solution for media transfer, enhancing the efficiency, reliability and performance of equipment such as cranes, wind turbines and excavators. As industry demands continue to evolve, the integration of rotary unions and slip rings promises a future of innovative, high-performing machinery and systems.



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