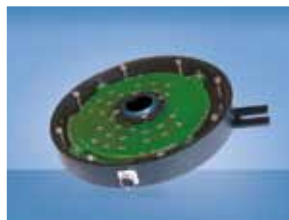


Slip Ring Assembly Systems Survey



STEMMANN PRODUCTS

QUALITY MADE IN GERMANY



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STEMMANN-TECHNIK

QUALITY MADE IN GERMANY

From planning to production, all under one roof



Corporate headquarters and manufacturing facility in Schüttorf, Germany

STEMMANN-TECHNIK is one of the world's leading manufacturers of energy and data transfer components and systems in industrial and transport technology.

Drawing on our 100 years of engineering and practical research, we manufacture high quality products required all over the world, and create special, innovative, customised solutions.

A fundamental key to our success is our understanding of the importance of high quality in all areas of the company, ranging from customer-oriented advice to long-term service.

STEMMANN-TECHNIK products and services aim to fulfill all our customers' requests, needs and expectations.

Every project and application is designed down to the finest detail, taking into account performance-related and economic aspects.

We guarantee high quality by upholding international standards and guidelines.

The quality management system implemented is based on standardised methods in conjunction with flexible structures for modelling and documenting all production and business processes.

Global Player – Worldwide Presence



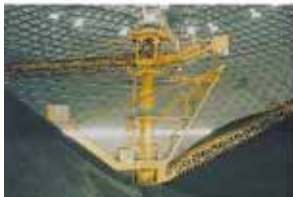
Our company was founded in Luxembourg in 1912 by engineer August Stemmann. At that time, we were already involved with producing power supplies for cranes at steel and smelting works as well as for other mobile machines.

Slip ring assemblies for rotating machines and pantograph systems for railway vehicles were added later on.



Since 2014 we belong to the Wabtec Corporation, a global provider of technologies, products and services in the field of railway and industrial engineering.

Power and data transmission for rotating equipment



Our slip ring assemblies at work

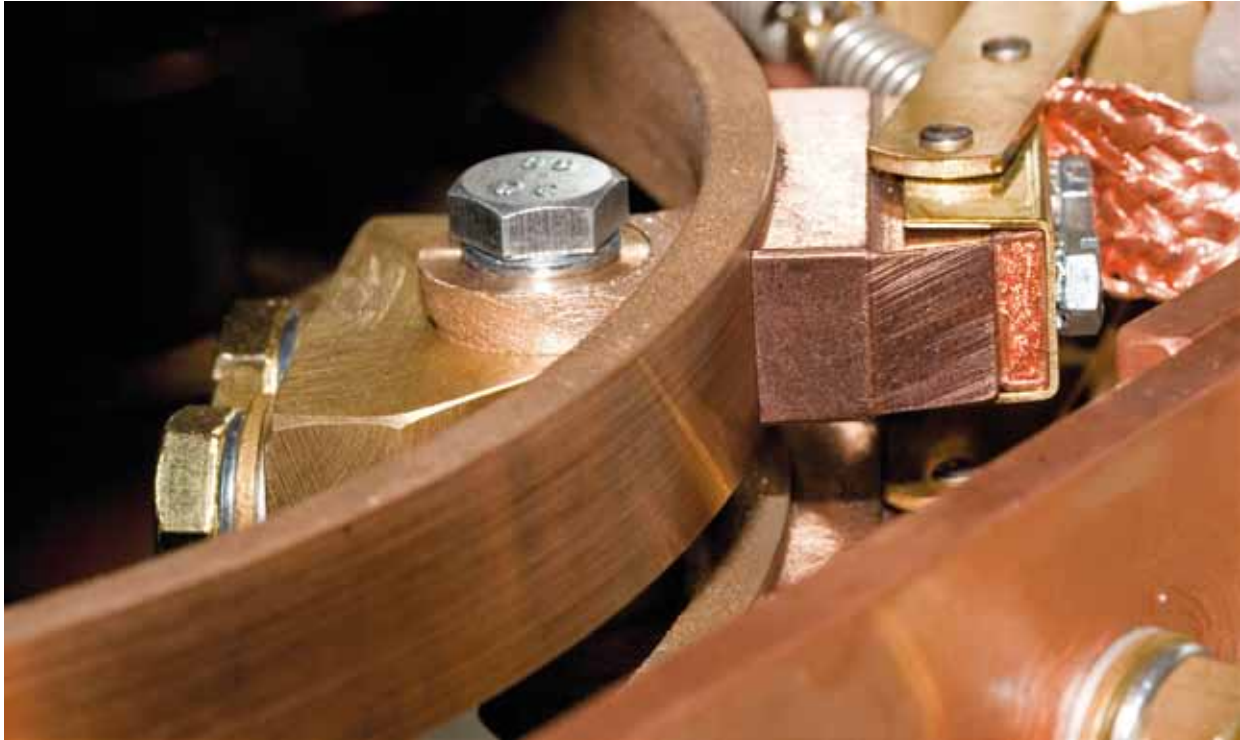
Slip ring assemblies are used for all applications that, due to their rotary movement, are not suitable for supplying energy and data via stationary lines.

Our systems enjoy an excellent reputation around the globe. For decades they have been representing reliability and high quality. We are highly specialised in constructing and manufacturing slip ring assemblies and data transmission systems – as perfectly fitting solutions for our customers' applications.



Their fields of application range from construction vehicles, production machines and crane installations to machine tool engineering and environmental engineering, e.g. wind power plants and sewage plants, to robotics, planetariums and radar technology. Also in use are our explosion-proof systems, e.g. on oil production vessels.

Our systems are characterised by compact designs, robust components and many years of functionality.



We draw on a broad array of highly developed technologies and provide each of our customers with the optimal solution from a technical and economical point of view. This holds true for standard applications as well as for complex requirements and extreme operating conditions.

By combining the different technologies we facilitate various slip ring assembly systems and we cover a nearly unlimited range of applications. Our slip ring assemblies for power transmission, data transmission and signal transmission are constructed in accordance with our customers' individual wishes and for the respectively intended purpose, geared to the respective environmental requirements.

The constant further development of our products and the application of innovative technologies help us ensure the high quality of our solutions in a sustainable manner. Improved technologies lead to more economic viability and functionality, e.g. in the form of smaller construction sizes or longer lifecycles.

TECHNOLOGIES	
Carbon / brass system	for conventional power and data transmission
Printed circuit board system	for power and data transmission
Cast slip rings	with gold wire or carbon brushes for applications with high rotational speeds, strong vibrations and for compact frame sizes
Multi-wire system	for compact frame sizes for power and data transmission
SICL system	the individually insulated conductor bar for very large/concentric diameters
Carbon / carbon	for high rotational speeds
Optical system	for contact-free transmission of signals

Slip ring assembly systems

CARBON/BRASS SYSTEM



The carbon/brass system is our technology for slip ring assemblies on a modular basis.

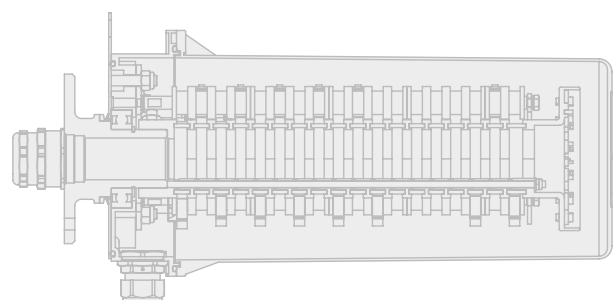
We implement the most common diameters in various different versions and adjust these technologies to fit the individual requirements of our customers.

DESIGN

Modular system	
Rings	brass or bronze, refined if necessary
Brushes	carbon made of bronze, silver graphite or special carbons
Rotation speed	up to 90 rpm
Data-/ signal-transmission	with refined slip rings and silver graphite carbons
Housing	stainless steel or steel (galvanised or painted), plastics
Protection class	up to IP 67, optionally higher
Number of poles	individually stacked
Rated current	from mA to kA
Rated voltage	from mV to kV

MAIN AREAS OF APPLICATION

- Crane technology
- Environmental technology
- Sewage plants
- Rotary tables
- Construction machines / excavators
- Silo technology / mixer



Slip ring assembly systems

PRINTED CIRCUIT BOARD SYSTEM



Our printed circuit board system is employed when transmitting digital and analogue signals up to EtherCat and when transmitting power within small installation spaces.

This system is characterised by its low installation height and a large diversity of styles, e.g. free boreholes up to 950 mm, integrated protective tubes and media distributors. Additional features such as the incorporation of angle encoders and high-power components can easily be realised.

Even concentric designs for low installation heights and customised housing designs are possible.

DESIGN

Modular system

Rings refined printed circuit board or full-brass

Brushes silver contacts

Rotation speed up to 90 rpm

Data transmission Ethernet 100 MBit/s, EtherCat Profinet, CAN-Bus etc.

Housing aluminium, stainless steel or steel (galvanised or painted)

Protection class up to IP 65

Number of poles individually stacked

Rated current μ A up to 50 A per way

Rated voltage mV to kV

MAIN AREAS OF APPLICATION

Truck-mounted cranes, fire truck turntable ladders

Spinning mill machines

Rotary tables, robotics

Packing machines

Tooling machines

Turret winders

Construction machines

Amusement rides

Telescopes, planetariums

Welding systems

Automation

Stage technology

Slip ring assembly systems

CAST SLIP RINGS / GOLD WIRE SYSTEM



Our cast slip ring assemblies are characterised by compact design and high durability.

They are specially designed for small installation spaces and for applications with high mechanical swing loads.

Depending on the individual customer's requirements, the slip rings are built into steel or aluminium housings.



DESIGN

Rings	brass, refined
Brushes	gold wire brushes
Rotation speed	up to 200 rpm
Data-/ signal transmission	up to, for example, Profinet (Industrial Ethernet)
Housing	aluminium, stainless steel or steel (galvanised or painted)
Protection class	up to IP 67
Number of poles	customised
Rated current	200 A
Rated voltage	1 kV

MAIN AREAS OF APPLICATION

Wind power plants
Amusements rides
Tooling machines
Automation
Winding technology
Measurement engineering
Optical devices

Slip ring assembly systems

CAST SLIP RINGS / CARBON BRUSH SYSTEM



The cast slip ring assemblies with carbon brush system are very robust and guarantee high durability. They are designed for applications with high rotational speeds and high mechanical swing loads.

Depending on the individual customer's requirements, the slip rings are built into steel or aluminium housings.

DESIGN

Rings	brass, gold-plated brass or silver
Brushes	carbon made of bronze, silver graphite or special carbons
Rotation speed	up to 3000 rpm
Data transmission	on request
Housing	aluminium, stainless steel or steel (galvanised or painted)
Protection class	up to IP 67
Number of Poles	customised
Rated current	kA
Rated voltage	kV

MAIN AREAS OF APPLICATION

Stranding machines
Packing machines
Mining divices
Balancing machines



Slip ring assembly systems

MULTI-WIRE SYSTEM



Our multi-wire technology allows us to manufacture slip ring assembly systems with very compact measurements. This special development for data transmission in industrial manufacturing, regenerative power generation or radar technology is particularly characterised by a long service life and little signal static.

Depending on the individual design, the multi-wire technology uses conductor plates with single-sided or double-sided tracks.

DESIGN

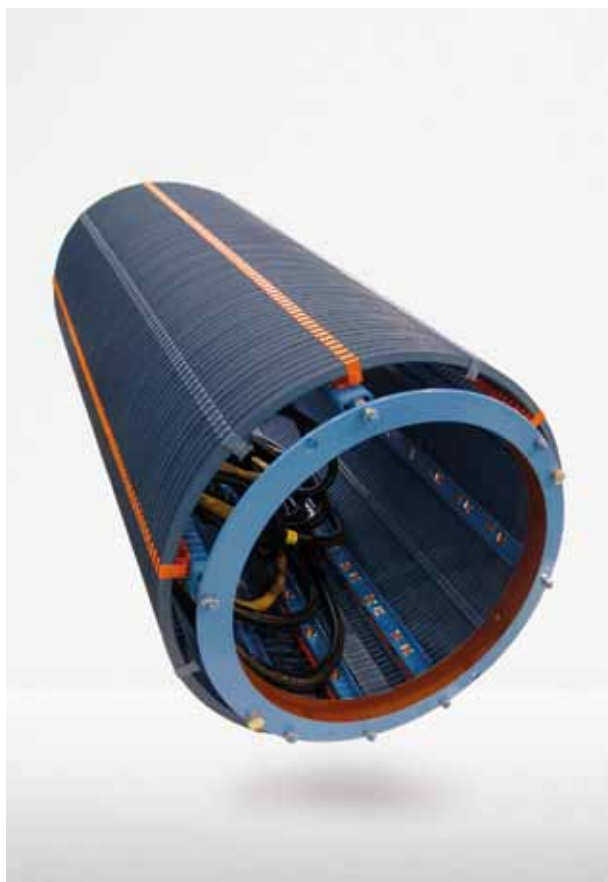
Rings	circuit boards, gold-plated
Brushes	multi-wire brushes
Rotation speed	up to 200 rpm
Data-/signal transmission	common field bus systems up to 100 MBd Industrial Ethernet, Profinet
Housing	aluminium, stainless steel or steel (galvanised or painted)
Protection class	bis IP 67
Number of poles	customised
Rated current	200 A, optionally higher
Rated voltage	1 kV, optionally higher

MAIN AREAS OF APPLICATION

Packing machines
Tooling machines
Construction machines
Amusement rides
Telescopes, planetariums
Wind power plants
Radar technology
Automotive engineering
Stage technology

Slip ring assembly systems

SICL SYSTEM



The slip ring assemblies of the SICL system are based on our individually insulated conductor lines. We manufacture slip rings with large diameters even in concentric design, customised to fit the respective application.

The SICL system allows for flat installation heights and can be manufactured with divisible housings.

DESIGN

Rings	plastic-insulated copper bar, silver-coated or nickel-plated on request
Brushes	carbons made of bronze graphite or silver graphite
Rotation speed	up to 18 m/s
Data transmission	upon request
Housing	stainless steel or steel (galvanised or painted)
Protection class	up to IP 54, optionally higher
Number of poles	customised
Rated current	up to 100 A, optionally higher
Rated voltage	up to 690 V, optionally higher

MAIN AREAS OF APPLICATION

Stage technology
Wind power plants
Amusement rides
Crane technology
Logistics and storage technology
Machine and plant engineering

Slip ring assembly systems

CARBON/CARBON SYSTEM



Our carbon/carbon technology is used in slip ring assemblies for special machinery. It guarantees that power is transmitted reliably at extremely high rotational speeds.

DESIGN

Rings	carbon
Brushes	carbon
Rotation speed	up to 3000 rpm, optionally higher
Data transmission	upon request
Housing	stainless steel or steel (galvanised or painted)
Protection class	up to IP 67
Number of poles	customised
Rated current	200 A, optionally higher
Rated voltage	1 kV, optionally higher

MAIN AREAS OF APPLICATION

Hydroelectric power stations (turbines)
Stranding machines
Welding technology



Slip ring assembly systems

FIBER OPTIC ROTARY JOINTS / CONNECTORS



Optical systems facilitate the non-contact transmission of large quantities of data. Typical areas of application include automation and robotics as well as wind energy plants and explosion-proof applications.

Fiber optic rotary joints achieve a nearly unlimited resistance to interference with regard to electromagnetic compatibility and are therefore perfectly suited for applications in problematic EMC conditions.

The FORJ system is applied in combination with our other technologies.

DESIGN

Fiber type	single mode or multi mode
Data transmission	up to GigaBit

MAIN AREAS OF APPLICATION

- Automation
- Robotics
- Wind power plants
- Explosion-proof areas of application



With regard to optical transmission systems we also offer finitely rotating fiber optic rotary connectors.

The number of effective rotations, the frame sizes and designs may vary depending on each case of application. This technology is often used in combination with other systems from our cable reels section.

Modular combination possibilities



Diversity of variants of our slip ring assemblies

Our slip ring assemblies are characterised by nearly unlimited possibilities of combining the various technologies.

In this regard, the adaptable design measurements, large number of transmission ways and power loads up to high-current levels are merely exemplary for the diversity of variants of our slip ring assemblies.

Depending on the application, we put our technology into optimally-shaped housings made of various types of material, also for explosion-proof areas of application.

The housings can be fitted, for example, with divisible covers to facilitate installation or maintenance works. We develop slip ring assemblies both for small installation spaces and for diameters of several meters.

Based on the customer's specifications, we adapt the core components to fit the specific requirements down to the last detail.

The options for cross-platform combinations allow for a high level of flexibility in terms of manufacturing, making it possible to produce the corresponding slip ring assemblies at economically reasonable terms – fast and individually, with high quality and low costs.

Materials, components and serial production

The key to finding the optimal solution for each customer's needs lies in the numerous possibilities of combinations. This holds particularly true with regard to the conception of serial products. Important parameters towards this goal include setting standards, optimising and adapting the applied technologies as well as selecting the housing material and shape.

Observing technical and economic aspects, we produce slip ring assemblies that are optimally geared to our customers' requirements for a diversity of applications.

HOUSING DESIGN

Plastics, glass fiber reinforced plastics

Steel and stainless steel housings
(galvanised/painted)

Aluminium-, cast aluminium housings

Divided housing styles

Explosion-proof housings

COMPONENTS

Encoder systems

Media transmitter

Medium voltage components

Integrated protective tubes

Thermostatically regulated heating components

Standard flanges, pipe flanges

REFINEMENTS

Refinement for combined transmission
of power and control signals



Slip ring assembly series for crane technology



Slip ring assembly series for winding machines

Areas of application for our slip ring assemblies

EXPLOSION-PROOF SLIP RING ASSEMBLIES



Our explosion-proof slip ring assemblies at work

For applications in hazardous installations we have developed a special design series of explosion-proof slip ring assemblies that have proved to be successful in numerous branches of industry and areas of application over many decades.

They are as reliable in transmitting power for electro engines or drives as they are in transmitting data signals, control signals and test signals – even under extreme environmental conditions.

The core concept of this design series already fully observes the specific ex-proof requirements. On this basis, it is possible to individually construct or, respectively, optimise the material, design and performance parameters for power and data transmission in different applications.

AREAS OF APPLICATION

- Oil production vessels (FPSO)
- Oil production platforms (SYMS)
- Mining divices
- POD drives
- Logistics (Silo)

This design flexibility makes it possible to use the optimal slip ring assembly technology in an explosion-proof housing.



EXCAVATOR, CRANE TECHNOLOGY & AUTOMOTIVE ENGINEERING



Areas of application for our slip ring assemblies

Slip ring assemblies for power and data transmission in electrically operated excavators and cranes are located in the centre of rotation between superstructures and sub-structures.

Our robust slip rings and reliable transmission systems for data and media guarantee unimpeded operations even when exposed to high levels of shock and vibration or rough environmental conditions.

Typical areas of application include rotating tower cranes and gigantic bucket-wheel excavators in open-cast mining as well as cranes and excavators in the construction industry. Additional areas of application can be found in the trans-shipment port business and in rotating superstructures, e.g. on fire trucks.

TECHNOLOGIES
Application-specific
DESIGNS
Manufactured individually to customer's requirement
Plug version / terminal box version
Optionally with boreholes for media supply

Areas of application for our slip ring assemblies

WIND POWER PLANTS



Our slip ring assemblies are used in wind energy plants around the globe

Since 1994 we have developed and realised slip ring assembly systems for wind energy plants to supply electrical pitch control systems with power and data.

Particularly with regard to the requirements that are unique to wind power, our systems are distinguished by compact frame sizes, high vibration resistance and a lack of sensitivity to extreme differences in temperature.

Our technical spectrum ranges from conventional transmission ways to fiber-optic cable technologies and innovative hybrid solutions.

By standardising essential components and key technologies we are able to adapt to our customers' requirements in a flexible manner. Even combinations of our slip ring assembly technologies in challenging systems can be arranged quickly and reliably.

We outfit wind energy plants both on-shore and off-shore around the globe.

TECHNOLOGIES

- Gold wire system
- Multi-wire system
- Carbon technology
- Optical system (FORJ technology)

DESIGNS & ADVANTAGES

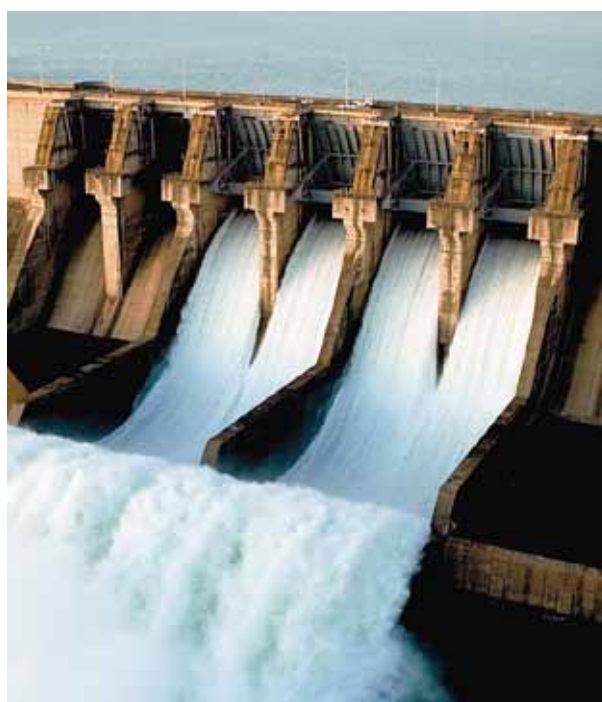
- Manufactured individually for the customer
- Plug versions /terminal box version
- Designed for high vibration resistance coupled with durability
- Uses robust and compact metal housings
- Designed for temperatures ranging from - 40 °C to + 70 °C
- Power transmission up to 200 A / 750 V
- Integrated, thermostatically regulated heater to avoid water condensation
- Easy and fast assembly
- Data transmission for CAN-, PROFI-Bus and LAN/Ethernet up to 100 Mbit/s
- Integration of optical data transmitters, media feed-through and encoder system



HYDROELECTRIC POWER PLANTS

In hydroelectric power plants, our slip ring assemblies provide power for the generator's electromagnets. In addition, they can transmit control data and control signals between the turbines and the control panel.

We employ individually configured carbon/carbon technologies that can be designed for high rotational speeds (up to 3000 rpm).



TECHNOLOGIES

- Carbon/carbon technology

DESIGN

- Manufactured individually to customer's requirement

Areas of application for our slip ring assemblies

AUTOMATION / TOOLING MACHINES, STRANDING & PACKING MACHINES



Our slip ring assemblies are characterised by components that are perfectly geared to each other

We supply manufacturers and operators of tooling machines and manufacturing plants with sophisticated, compact-sized slip ring assembly systems that guarantee long durability.

We develop solutions for the mechanical engineering industry. Manufacturers of stranding machines, simple milling machines and lathes and even 5-axle processing centres and rotary tables employ our systems.

In this area of application we use, for example, our carbon/carbon technology. This allows for rotation speeds of up to 3000 rpm.

- TECHNOLOGIES**
 - Circuit board system / gold wire system
 - Multi-wire system
 - Carbon/carbon technology
- DESIGN**
 - Customised
 - Plug version / terminal box version

We construct, design and manufacture slip ring assemblies as per our customer's wishes. The systems are geared to the automation concept with regard to the bus system, drive controller, encoder system and sensor-periphery.

OIL PRODUCTION VESSELS (FPSO)

Today, modern offshore oil production is conducted by means of oil production vessels. They act as central connection points or interface sites for various oil production installations (offshore oil rigs, oil drill rigs, underwater production site) that surround the oil production vessel.

In all of this, slip ring assemblies are a key element. Aside from the enormous challenges of permanently changing and sometimes even extreme climate conditions on the open seas, slip ring assemblies that are to be employed on oil production vessels (FPSO) must be designed and manufactured as explosion-proof and they also have to meet particularly high environmental specifications.

We deliver such customised systems that will safely supply and transmit power and data from the oil production vessel to the surrounding installations.



TECHNOLOGIES

Specific to the application

DESIGN

Customised for
Zones 1 and 2 as well as **Zones 21 and 22**

Ex d / Ex e / Ex p / Ex tD

POD DRIVES (Propeller nacelles)

POD drives are special drive units in the propeller nacelles of special ships and water vehicles. The transmission of power and data to the propeller nacelle is facilitated by our slip ring assembly systems.

For this, we offer system solutions with an integrated air and media feed-through. All systems are individually configured and specially manufactured as per the customer's requirements.

Our POD slip ring assemblies are running successfully in research vessels and multi-purpose vessels – they are in use around the globe.



TECHNOLOGIES

Specific to the application

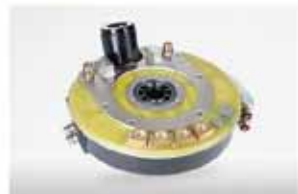
DESIGN

Specific to the application / customised

Protection class up to IP 65

Areas of application for our slip ring assemblies

INDUSTRIAL ROBOTS



uni-swiv slip ring assemblies for industrial robots

We have developed the uni-swiv[®] rotary transmitter, which is a multifunctional slip ring assembly that increases productivity and efficiency particularly in the fields of automotive engineering and machine engineering.

The encapsulated system combines the slip ring assembly and the media feed-through as well as the interface points into one compact and flexible unit. Adaptable to all common 6-axle robots, it transmits power, welding currents, cooling agents and compressed air as well as signals and data (optical and electrical). It can be combined with tool-replacement systems.

The uni-swiv[®] system can be employed for loads of up to 200 kg and rotation speeds of up to 30 rpm at accelerations of up to 7g.

TECHNOLOGIES

Circuit board system

Multi-wire system

Our uni-swiv[®] rotary transmitters offer you distinct advantages, e.g. applications in machine engineering and in automotive engineering. Compared to applications that use pure tube packages, set-up times in these areas of application can be decreased significantly, cycle times can be increased and durability can be extended, thus decreasing the costs for maintenance in a sustainable manner.

AMUSEMENT RIDES



Slip ring assembly applications in the amusement rides sector

Hardly any other sector can compare to the amusement rides sector when it comes to diversity of structural designs and technical features. Whether it concerns a simple carousel, an oversized Ferris Wheel or a high-tech installation with numerous axles: error-free energy and data streams can only be guaranteed with first-class slip ring assemblies.

We fit individual solutions into technically innovative installations as well as into attractions with extremely high rotation speeds.

Depending on the customer's wishes, we configure robust standard slip ring assemblies or develop highly-complex systems to supply and control e-motors and brakes, lighting and air conditioning systems, and transmit signals for position encoders and safety devices.

TECHNOLOGIES

- Circuit board system
- Multi-wire system
- Carbon/carbon or carbon/brass technology
- SICL system

DESIGN

- Manufactured individually to customer's requirement
- Plug version /terminal box version

INDUSTRIAL PRODUCTS · INDUSTRIEPRODUKTE



CABLE FESTOON SYSTEMS
LEITUNGSWAGEN-SYSTEME



CABLE REELS
LEITUNGSTROMMELN



SLIP RING ASSEMBLIES
SCHLEIFRINGÜBERTRAGER



CONDUCTOR LINES
SCHLEIFLEITUNGEN

RAILWAY PRODUCTS · BAHNPRODUKTE



ROOF-MOUNTED PANTOGRAPHS
DACHSTROMABNEHMER



3rd RAIL CURRENT COLLECTORS
DRITTE-SCHIENE-STROMABNEHMER



frost® GROUND CONTACTS
frost® ERDUNGSKONTAKTE



STINGER SYSTEMS
STINGER-SYSTEME

