SLIP RINGS

Contacting and non-contacting transmission solutions

CONTACT US

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Venturetec Mechatronics is a specialist for the development and production of mechanical components, complete electro-mechanical systems as well as slip rings and rotating transmission systems.
ABOUT US

WHAT WE DO

Venturetec Mechatronics manufactures complex electro-mechanical units and systems in a production area of more than 130,000 square feet.

As a well-known partner of the high-tech industry we support leading companies in the following markets: medical technology, industry automation, robotics, aviation & surveillance, offshore and environmental technology.

FACTS & FIGURES

CEO
Stephan Neubauer

STAFF
Approximately 130 employees are working in the divisions development, construction, manufacturing, assembly and administration

AREA
130,000 square feet

QUALITY MANAGEMENT

LOCATIONS
• Kaufbeuren, Germany (Headquarter)
• Wilmington, MA, USA (Subsidiary)
• Nacka / Stockholm, Sweden (Sales)
• Further international sales representatives
INDUSTRIES

Our company is focused on selected markets providing contacting and non-contacting slip rings, rotary joints and linear transmission systems.

Below an overview of our key markets:
Venturetec Mechatronics offers a wide knowledge of transmitting power, signals, video, data and media.

CONTACTING TRANSMISSION

POWER
Our contacting transmission know-how is based on long-term experience. Depending on your requirements we may use gold/gold, silver/silver or others.

SIGNAL
Our rotating signal transmission systems are usually based on gold wires and gold plated tracks. Special alloys used in qualified combinations guarantee best results for the transmission of high speed signals and data.

NON-CONTACTING TRANSMISSION

POWER (inductive technology)
An inductive transmission system consists of a transmitter and receiver coil which forms a system of magnetically coupled inductors. The inductive technology offers the possibility of adding a data transmission on top. This can be done by modulation of the signal on to the carrier frequency of the power link.

SIGNAL
With our innovative optical non-contacting transmission technology we are able to transmit data rates up to 1.250 Mbit/s per channel. With our capacitive link we are able to transmit data rates up to 10 Gbit/s per channel. Our technologies enable a free inner diameter (off axis).

OPTICAL (passive solution)
- Singlechannel singlemode/multimode (on axis)
- Multichannel singlemode/multimode (on axis)
- 1/2 Channel POF (on axis)
- Multichannel POF with free inner bore
- Media converters (Cu-SiO₂/POF or others)
- MUX/De-MUX technologies

MICROWAVE
Microwave technology in a frequency spectrum from 1 GHz to 50 GHz. In cooperation with leading partners, Venturetec Mechatronics offers systems with integrated microwave transmissions.

COMPONENTS

MEDIA ROTARY JOINTS
Venturetec Mechatronics provides hybrid systems. We supply technical solutions for media rotary joints of different fluids such as coolants, water, oil and gases.

ENCODER, RESOLVER
We offer encoder and resolver solutions in accordance to your requirements. These solutions are adapted to the characteristics of the respective rotating transmission system and can be used for instance for the positioning or the control of the drive speed.
MEDICAL TECHNOLOGIES

The demand for medical imaging systems continues to grow across the globe.

We offer a wide range of sophisticated solutions that fulfill your specific requirements.

GANTRY ROTOR COMPONENTS

- Rotor frame
- Collimator box
- Rotor mechanics (e.g. DMS) and electronics
- Slip rings (contacting and non-contacting)
- Rotor cabling (electrical, optical)
- Light markers

GANTRY ROTOR COMPONENTS

- Stator frame
- Rotational drive and encoder
- Main bearing
- Miscellaneous gantry mechanics and electronics
- Temperature control
- Gantry wiring (electrical, optical)
Slip ring technologies for CT and EDS scanners enable a continuous rotation of the x-ray tube. The image data from the rotating x-ray detector is transmitted to the stationary processing computer.

### CT AND EDS SCANNERS

#### PANCAKE SLIP RING FOR MEDICAL IMAGING APPLICATIONS

- Contacting power transmission of voltages up to 1000 V and 300 A
- Contacting signal transmission (CAN, RS422, RS232 or others)
- Rotational speeds up to 300 rpm
- Non-contacting data transmission systems in AnyRate™ technology from 100 Mbit/s up to 10 GBit/s
- Optional integrated encoder systems
- Typical in platter technology
- Design lifetime of 10 years
- Dimensions up to 1800 mm

### ANY RATE™ TECHNOLOGY

- Venturetec Mechatronics AnyRate technology offers data transmission in a wide bandwidth
- AnyRate BASIC offers data rates from 625 Mbit/s up to 4.25 Gbit/s
- AnyRate ENHANCED offers data rates from 100 Mbit/s up to 5 Gbit/s
- AnyRate PRIME offers data rates from 2.5 Gbit/s up to 10 Gbit/s
- All systems are available with standard 8B10B coding
- Optional 64B66B coding available for AnyRate ENHANCED and PRIME. This feature offers 22% more net data for customers
Venturetec Mechatronics supplies customized slip ring solutions for many applications in the industrial field. In times of a special focus on smart manufacturing, the demand for more intelligent automation solutions is growing steadily. Our slip rings guarantee very fast production times and outstanding efficiencies.

**EXEMPLARY APPLICATIONS**

- Automated packaging and filling machines
- Cranes (onshore)
- Industrial control systems
- Milling heads
- Mining machines
- Pick & Place systems
- Printing machines
- Rotary type presses
- Turntables
To achieve an unlimited 360 degrees rotation of the milling head, a slip ring is used to transmit mainly power, machine control signals and measurement signals.

**CHARACTERISTICS**

The shown slip ring system enables the transmission of the following units:

- Machine control, for instance DRIVE-CLiQ
- Encoder signals, for instance EnDat
- Various measuring signals, for instance vibration, temperature and further
- Power: high-power, low-power or a combination of both

**OPTIONAL FEATURES**

- Free inner bore
- Integration of a media rotary joint
- Integration of an encoder system

5-axis machining centers have three linear axes and two additional rotary axes. They offer the ability to machine extremely complex shapes in a single setup.
ROBOTICS

The steadily increasing level of automation leads to a corresponding increase of the demand for complex robot applications.

Venturetec Mechatronics is supplying a wide range of reliable transmission solutions.

Robots that operate with rotational movements of more than 360 degrees usually require a slip ring system for the transmission of power and a variety of different signals.

EXEMPLARY APPLICATIONS

- Agricultural robots
- Assembly robots
- Entertainment robots
- Material handling robots
- Positioners
- Surgical robots
- Underwater robots
- Welding robots
Intelligent robot systems require a large number of rotating axes. The use of slip rings offers a long-term and reliable transmission of low-power and signals.

18-WAY PANCAKE SLIP RING FOR LOW POWER AND SIGNAL

**Application example**

**WELDING ROBOTS**

CHARACTERISTICS

The shown slip ring system offers the following features:

- Better reliability and lifetime in comparison to cable solutions
- Transmission of the most common industrial buses
- Transmission of low-power
- Innovative contact materials
- Lightweight design

OPTIONAL FEATURES

- Free inner bore
AVIATION & SURVEILLANCE

Many applications in the fields of aviation and surveillance require a reliable and secure transmission under very extreme environmental conditions.

Venturetec Mechatronics offers customized solutions for highly complex applications.

The areas of application in the fields of aviation and surveillance are very diverse and require always a high degree of security.

EXEMPLARY APPLICATIONS

- Air traffic control radar systems
- FLIRs
- Helicopters
- High altitude applications
- Marine radar systems
- Radio telescopes
- Satellite communication
- Stabilized platforms
- Weather radar systems
Weather radar systems are observing and forecasting extreme weather conditions. They are installed to display the current precipitation, calculate its motion and to estimate its type (rain, snow, hail and others). All of the mentioned data has to be transmitted by slip ring systems.

Due to the very long operating time of radar systems, the respective slip rings require a long lifetime and low maintenance efforts.

**CHARACTERISTICS**

The shown slip ring system can be integrated into a complete system and offers the following features:

- Safe and secure transmission under challenging environmental conditions
- Transmission of low-power, high-power and signals

**OPTIONAL FEATURES**

- Free inner bore
- Integration of a fiber optic rotary joint (FORJ) and/or a microwave rotary joint
- Integration of a media rotary joint
- Integration of an encoder system
Venturetec Mechatronics’ transmission solutions for the usage in offshore environments are resistant to salt spray and moisture as well as high humidity and temperature ranges. In addition, they are withstanding high forces and payloads and are optionally designed to ex-proof requirements.

**EXEMPLARY APPLICATIONS**

- Azimuth thrusters
- Cranes (offshore)
- Floating Production Storage and Offloading Units (FPSOs)
- Maritime buoys
- Oil platforms
- Remotely operated vehicles (ROVs)
- Winches

A major challenge is the reliable transmission of very high power and data under extreme environmental conditions and in rough seas.
Application example

AZIMUTH THRUSTERS

An azimuth thruster is a configuration of one or more marine propellers placed in pods that can be rotated 360 degrees continuously to any horizontal angle (azimuth). A slip ring is needed to transmit high-power, low-power and signals from the machine room to the pod.

12-WAY HIGH-POWER SLIP RING, 84-WAY SIGNAL SLIP RING AND 10-CHANNEL MEDIA ROTARY JOINT INTEGRATED INTO ONE SYSTEM
There are many different systems for environmentally friendly power generation. Usually, these systems require a slip ring for the transmission of power and control signals.

**EXEMPLARY APPLICATIONS**

- Heliostats
- Horizontal wind power plants
- Hydroelectric power plants
- Tidal power plants
- Vertical wind power plants
In addition to supplying our core markets, Venturetec Mechatronics also offers flexible solutions for special projects. Our service ranges from consulting and design to on-site installation.

Nowadays the potential areas of slip ring applications are very diverse. Special projects that require the transmission of power, signals and media can be realized reliable and uncomplicated in cooperation with our engineers. The economic feasibility is always in our focus.

Below are some exemplary project fields:

**EXAMPLES**

**THEATER STAGES**

Modern turntables need in addition to the power supply, among other things, the transfer of complex audio and video signals. This can be realized by using different transmission technologies.

**ROTATING ARCHITECTURE**

No matter if either rotating viewing platforms or even complete floors that rotate in the opposite direction. With the use of the latest slip ring technology creative architectures can be put into reality.

**ENTERTAINMENT**

New perspectives in TV broadcasts, such as sports or concerts, require new camera technologies (e.g. Skycam) under the use of slip rings. We offer very compact and reliable systems also for the highest data rates.

**AMUSEMENT RIDES**

Whether classic ferries wheels or innovative amusement rides, our slip rings provide the needed supply of power and data safely.
SPARE PARTS

Venturetec Mechatronics offers spare parts for a variety of applications for the transmission of power and signals.

Below an exemplary selection of our complementary slip ring components and spare parts:

**SELECTION OF OUR SPARE PARTS**

- Transmitter-receiver-electronics
- Brush blocks
- Signal brushes
- Carbon brushes
VENTURETEC MECHATRONICS REFURBISHES AND REPAIRS all types of rotating transmission systems, slip rings, brush holders and related components.

With our broad technical expertise we can reverse engineer to redesign worn parts and prolong the lifetime of your system with our technology.

1 VALUE-ADDED SERVICES
Our well experienced staff offers comprehensive consulting and technical support throughout the development phase to after sales activities. If required, we assist you in determining the specification for your system.

2 ANALYSES OF EXISTING SYSTEMS
Does your system work as intended? If you are dissatisfied with the performance of your existing system, Venturetec Mechatronics offers error diagnosis. We analyze different parameters from the mechanical and electrical design down to the chemical composition of abrasion from the tracks. This approach enables us to give constructive feedback and expert action proposals on how to improve the performance.

3 INSTALLATION AND MAINTENANCE
Venturetec Mechatronics provides technical support and maintenance over the entire life cycle of your system. Our installation, maintenance and upgrade services ensure that your systems work efficiently for years to come.

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