Setting ideas in motion

Rotary unions · Electrical slip rings · High-precision air bearings
Test rig equipment · Minimal-quantity lubrication
Challenge us – we will provide the right solution

For over 30 years GAT (Gesellschaft für Antriebstechnik mbH) has been an expert for fluid and sealing technology. Our extraordinary reputation rests on convincing concepts and sophisticated technology. With more than 120 employees GAT develops, manufactures and sells a wide range of rotary unions, electrical slip rings, high-precision air bearings, torque motors and minimal-quantity lubrication systems. Thanks to our 18 sales offices around the world we are always close to our customers, providing competent consulting services and direct support.

GAT focuses on custom solutions to meet the highest expectations. That is why our sales efforts are mainly dedicated to a thorough application analysis carried out by our engineers and product specialists. With their expert knowledge of a broad range of industries they are able to solve complex tasks. Even when faced with completely new challenges our seasoned consultants simply know what is technically feasible.

The continuous development of products and production processes as well as the ongoing extension of employee know-how express the passion we share for perfection and reliability. A powerful company resources planning system and transparent process control ensure reliable production processes and short delivery times. After production and before leaving the company, all finished products are thoroughly tested to guarantee superior quality, because in the end customer satisfaction is the only thing that counts.
Proven references: Technology for many industries

Our technically elaborated products are used wherever uncompromised reliability under the most adverse operating conditions is crucial. When it comes to ensuring system availability our products play a key role:

- In wind turbines, our hydraulic rotary unions and slip rings allow correct adjustment of blade pitch to wind direction, even under rough conditions.
- Thanks to the reliable supply of coolant to milling spindles, production runs smoothly even at high utilization rates.
- The production rates of rolling mills can be increased as the rotary union ensures a reliable supply of hydraulic fluid to the spindle - even at high speeds.
- Highway tunnels are driven through mountains in record-breaking time thanks to special rotary unions providing effective protection against abrasive rock dust.
- GAT slip rings allow ships to perform seismic ocean-floor scanning at unprecedented speeds.
- GAT is the product manufacturer of choice for the petroleum industry to further reduce downtimes.

Products from GAT are used in critical situations and in various production plants and machines.
Our principle: First-class functionality

GAT products embody more than 30 years of experience gained from the development of solutions for the fluid and sealing technology resulting in more than 150 patents. A high degree of flexibility allows us to provide a wide product range of custom solutions in small quantities as well as standard solutions in high quantities. All products offer utmost precision and reliability. From 500 gram emulsion rotary unions to 4 ton hydraulic rotary unions, from 150-channel slip rings to ultra-high precision air bearings. Using the best ideas and latest technologies we continue to enhance our products. Each product is carefully optimized to the respective operating requirements. Although custom solutions are at the center of our efforts we also offer a wide range of standard products.

GAT rotary unions: Reliability for production

High-performance rotary unions are employed in many industries to transfer the most diverse media between fixed and rotating machine elements. Depending on the application, the requirements for rotary unions vary. To offer the best solution for any kind of application GAT has developed eight different sealing systems, including:
- Leakage-free elastomer seals with optimized sealing ring profiles featuring wear-resistant shaft coatings, ceramic mechanical seals with hydrostatic wear-reduction and contactless gap seals of various geometries for high-performance rotary unions. To obtain a compact comprehensive solution for specific applications the systems can be combined with each other.
- The long-term use of our rotary unions under the most adverse conditions and the ongoing exchange with our customers has significantly contributed to the continuous development and enhancement of our products.

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For power and data currents:
GAT electric slip rings
Proven gold/gold technology is used for the transfer of high power currents, fine analog measurement signals or high-speed digital data. Using this combination, highest contact quality and unsurpassed product life can be achieved. Besides, there is no more need to remove abrasion dust. A low electric noise level ensures the reliable transfer of signals of all current BUS systems, including Fast-Ethernet. Due to their modular design our slip rings can be configured for individual solutions and countless applications. The result is a very compact design that can be complemented with an integrated rotary union.

All air, no friction:
Aero-static air bearings from GAT
Wherever ultimate speeds or micro-meter positioning accuracy are required, our spindle and linear guide units with air bearings are the system of choice. Based on our proven micro-jet technology our air bearings offer unique durability and a long service life and are adapted to meet individual application requirements.

Economic efficiency put to test:
GAT test rig technology
Wherever drive elements must be tested to the most demanding conditions, our hydraulic torque motors or hydro swangers come in. Their compact design and the hydrostatic rotor bearing make them first choice for highly dynamic tests. Mechanical power circulation adds to the system’s efficiency.

Simply a clean solution:
GAT minimal-quantity lubrication
The conventional use of traditional coolant lubricants for cutting processes is expensive and can cause health and environmental hazards. Therefore, our minimal-quantity lubrication is a smart alternative for many applications as it increases productivity and reduces costs.
**Rotostat E: Radial gap seal**

This seal features a contactless sealing system with a hy- 
dromatically controlled radial gap and is suitable for high 
rotation rates up to 40,000 min⁻¹ and very high pressures 
of up to 600 bars. Pressure and rotation rate are independent 
of each other. The sealing system transfers oil, water or gas and 
can be used for a number of purposes such as rotary 
clamping systems, blade pitch control, pusher centrifuges 
or high-speed down cutters in mills.

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Operating speed (min⁻¹)</th>
<th>Channel Ø (mm)</th>
<th>Attachment</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 200</td>
<td>100 - 1,000</td>
<td>6 - 12</td>
<td>Radial</td>
<td>1 up to 10</td>
</tr>
</tbody>
</table>

**Rotostat N: Gap seal as cartridge element**

This seal features a cartridge element with a hydra-

tically controlled axial gap seal for the radial 

supply of media. It is used for high flow rates of up to 700 l/min and high pressures amounting to 250 bar. The system is 

also available as a complete rotary unit for particularly rough 
aplications like pusher centrifuges or down cutters in mills.

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Operating speed (min⁻¹)</th>
<th>Channel Ø (mm)</th>
<th>Attachment</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 250</td>
<td>100 - 1,000</td>
<td>6 - 12</td>
<td>Radial</td>
<td>1 up to 10</td>
</tr>
</tbody>
</table>

**Rotostat A: Axial gap seal**

With a hydrostatically controlled axial gap seal this seal is 

ideal for midrange pressures. It is used for oil and 

water-based liquids and is suitable for high speeds of 

up to 30,000 min⁻¹ and pressures of up to 80 bars. Due 

to its compact design, the Rotostat A is often used for the radial 

supply of cooling lubricants or hydraulic fluid for clamping applications in machine tools.

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Operating speed (min⁻¹)</th>
<th>Channel Ø (mm)</th>
<th>Attachment</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 500</td>
<td>100 - 1,000</td>
<td>6 - 12</td>
<td>Radial</td>
<td>1 up to 2</td>
</tr>
</tbody>
</table>

**Rotopack: Contact seal**

This sealing system comprises a series of leakage-free 

axial and radial, single or multi-channel rotary unions with 

elastic contact seals for high pressures of up to 450 bars and low rotation rates. Thanks to many differ-

tent sealing elements and materials these rotary unions are of uni-

versal use and suitable for almost any medium.

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Operating speed (min⁻¹)</th>
<th>Channel Ø (mm)</th>
<th>Attachment</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 500</td>
<td>100 - 1,000</td>
<td>6 - 12</td>
<td>Radial</td>
<td>1 up to 25</td>
</tr>
</tbody>
</table>

**Rotovac: Ferro-fluid seal**

Vacuum rotary unions with ferro-fluid seal transmit ro-

tary motion and media into vacuum applications or 

transfer vacuum from fixed into rotating components. 
The unions are ideal for processes demanding a high 
degree of cleanliness and ultra-high vacuum applications.

<table>
<thead>
<tr>
<th>Pressure (mbar)</th>
<th>Operating speed (min⁻¹)</th>
<th>Channel Ø (mm)</th>
<th>Attachment</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 10¹⁰</td>
<td>100 - 1,000</td>
<td>6 - 12</td>
<td>Radial</td>
<td>1 up to 2</td>
</tr>
</tbody>
</table>

**Rotoflux: Electrical slip rings**

Gold spring wire running on gold-plated contact rings is 

our preferred transfer method. Even with 200 channels the 

system is rather short. If required, air channels or vari-

dous rotary unions can be added. Among the typical 

applications are rotary tables, wind turbines, packaging machines, 
tooling machines, theater platforms.

<table>
<thead>
<tr>
<th>Medium</th>
<th>Oil</th>
<th>Emulsions</th>
<th>Water</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (bar)</td>
<td>10</td>
<td>50</td>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>Speed (min⁻¹)</td>
<td>100</td>
<td>1,000</td>
<td>10,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Channels</td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>25</td>
</tr>
</tbody>
</table>

**Rotospray: Rotary atomizer**

Rotary atomizer using air bearings with a flow rate of 

1,200 ml/min at 70,000 min⁻¹. The jet air bearing 

with a high load capacity is perfect for robotized appli-
cations. Special bearing materials for high durability, 
Pneumatic high-performance turbine with low air consumption.

<table>
<thead>
<tr>
<th>Medium</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (bar)</td>
<td>100</td>
</tr>
<tr>
<td>Speed (min⁻¹)</td>
<td>1,000</td>
</tr>
<tr>
<td>Flow rate (ml/min)</td>
<td>100 - 1,000</td>
</tr>
</tbody>
</table>

**Rotojekt A**

IMQL: Internal minimal-quantity lubrication for the re-
liable lubrication of cutting points. Oil aerosols are cre-
ated outside of the spindle and are supplied via a 
single-channel system - even over long distances. Very 
simple dosing adjustment by automatic tool detection. Easy to ope-
rate and service.

<table>
<thead>
<tr>
<th>Application</th>
<th>Turning</th>
<th>Milling</th>
<th>Drilling</th>
<th>Deep-hole drilling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>Lubricant (ml/h)</td>
<td>5 - 10</td>
<td>20 - 50</td>
<td>100</td>
</tr>
<tr>
<td>Manufacturing costs</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It's all about quality

Repairs are as annoying as downtimes are costly. We at GAT take every effort to develop and manufacture products that yield a long service life and utmost reliability. GAT products are subject to long operating periods, extreme loads and demanding operating conditions. That is why all parts must be manufactured as accurately as possible.

During the initial product design only cutting-edge processes and high-quality materials are used. GAT products are developed with the help of powerful 2D and 3D CAD systems, and FEA serves for the simulation and optimization of critical parts. Machining to minimal tolerances and assembly take place in air-conditioned rooms and in compliance with strict cleanliness requirements. Any tests during the manufacturing process are carried out with modern electronic testing devices. Each product is subject to a final quality check under customer-specific testing requirements, making sure that all functions work properly.

Finally, a quality management system in compliance with DIN ISO EN 9001 ensures a consistently high quality of all processes.

With our proprietary quality concept our customers can rest assured that components from GAT are the most durable and reliable parts of their equipment and offer high technology with a long service life.