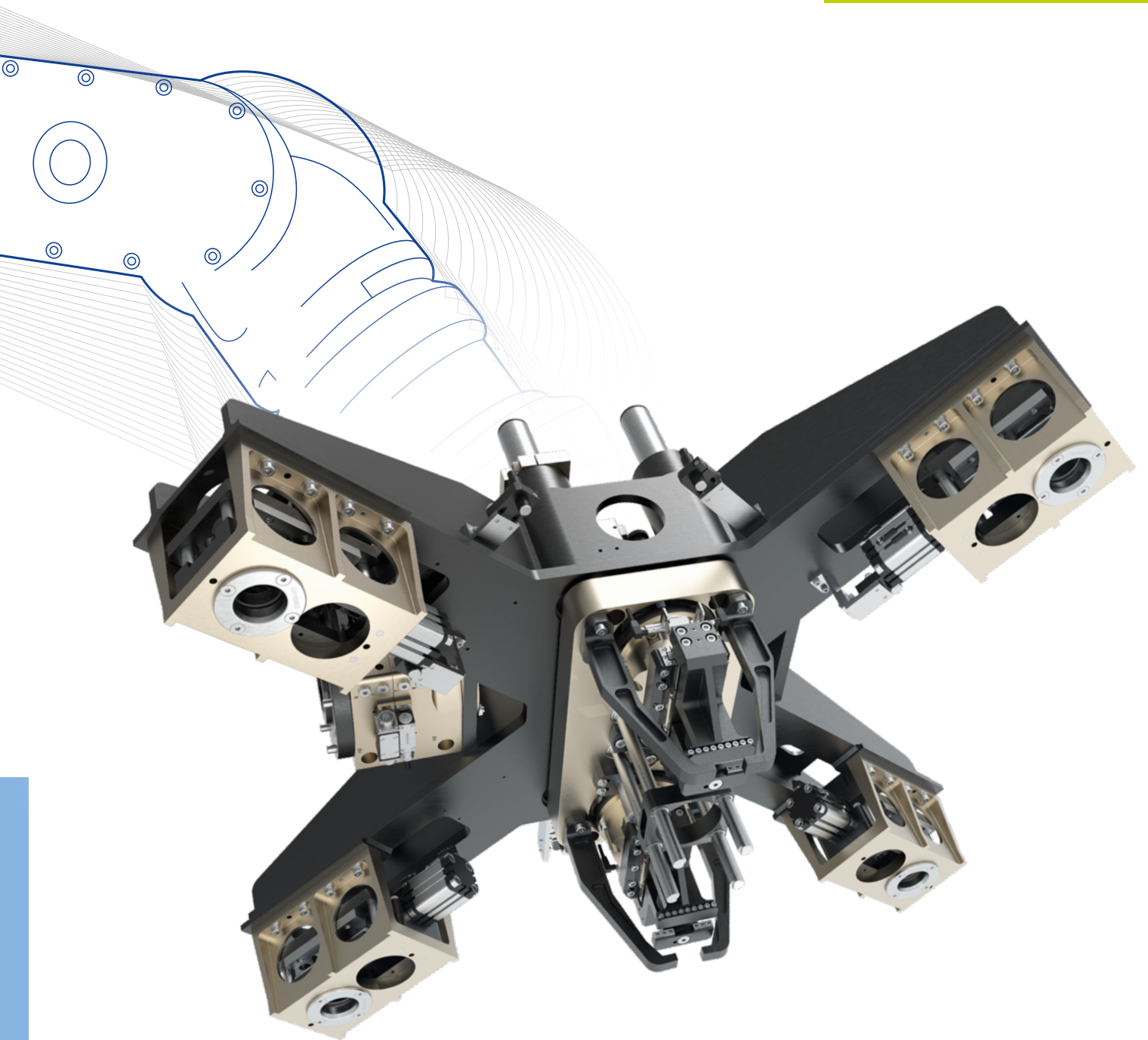


# INDUSTRY-SPECIFIC SOLUTIONS

**FOUNDRIES**



# IPR – Solutions at hand

Our components make your robot more intelligent, flexible and versatile

## Innovation meets top quality

IPR – Intelligente Peripherien für Roboter GmbH is a leader in the development and manufacturing of products related to industrial robots and offers an extensive product range with innovative systems and components for assembly and handling technology. Our parallel and angular grippers, tool changers, joining and compensating systems as well as load limiters, 7th axes for robots and customer-specific solutions are used by customers in many countries around the world.

Companies from all industries trust our products. Quality, technical and industry knowledge are our most important success factors.

We offer you standard products ready for immediate use, but we also support you in special and large-scale projects. Here you benefit directly from the development and manufacturing technologies in our house.







# Industry-specific solutions

## For robot applications and automation solutions

### Assembly and handling technology



### Machinery loading and unloading



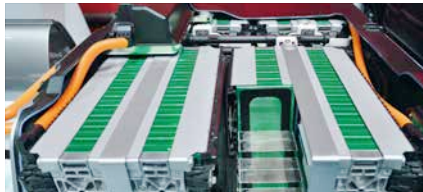
### Foundry and forge



### Automotive



### E-mobility



### Medicine and pharmaceuticals



### Increased value for your application

IPR components are used in a wide variety of industries. The high variance in the product series combined with the possibility of creating modified standard or specifically designed special products in a short time holds a lot of potential for meeting the requirements of our customers. Our success is the result of many years of experience in

our company. Our employees are professionals in their field and have extensive knowledge around industries and production processes. This is how we continually develop innovative, high-quality and high-performance solutions for each individual project.





# Individuality for your application

## From standardized to customized

For individual solutions, we combine standardized components with custom-built modules to reduce design and delivery times as well as costs. Our company provides these services for a wide range of industries such as the

automotive and supplier industry, machine tools and plant engineering, intralogistics, electrical industry, renewable energies, medical technology and the aerospace industry.



# IPR offers everything that robots need to work

## Discover our extensive portfolio of peripherals for robots

Our product range of series-produced automation modules includes a variety of grippers and tool changers, joining and compensation modules, collision protection systems and 7th axes for robots. Within the individual product types, differently graded sizes are available for all load ranges. The excellent quality of our product range ensures high availability as well as smooth use in the production process. We would be pleased to inform you about our components and technologies. Benefit from the many years of experience of IPR consultants.

### IPR stands for:

#### ■ Customer proximity

We are always there for our customers with advice and support.

#### ■ Internationality

We are on site worldwide.

#### ■ Innovation

We offer innovative solutions in top quality.

#### ■ Competence

We utilize many years of experience and the know-how of all employees.

#### ■ Quality and flexibility

We live lean structures and short decision-making paths.

2

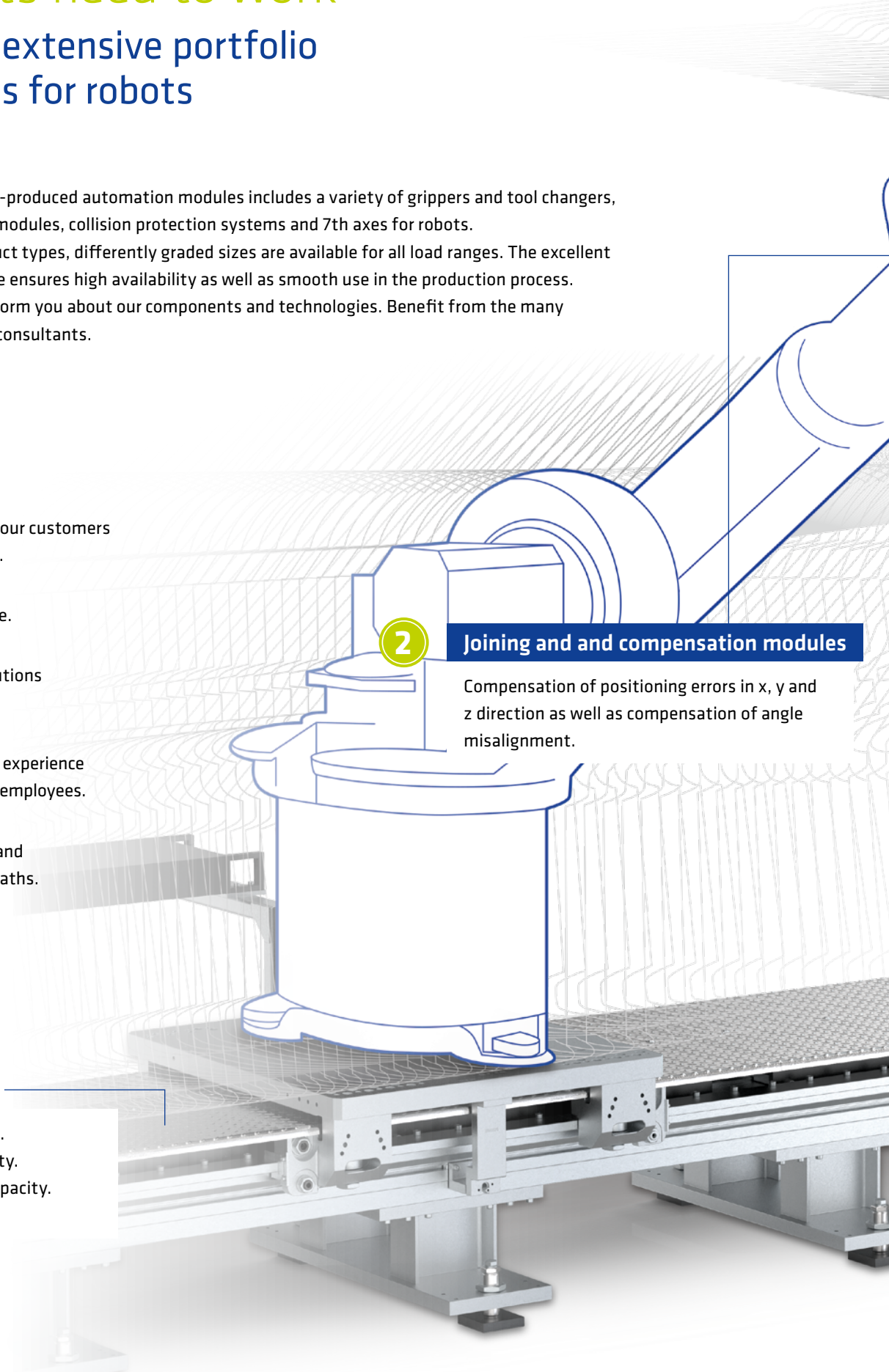
### Joining and compensation modules

Compensation of positioning errors in x, y and z direction as well as compensation of angle misalignment.

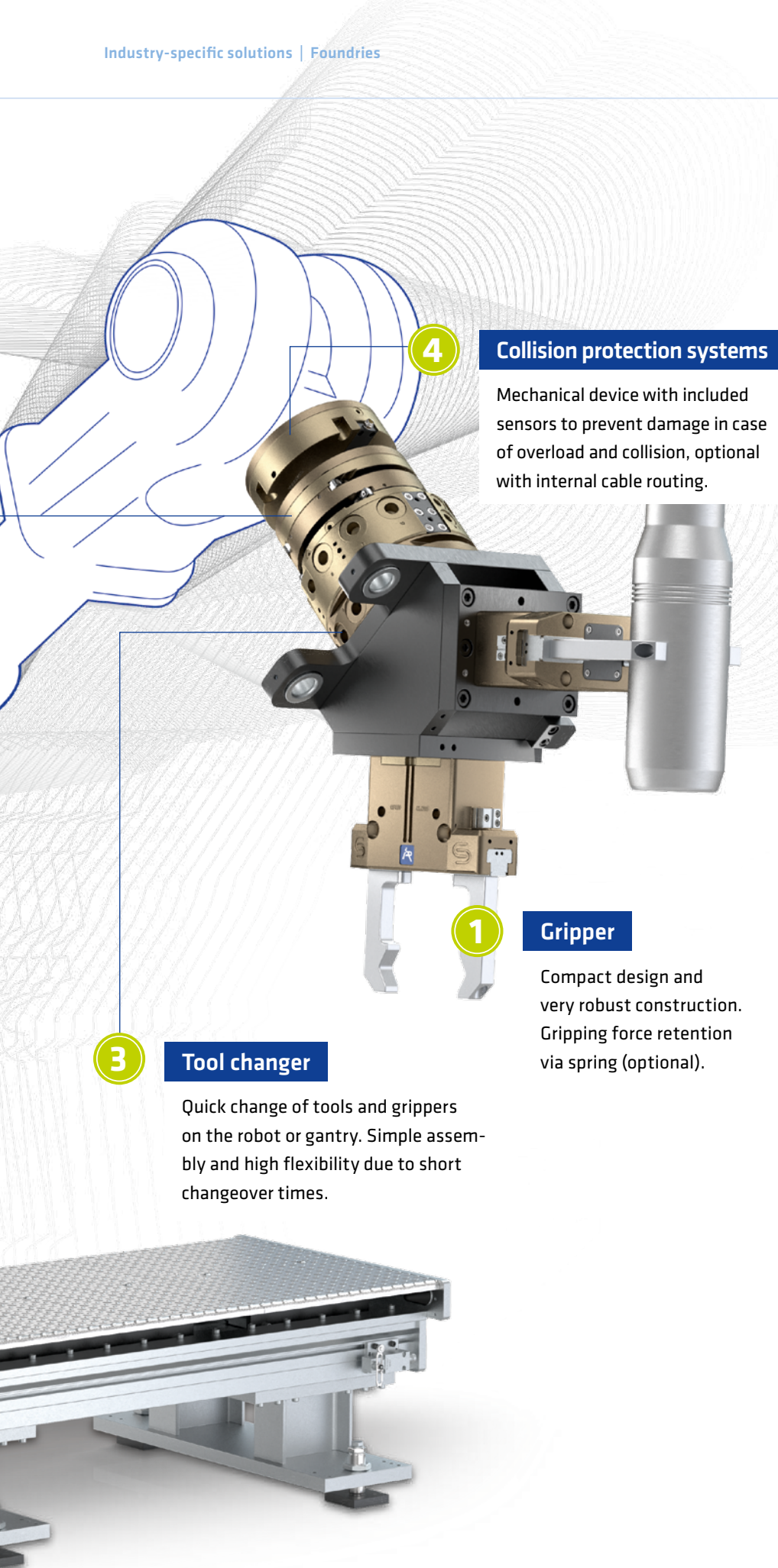
5

### 7th axes

Modular system.  
High repeatability.  
Extreme load capacity.  
Long life.







4

**Collision protection systems**

Mechanical device with included sensors to prevent damage in case of overload and collision, optional with internal cable routing.

1

**Gripper**

Compact design and very robust construction. Gripping force retention via spring (optional).

3

**Tool changer**

Quick change of tools and grippers on the robot or gantry. Simple assembly and high flexibility due to short changeover times.

1

**Gripper**

2

**Joining and compensation modules**

3

**Tool changer**

4

**Collision protection systems**

5

**7th axes for robots**

# Intelligent solutions for a tough environment

## IPR: Your partner in foundry technologies

### Powerful in all manufacturing processes

High temperature, moisture and dirt – IPR knows all too well about the extreme conditions prevailing in the foundry industry and the related requirements. With our gripper systems, robot transport units and fully automated manufacturing cells, we accompany all operations from chill, sand and precision casting, die casting and casting with salt core inserts through to the handling and assembling of delicate components or heavy molds.

### Competence in equipment construction and as a system integrator

Our technological and industry knowledge also makes us a dependable partner in foundry equipment construction. We use our innovative solutions in fitting out equipment constructors and plant manufacturers all over the world. For our customers, we also devise and install complete cells for process automation in low-pressure casting and die casting processes.

### Special gripper for foundry



TEMPERATURE-  
RESISTANT



ROBUST



DIRT  
INSENSITIVE



HIGH  
AVAILABILITY



LONG  
LIFETIME

## We support you in various casting processes:

### Die casting

- Salt core insert
- Aluminum
- Magnesium

### Low-pressure casting

- Sand casting incl. sand core handling
- Chill casting
- Precision casting



# Bespoke solution competence

## Our solutions perfectly customized to your needs

Our different specialist teams implement the full process from devising ideas through to actual design and production. In so doing, we develop customized individual solutions based on our standard program. This results in a reduction of design and delivery times – with a similar reduction in costs. In many countries throughout the world,

IPR is directly involved both in development and production technologies of supplier industry companies, such as KS HUAYU AluTech, Mahle and Nemak, and of car manufacturers, such as Audi, BMW, Mercedes, Ford, GM and VW.



### Assembly cell for sand cores

The cell automates both sand core assembling and handling. It consists of an assembly- and turntable, a core inserting and extracting gripper, an elevated robot transport unit and gripper stackers. Cylinder heads are made with the assembled sand cores.

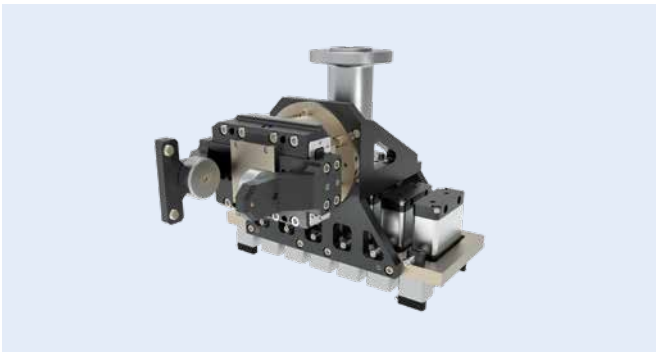
# Customized gripper as per casting process

## Die casting

We have special expertise in the die casting process of light metals, such as aluminum and magnesium.

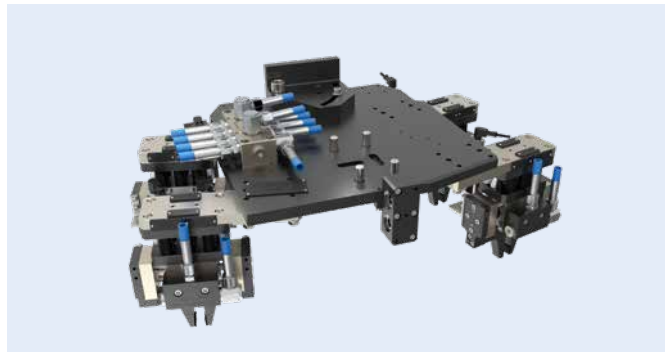
Our know-how is also utilized in salt core handling to remove salt cores from core casting machines in a fracture-proof manner and insert them into the die casting machine.

### Magnetic bearing-support insert gripper



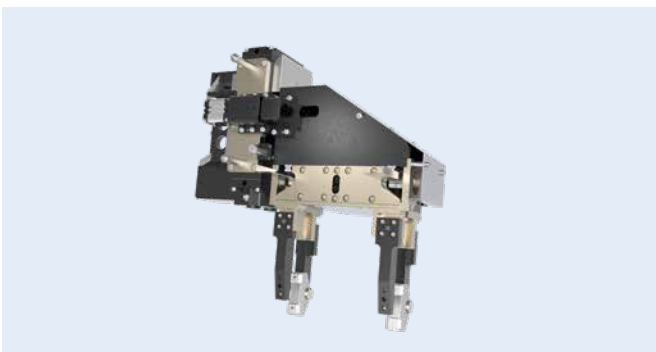
<b>Process</b>	Aluminum die casting
<b>Customer</b>	BMW
<b>Function</b>	Inserting the bearing supports into the die-casting machine and extracting the bed plate
<b>Benefit</b>	Reliable handling of cold and hot bearing supports using magnetic grippers

### Unloading gripper C-pillar



<b>Process</b>	Aluminum die casting
<b>Customer</b>	Mercedes
<b>Function</b>	Removal of a C-pillar from the trimming press
<b>Benefit</b>	Safe removal of the C-pillar from the trimming press, taking into account of temperature-related component fluctuations

### Conveyor unload and furnace feed gripper



<b>Process</b>	Magnesium die casting
<b>Customer</b>	BMW
<b>Function</b>	Handling the sprue and of cylinder crankcases
<b>Benefit</b>	Multifunctional

### Load and unload gripper



<b>Process</b>	Magnesium die casting
<b>Customer</b>	BMW
<b>Function</b>	Inserting and holding cylinder parts in the die-casting machine and extracting the finished cylinder crankcase
<b>Benefit</b>	Putting in the inset under high pressing forces without any additional robot loading

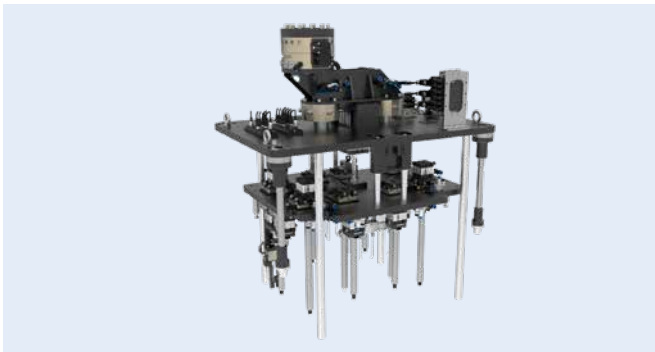


# Versions and accessories

## Low-pressure casting

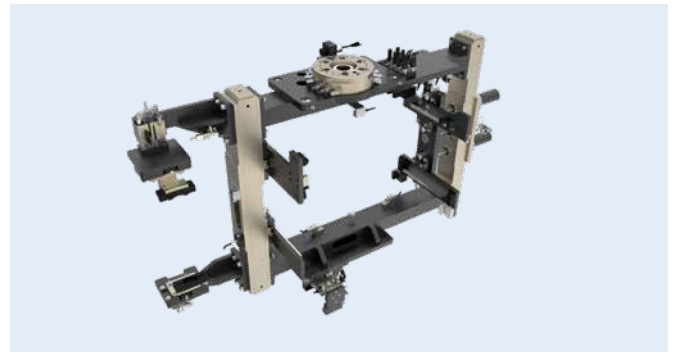
Handle, assemble, insert, remove and hold, whether for sand casting, permanent mold casting or investment casting. With our gripping systems, we can handle all disciplines – for delicate components or heavy molds. The excellent quality of our gripping systems ensures high availability and a long service life.

### Coresetter for automated handling



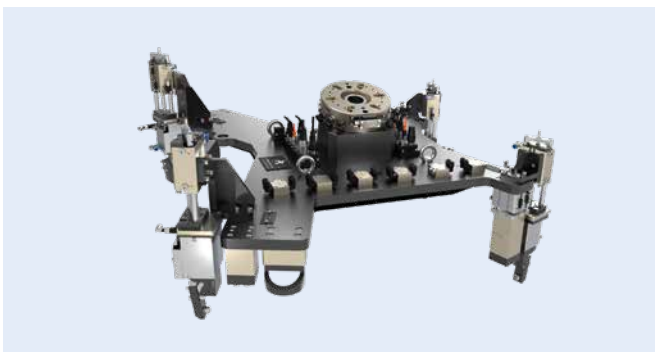
<b>Customer</b>	BMW
<b>Function</b>	Fitting the finished core package in the mold
<b>Benefit</b>	Raised level of availability due to precise gripper measuring and setting

### Frame-gripper for sand cores



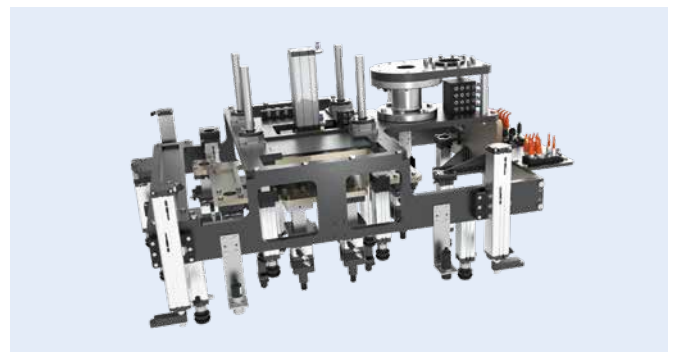
<b>Customer</b>	Indianapolis Casting Company
<b>Function</b>	Extracting sand cores from a core shooter and re-positioning them overhead
<b>Benefit</b>	<ul style="list-style-type: none"> <li>■ Optimum supply line protection brought about by internal frame piping</li> <li>■ Frame construction for considerable stability</li> </ul>

### Unloading gripper



<b>Customer</b>	KS HUAYU AluTech
<b>Function</b>	Unloading gripper subframe
<b>Benefit</b>	Direct removal of the hot casting from the upper part of the casting machine and stacking in transport rack

### Sand core gripper, filter insertion gripper, tray handling gripper



<b>Customer</b>	KS HUAYU AluTech
<b>Function</b>	Removal of sand core from tray, insertion sand core and filter into mold, handling of empty tray
<b>Benefit</b>	Processing of a tray stack with casting machine with only one gripper

## IPR – Your experts in sand core handling

Solve your sand core handling tasks in a process-safe way with our innovative gripper solutions. Successful for decades in the gripping technology of various industries, we have a special competence to remove sand cores from core shooter and assemble them together.



### Assembly- and turntable for sand cores

The individual sand cores are assembled here into the core package. The Top Core is rotated by 180° for the final joining process. This prepositions the core package ready for pick-up by the coresetter.

### Design features core gripper

- Weight saving due to aluminum construction (frame or plate design)
- Own stable IPR aluminum profile
- Mounting surfaces machined; parts pinned and marked
- Workpiece contact parts made of hardened steel
- Gripper details in three directions adjustable to measuring machine
- Exchange of wearing parts without re-measuring
- Measurement (+/-0.1 mm) according to robot hand axis with measurement protocol
- The gripper can be exchanged at any time without reteaching

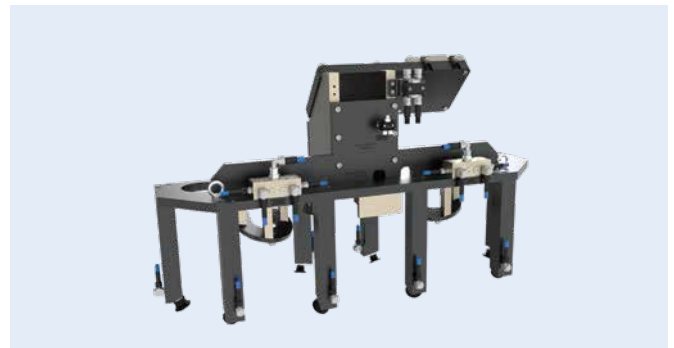
## Handling

### Crankcase handling gripper



<b>Customer</b>	VW China
<b>Function</b>	Handling cylinder crankcases
<b>Benefits</b>	<ul style="list-style-type: none"> <li>■ Raised level of availability</li> <li>■ Long-stroke gripper with mechanical gripping force safeguard</li> </ul>

### Multi-gripper for strut domes



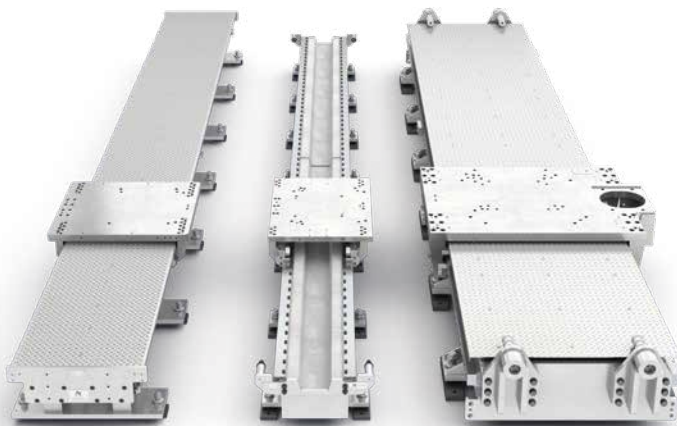
<b>Customer</b>	Mercedes
<b>Function</b>	<ol style="list-style-type: none"> <li>1. Extraction of cast part from die-casting machine with a single jaw gripper at the sprue</li> <li>2. Insertion into de-burring press</li> <li>3. Extraction of finished parts from de-burring press using vacuum or parallel grippers, sprue extraction using the single jaw gripper</li> </ol>
<b>Benefits</b>	Multifunktional



# Work with the No. 1 in 7<sup>th</sup> axis technology

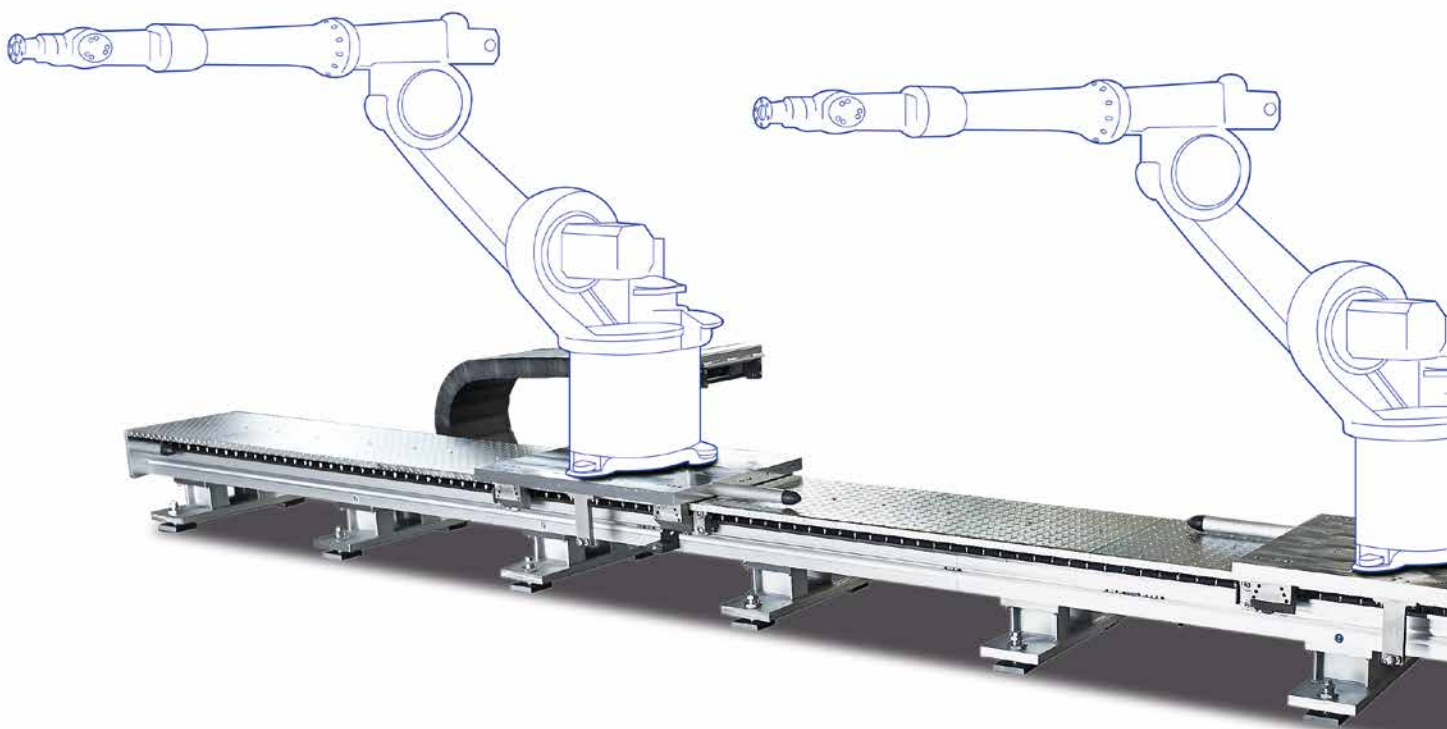
## IPR 7<sup>th</sup> axes for industrial robots add flexibility and precision to the production process

In view of the extreme environmental conditions, our robot transport units for the foundry industry optionally come with an integrated air curtain using seal air to stop any rail contamination. Furthermore, a cover can protect the drive and control system of the unit and at the same time make it accessible.



### **Modular construction system: arbitrarily expandable**

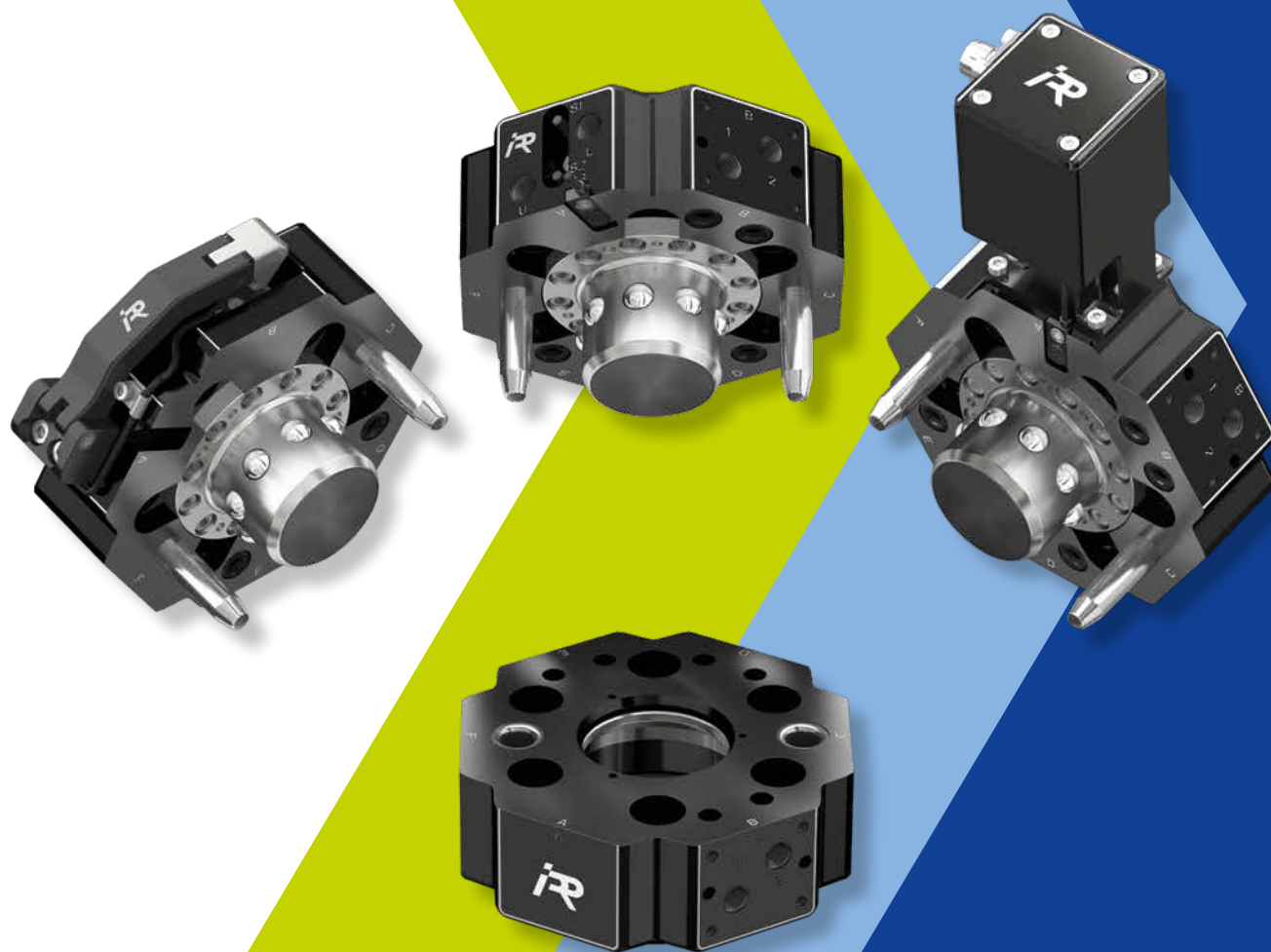
Based on a basic module – two meter length with a one meter travel path – the IPR robot transport units are nearly endlessly extendable. Ten different aluminum or steel models are available with maximum payloads of up to 12 t.





# TOOLCHANGER<sup>3</sup>

PNEUMATIC · ELECTRIC · MANUAL



MODULARITY  
TAKEN TO THE LIMIT



# More flexibility in the foundry

## The new tool changer from IPR

The new TKX product family revolutionizes the world of robot automation: Three drive technologies with endless application possibilities. In typical industrial applications as well as for use with light-weight robots and stationary applications, the new tool changers are the best choice. From now on, you can use a single system to equip every robot in your production - interchangeable and fully flexible.

- ⊕ **Wide portfolio up to 500 kg payload**
- ⊕ **Extremely robust and low-wear due to hard chrome-plated functional parts**
- ⊕ **Improved compressed air transmission due to specially developed seals**

### **X TKP** | PNEUMATIC

**Proven functional principle –** successful for 30 years and further improved with optimized kinematics for maximum locking force.

### **X TKE** | ELECTRIC

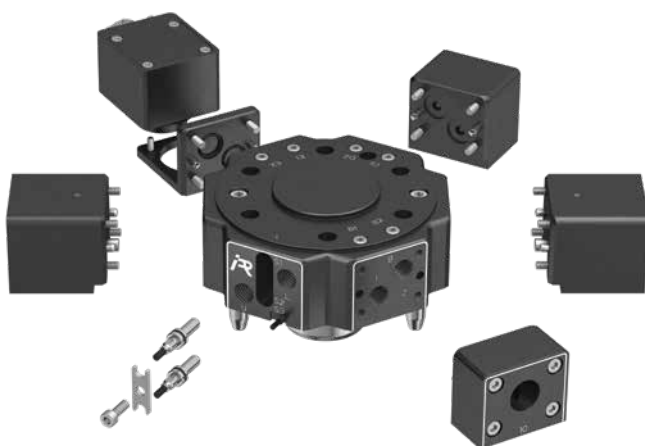
**Changing with 24 V –** no pneumatics necessary, therefore especially suitable for light-weight robots, cobots and environments without compressed air.

### **X TKM** | MANUAL

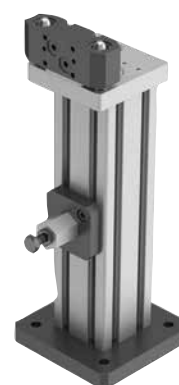
**Change in the blink of an eye –** no power supply necessary, therefore especially suitable for applications with low replacement cycles.

## The TKX product family

Pneumatic, electric and manual – all three types of drive can be used with the new TKX product family. Each robot-side head section is compatible with the uniform mold side and thus offers the customer the greatest possible flexibility.



Modules for carrying out electrical signals (Industrial Ethernet up to 1Gbit), pneumatic and hydraulic media



II-Tray  
Pin Tool Rack



U-Tray  
Tool Rack

## Everything from a single source

### Compatible accessories

Each application has its own requirements and needs components that are specially adapted and optimized for maximum productivity. For the new product family of TKX tool changers a new portfolio of accessories has been developed from scratch. Configure your system exactly the way you need it – IPR provides you with everything from a single source.

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