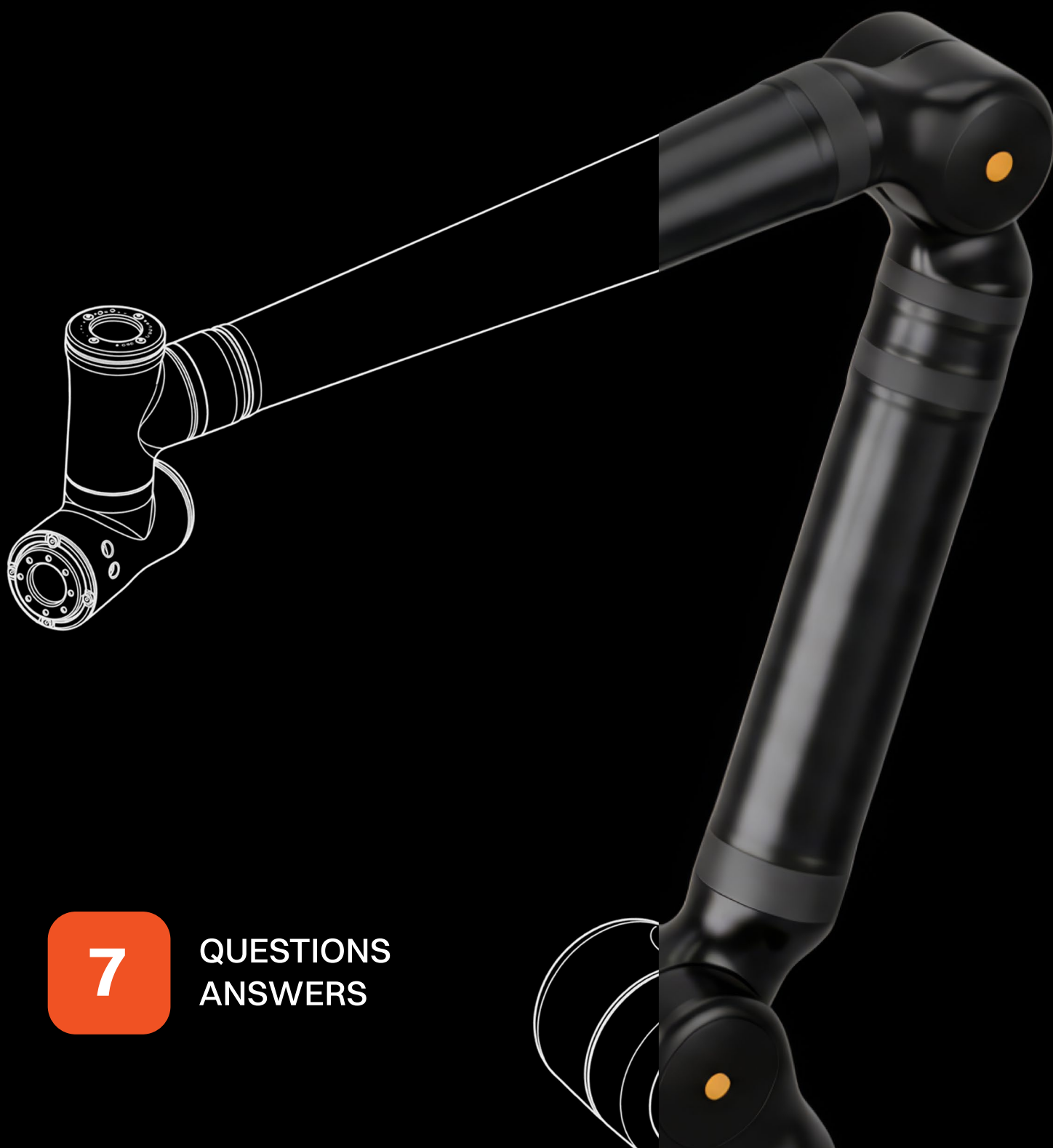


BEGINNING WITH ROBOTICS



7

QUESTIONS
ANSWERS

Exploring the value of robotics.

Is it worth integrating robotics into my company? What does human-cobot collaboration look like in practice? What options are available on the market? And, importantly, isn't automation too challenging for small and medium-sized companies without prior robotics experience?

We encourage you to delve deeper into the subject of robotics. It's definitely worth it.

Many people initially envision a simple scenario: robots replace human workers, allowing them to take on more complex tasks or perform tasks for which human workers cannot be found. While these ideas hold some truth, they miss a larger point – using robots enhances your competitiveness.

The opportunities you gain from robotics are extensive. Robots offer advantages far beyond merely speeding up existing tasks.

Implementing even a single robot can ensure not only higher productivity but also improved quality.

Changes in production can lead to additional possibilities, including process optimization and portfolio expansion.

In short, the use of robotics significantly boosts your competitiveness.



Did you know?

The term 'robot' was initially introduced by Josef Čapek, the brother of Czech author Karel Čapek. It is derived from the Czech word 'robota,' which means compulsory labor.



Automate with confidence.

With this white paper, we want to offer insights into important aspects of your entry into robotics.

While we can't cover every detail in these pages, we aim to provide you with crucial insights and guidance tailored to your unique challenges. Our goal is to empower your company to harness the full potential of robotics from the start.

This white paper highlights the key considerations for your journey into robotics. Our expert advice will guide you through essential areas and prompt you to ask the right questions.

Focused exclusively on the industrial application of cobots, this paper targets manufacturing and skilled trades companies. Whether you're looking to automate tasks such as machine tending/CNC, packaging, palletizing, quality inspection, dispensing, or labeling, we are here to support your first steps into robotics.

When are robots worth the investment?

Some business owners face the exciting challenge of deciding which task to automate first (see Question 4). Others are uncertain whether robots can deliver a substantial return on investment (ROI) for their company.



If any of the following scenarios resonate with your company, it's time to seriously consider integrating cobots into your operations:

- Your production involves repetitive tasks that demand speed and precision, but you face staff shortages either overall or during specific shifts.
- You want to reassign certain employees to more value-added tasks, but you're concerned about finding replacements for their current repetitive roles.
- While eager to embrace automation, you're hesitant to invest in conventional industrial robots due to high follow-on programming costs for future tasks and the inflexibility of permanently installed robots.

💡 Did you know?

The first cobot was invented in 1996 by J. Edward Colgate and Michael Peshkin. They called the cobot 'a device and method for direct physical interaction between a person and a computer-controlled manipulator'.

By choosing Kassow Robots, you can address these challenges head-on. Our cobots offer the flexibility, efficiency, and precision needed to optimize your production processes and achieve a strong ROI.

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Q1

Is an industrial robot right for our manufacturing company?

Considering automation options and determining the suitability of industrial robots for your needs.

When we think of “industrial robots,” images of vast factory floors at famous carmakers or food companies often come to mind – fully automated production lines with giant, caged robots operating at incredible speeds and hardly a human in sight. The costs for such systems are indeed enormous, justified by production volumes in the hundreds of thousands or even millions, with operations planned years in advance.

But what does a small or medium-sized company (SME) think when considering its first investment in robotics? Such massive solutions – permanently installed on the factory floor, enclosed for safety, and requiring robotics engineers for operation and maintenance – might seem overwhelming and impractical.

SMEs typically operate in a very different landscape. Many manufacture different sets of products on different days, embracing a variety of versions as part of their business model. Often, their diverse tasks can't be managed by a single robot fixed in one location. These companies need robots that can be easily moved to where they are needed. This is where cobots come into play, offering simple and flexible automation solutions.

Conventional industrial robots excel at tasks beyond human capability, such as lifting heavy objects or performing high-speed operations. These robots usually require a fixed location within a special enclosure and the expertise of skilled robotics programmers. In contrast, SMEs seek robots that provide flexibility and ease of programming, allowing them to stay agile and independent.

For these companies, we highly recommend exploring cobots as a viable solution. Cobots provide versatility and user-friendly operation that can adapt to the changing needs of small and medium-sized enterprises, making them ideal for the first step into automation.

In short

- Traditional industrial robots are costly, fixed, and require extensive programming, making them less practical for SMEs.
- SMEs need flexible, easily movable robots to handle diverse tasks and varying production schedules.
- Cobots offer versatile, user-friendly automation, ideal for SMEs seeking to stay agile and independent.



Q2

What are cobots – and must they always be used collaboratively?

Understanding cobots and exploring their various applications beyond just collaborative use.

Cobots, or collaborative robots, have become indispensable in modern industrial production, especially for small and medium-sized enterprises (SMEs). While traditional industrial robots are known for their size, speed, and complexity, cobots offer a different set of advantages tailored to the needs of dynamic and versatile production environments.

The term “cobot” combines “collaborating” and “robot,” reflecting their original design purpose: to simplify robotic automation and make it accessible to smaller companies. Cobots are engineered to work alongside humans, enhancing productivity without the need for extensive safety barriers or specialized programming knowledge.

Over two decades ago, Kristian Kassow's student project at the Technical University of Denmark laid the foundation for what would become a revolution in robotics. After co-founding Universal Robots, the world's first cobot manufacturer, Kristian Kassow continued to innovate, eventually founding Kassow Robots, known for its pioneering 7-axis cobots. The company made its public debut at the Automatica trade fair in 2018, and in 2022, Bosch Rexroth became the majority shareholder, with Kristian continuing as co-owner and CEO.

Cobots stand out from traditional industrial robots in several ways:

- **Simple operation and programming:**
Cobots are user-friendly, enabling employees with minimal training to program and operate them.
- **Safe operation in human workplaces:**
Designed to work safely alongside humans, cobots minimize the need for extensive safety measures.
- **Easy relocation within facilities:**
Their lightweight construction allows for effortless movement and repositioning as production needs change.

While cobots may have limitations in payload and speed compared to their larger industrial counterparts, their benefits are substantial. They offer rapid ROI, particularly during labor shortages, and can significantly boost productivity and growth.

Cobots are ideal for companies embarking on their robotics journey. They are easy to use, versatile, and can be programmed quickly by any employee. Cobots on the market range from 3 to 7 axes, with 7-axis models like those from Kassow Robots offering the unique ability to reach around corners, simplifying programming and expanding their functional range.

Kassow Robots' portfolio includes five advanced 7-axis cobots, each designed to handle a wide variety of applications. All five are available in two versions: the classic variant with a separate controller, and the Edge Edition series, featuring an innovative integrated controller in the base of the cobot – a testament to Kristian Kassow's relentless drive for innovation.

In short

- Cobots are designed for ease of use, safety, and flexibility, making them ideal for SMEs, unlike traditional, complex industrial robots.
- Cobots, pioneered by Kristian Kassow, are user-friendly, can work safely alongside humans, and can be programmed and relocated easily.
- Kassow Robots' 7-axis cobots offer unique advantages, such as reaching around corners. The new Edge Edition features integrated controllers for enhanced mobility and functionality.



Q3

How can we ensure maximum flexibility in our robot solution?

Identifying key features to look for in a flexible robot solution to adapt to diverse tasks.

For SMEs, flexibility is crucial when implementing automation. But what characteristics make a cobot truly flexible? When selecting a cobot, consider the following essential factors:

Flexible in reach and payload

Cobots are incredibly versatile, handling millions of different tasks. Whether your products are light or moderately heavy or require short or long reach, Kassow Robots has you covered. We offer five cobots with a reach of up to 1,800 millimeters and payloads of up to 18 kilograms. Remember to account for the weight of grippers and end-of-arm tools (EOATs) when calculating payloads.

Flexible thanks to many axes

While robots typically have between 3 and 7 axes, most cobots are designed with 6. However, Kassow Robots' innovative 7-axis models provide exceptional reach and load-bearing capacity. The 7th axis offers two significant advantages: it allows the cobot to reach around corners and perform intricate movements, such as reaching deep into boxes, and it simplifies certain programming tasks.

Flexible through mobile deployment

Need to move your cobot frequently? With Kassow Robots, it's possible. Our cobots weigh between 23.5 and 38 kilograms, making them easily transportable. Whether you need the cobot in different areas depending on the season or specific tasks, mobility is no issue. In fact, our representatives can bring a 7-axis cobot to you in the trunk of their car for a demo appointment.

The new Edge Edition cobots feature an integrated controller in their base and can be powered by a battery or directly from the power grid. This world-first innovation, developed by our CEO Kristian Kassow and the Kassow Robots engineering team, enhances mobility. For example, the Edge Edition can be mounted on AGVs or AMRs for intralogistics tasks, utilizing their 48-volt connection to the mobile robot's battery.

In short

- Kassow Robots offers cobots with up to 1,800 mm reach and 18 kg payload, accommodating a wide range of tasks, from light to moderately heavy products.
- The innovative 7-axis design allows cobots to perform complex movements in tight spaces, simplifies programming, and offers significant maneuverability.
- Kassow Robots' cobots are lightweight and easily transportable, with intuitive programming akin to using a smartphone. The new Edge Edition features an integrated controller for enhanced mobility and adaptability to various tasks.



Flexible due to “programming” & “operating” independence

Cobots are designed for ease of use, allowing anyone to operate them. Additionally, programming your cobot yourself provides independence from third parties, enabling quick responses and cost savings. This isn't traditional programming; it's intuitive, similar to using a smartphone. With just a half to a full day of training, anyone with basic technical skills can create simple programs and operate the cobot competently.

When only basic operation and minor error corrections are needed, any team member can handle it, ensuring smooth and continuous production.

Planning for the future

Always think about tomorrow today. Your robotics needs may evolve over time. While a 6-axis robot might suffice now, the flexibility to reprogram and relocate cobots as needed is invaluable. For workstations with limited space or challenging conditions, the small footprint and 7th axis of a Kassow Robots cobot can be decisive advantages.

Flexibility is a key strength of SMEs, and cobots enhance this trait significantly. Kassow Robots provides multiple advantages at competitive prices, including the innovative 7th axis and the integrated controller in our Edge Edition.



Q4

What is a good starting task for our independent cobot automation process?

Discovering ideal initial tasks for cobot automation and avoiding the "toaster trap."

"We can't find anybody to do this job now. This might be the right time to try out a robot on that task..." Is the current difficulty in finding employees a good opportunity to test robots in your operations? Absolutely. Like any new technology, the use of robotics can be learned. And just as a triathlon novice wouldn't start with the Ironman in Hawaii, you should approach your entry into robotics with realistic expectations.

In this regard, we always warn potential customers about what we call the "toaster trap." While cobots are user-friendly, integrating them into your production process isn't as simple as unpacking a toaster and pressing a button without any instruction.

Avoiding the toaster trap

Don't take on too much when getting started. Consider which of these scenarios applies to your situation:

1. Alone: You are tackling the implementation independently because your company already has some experience with automation solutions.

- **TIP:** Start with simple tasks, such as picking and placing or loading a single component type.

2. Partner: A systems integrator is supporting you in the conception and implementation of the solution.

3. Mix: You are handling the implementation independently but are buying expert assistance on a single-day basis to gain know-how.

Cobots are not only easy to use but also easy to program. Anyone can quickly learn to do it without needing to know a programming language, thanks to the intuitive graphical user interface. However, any automation process presents certain challenges. For example, peripheral devices such as grippers and cameras must be correctly integrated into the cobot's setup. If this is your first time integrating a robotics solution for tasks like welding, dispensing, labeling, or complex loading, a systems integrator can provide invaluable expertise.

Lightweight robots are extremely user-friendly—as our Kassow Robots cobot users frequently attest. Many wonder why they didn't implement a robot solution sooner. Nonetheless, even using a cobot requires some foundational knowledge. Therefore, it's wise to consider external support—whether from a consultant on a short-term basis or a comprehensive service provider, at least for your first project.

Taking these steps will ensure a smoother transition into automation and help you maximize the benefits of your new cobot.

Q5

How can we integrate robots into our limited space?

Strategies for fitting robots into constrained spaces without compromising efficiency.

It might sound trivial, but the failure of a robotics implementation often stems not from the investment or the willingness of company owners, but from a lack of space. For many SMEs, space is a premium, with businesses expanding organically over generations. Acquiring additional land or building new facilities can pose a significant financial risk.

So, what space-related considerations might novices overlook?

- **Cobots are lightweight:**

They can be mounted overhead or sideways on walls, saving valuable floor space.

- **7-axis flexibility:**

Cobots with 7 axes can execute complex movements in tight spaces, an advantage 6-axis models lack. The 7th axis enables the robot arm to reach around corners, enhancing maneuverability. Additionally, Kassow 7-axis robots are less affected by robotic singularities due to their unique joint configurations, providing more reliable and flexible operation.

- **Extended reach:**

Despite their small footprint, some cobots can extend far. For example, Kassow Robots' "Max Reach" cobot can extend 1.80 meters in all directions.

- **Integration with AGV/AMR:**

The Edge Edition is ideal if you plan to combine AGVs or AMRs with a cobot. With an integrated controller in the base, these cobots can draw power from either a battery or the grid, enhancing mobility and flexibility.

Space is both costly and limiting when it comes to deploying cobots. We recommend choosing extremely maneuverable and compact models to maximize your options. Even if your initial applications can be achieved without spatial constraints using any cobot, consider the future potential of 7-axis models. Cobots' ease of movement and reprogramming means that, at some point, you might need to operate in very confined spaces.

By selecting versatile and compact cobots, you ensure that your automation solutions remain adaptable and efficient, regardless of space limitations. This forward-thinking approach will help you avoid spatial pitfalls and fully leverage the capabilities of your robotic investments.

Q6

How do we ensure the safety of our team when introducing robots?

Implementing safety measures to protect your team while integrating robots into your operations.

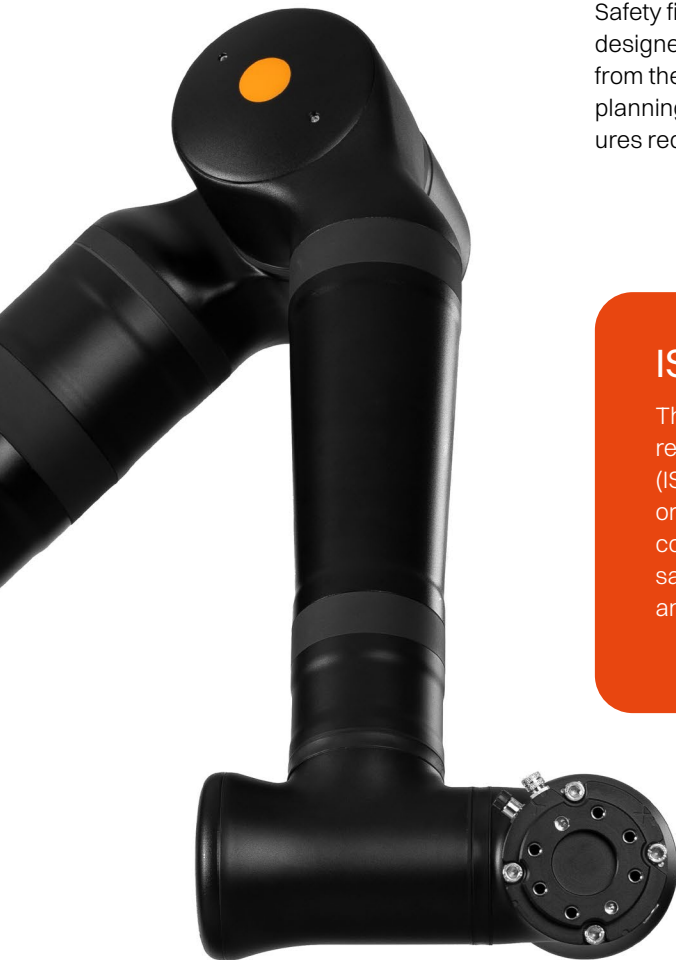
Safety is paramount for any company. Not only is it critically important, but a thorough risk analysis must be conducted during the early planning stages of any automation solution.

Deciding on the type of robot that fits your operations best is essential. Both industrial robots and cobots can create a safe workplace, but cobots are specifically designed to collaborate with human workers. This makes implementing safety measures simpler with cobots compared to larger industrial robots.

With their lightweight construction, Cobots are built to cooperate with and support humans. They come equipped with integrated safety technology that halts operation whenever a person or object is detected in their path.

What safety precautions can be taken when cobots operate at higher speeds? Additional equipment like sensors, scanners, and optical barriers are essential in such cases. These devices ensure that if a person enters the cobot's operating zone or passes through an optical barrier, the cobot automatically stops. If you choose to enclose cobots with safety fences, their installation is significantly less demanding and space-consuming than industrial robots.

Safety first. Companies must prioritize this issue, and rightly so. Cobots are designed for collaboration with people, incorporating special safety features from the outset. However, performing a comprehensive risk analysis during the planning phase is crucial. This analysis will identify the specific safety measures required and their implementation points.



ISO/TS 15066 – Collaborative Robots

The key standard for collaborative robotics is ISO/TS 15066, first released in 2016 by the International Standards Organization (ISO). This standard outlines the safety requirements for collaborative industrial robot systems and guides the safe operation of cobots. Robots that comply with ISO/TS 15066 include specific safety features such as integrated safety sensing, speed limits, and force limits.

Q7

Does a robotics solution make sense for our company, and should we seek outside support?

Evaluating the human factor and considering external support for a successful robotics implementation.

"People do business." Therefore, when planning your first robot project, it's essential to address the human factor:

Your role

Have you allocated enough time for project implementation? A robotics project requires dedicated time and cannot be rushed or done casually in the evenings. While cobots are user-friendly, their integration demands thoughtful planning and execution.

Your team (All levels)

Do you have technology enthusiasts in your team, and how will you introduce all members to the robots early on? Making robotics a top-level priority is crucial, but involving your entire team is equally important. Regularly update all employees on the project's progress and encourage their participation. From trainees to senior employees, let everyone engage with the robot and experiment with simple tasks.

Outside experts (Systems integrators, consultants, etc.)

Is "cheaper" really worth it? Although some cobot solutions can be implemented independently, engaging a systems integrator can be highly beneficial. An external perspective can unlock unexpected possibilities and ensure a smoother implementation, whether for a few training days or the entire integration process.

Novices should consider the value of experienced systems integrators who work in specialized engineering daily. Please discuss your project needs with potential partners to understand their requirements for efficient implementation. Look for a partner who offers fair and transparent pricing, including follow-up support and programming assistance. Sometimes, a seemingly inexpensive provider may cost more in the long run if they exclude essential services or charge separately for them.

Remember to consider the human factor. If you are responsible for your company's first cobot project, ensure you allocate sufficient time and involve your entire team. Choose systems integrators and external experts carefully, clarifying their services and pricing. Ultimately, the partnership should benefit both parties.

A global partner network

30+ countries, 80+ partners

Are you looking for a robot system integrator? Kassow Robots has developed an extensive network of business partners across four continents and 30 countries, continuously expanding our reach. Our partners are medium-sized enterprises that

speak the language of our end customers and are available to assist them even after purchasing our 7-axis cobots.

Please browse our list of certified and vetted partners.

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7 reasons to choose Kassow Robots

Kassow Robots, founded by Danish entrepreneur Kristian Kassow, manufactures unique 7-axis cobots in Copenhagen. These cobots combine strength, speed, and maneuverability. The present range provides a payload of up to 18 kilograms, a reach of up to 1800 millimeters, and a speed of up to 225 degrees per second. Their user-friendly design, operated via teaching pendants based on tablet technology, ensures easy programming and operation.

Now majority-owned by Bosch Rexroth, Kassow Robots continues to innovate. We recently launched the world's first 7-axis cobots with a controller integrated into the base, providing greater flexibility for mobile solutions and additional space savings for cramped facilities.

Here are some key advantages that set Kassow Robots apart from competitors:

1. Developed for industrial use

All our models, built with a robust all-aluminum surface and durable materials, offer exceptional durability and ensure optimal performance in any industrial setting.

2. 7 axes for maximum flexibility

Our 7-axis cobots provide unmatched flexibility with an unparalleled range of motion, increased payload capacity, and enhanced precision. Each axis can be controlled individually, allowing for greater adaptability. These cobots can easily access hard-to-reach areas, handle heavier objects, and perform delicate tasks more accurately, making them perfect for various industrial applications.

3. Easy programming

Our cobots are designed for easy programming and operation, featuring plug-in configuration and a user interface similar to a smartphone. This means you don't need help from robot experts. Our modular platform, CBuns, allows for seamless capability extensions, enabling plug-and-play use of peripheral devices.

4. Full flexibility

Our cobots can be quickly reprogrammed to perform different assembly tasks, allowing you to adapt swiftly to changing production needs and maintain greater agility and responsiveness in your operations.

5. Developed by a cobot pioneer

Originating from Copenhagen, our cobots are the brainchild of Kristian Kassow, a pioneer in the industry. Designed specifically for SMEs and industrial use, our lightweight robots are built to meet the highest standards of innovation and efficiency.

6. Safety is paramount

Equipped with advanced sensors that detect overloads, our cobots ensure safe operation in shared workspaces without extensive safety measures. This makes them ideal for repetitive, hazardous, and dirty tasks, significantly expanding their range of applications. A thorough risk assessment is essential before deployment.

7. Part of Bosch Rexroth

Since April 2022, Bosch Rexroth has been the majority owner of Kassow Robots. Partnering with this global leader in factory automation has significantly enhanced our capabilities and business expansion efforts, providing you with cutting-edge solutions backed by extensive industry expertise all around the globe.

Time to dive in?

Reach out to our sales team today for a no-obligation consultation. Arrange an initial phone call or schedule an in-person appointment for a live cobot demonstration. Discover firsthand how Kassow Robots can elevate your automation process!

[CONTACT US](#) ➔



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