

Success Story

Cognibotics + KEBA Industrial Automation
July 2024

Revolution in intralogistics

The legendary meeting between Cognibotics and KEBA took place at automatica 2022 in Munich. Fredrik Malmgren, CEO of Cognibotics, started the meeting with a clear statement: „We have decided that we want to use KEBA robotics technology for our product.“ This was because KEBA Industrial Automation had exactly the piece of the puzzle that the Swedish company based in Lund was still missing for the market introduction of its revolutionary high-performance robot for material handling: KeMotion, the robotics solution from KEBA based on the Kemro X automation platform.

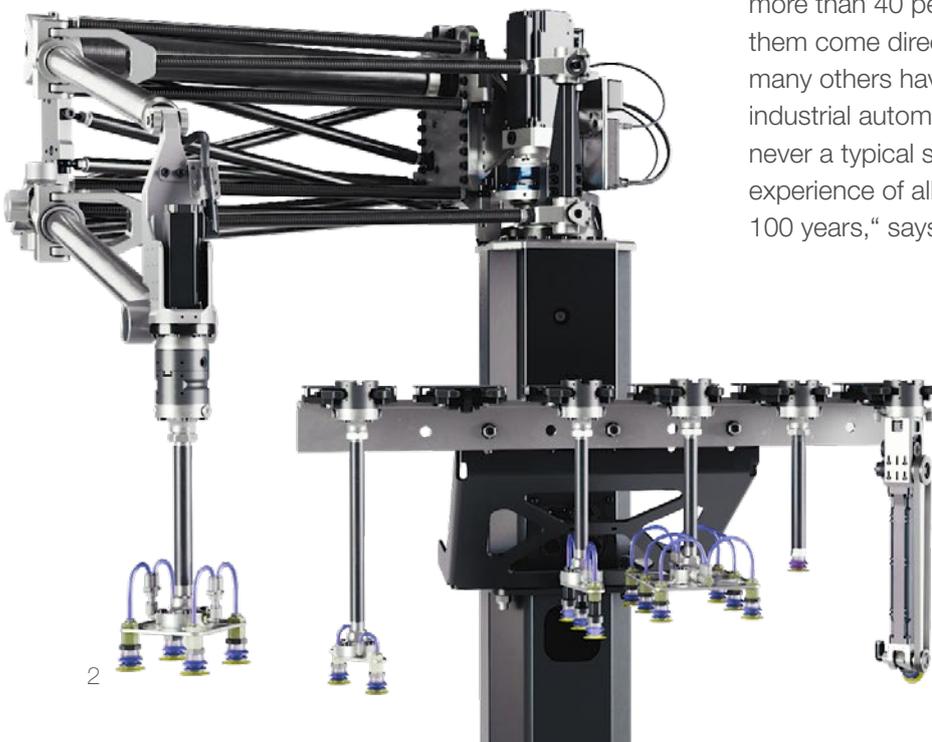
HKM stands for Hybrid Kinematic Manipulator

The name is derived from the combination of the advantages of serial and parallel kinematics; it is an innovative hybrid. This design enables the lowest possible moving masses and shortest cycle times over large circular working areas.

„After reading the names of the KEBA software interface calls, we knew that this system was a „real robotics control“ and not a simple robotics add-on for a PLC. “, say the developers from Malmgren’s team. They spent over two years looking for a suitable

control and platform solution for their HKM1800, a handling robot for order picking that has the potential to revolutionize the entire industry. Malmgren explains: „We needed a mature and complete robotics platform that allowed enough freedom for our specific know-how. Only the KEBA robotics environment offered this. We were able to easily integrate our technology here. This resulted in a unique product that is not easy to copy.“

Cognibotics was founded in 2013 by Klas Nilsson with the aim of developing advanced robot technology and state-of-the-art industrial robots for applications in material processing and material handling. Today, more than 40 people work at the company. 15 of them come directly from a scientific background, while many others have decades of practical experience in industrial automation and industrial robotics. „We were never a typical start-up. If you add up the robotics experience of all our colleagues, we can easily reach 100 years,“ says Malmgren.





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Fredrik Malmgren,
CEO at Cognibotics

After the trade fair in June, Cognibotics and KEBA quickly began working together - The HKM1800 should be launched on the market within a year. Michael Garstenauer, Product Manager at KEBA, explains: „Cognibotics' challenge was that they wanted to enter a productive sector with high demands in terms of reliability, service, spare parts availability and technology with their HKM1800.“

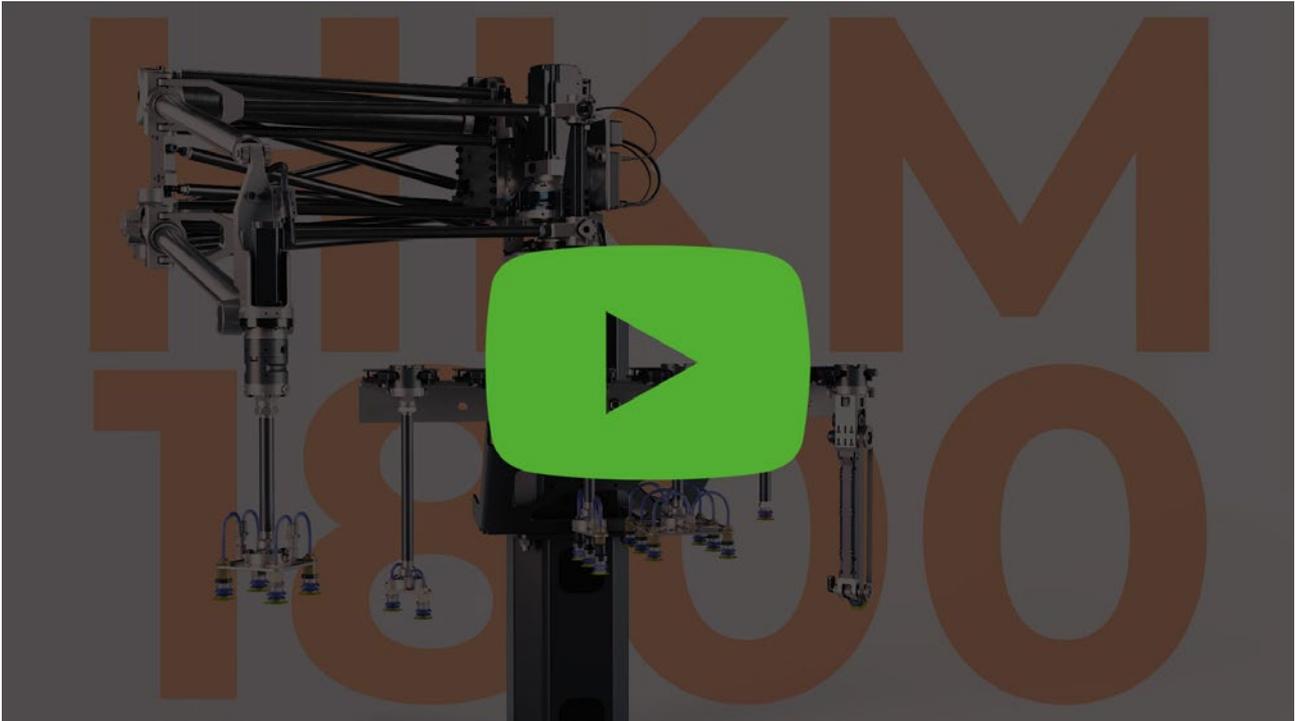
Thanks to Cognibotics' precise requirements, the ambitious goal was achieved.

After just a short time, Cognibotics was more than amazed at what KeMotion was capable of: „Actually we had the system running for days and it did not crash or freeze. We were very surprised,“ says Malmgren. Six months later, in January 2023, the HKM1800 was finally fully functional in the laboratory and ready for the customer world. „We knew we had a very ambitious schedule, but by using the KEBA robotics solution, we were able to reduce our development time by four times, which we could not have done any other way. This short time to the market is crucial for the future market success of HKM1800,“ says Malmgren. Global supply bottlenecks in 2022 led to slight uncertainty regarding the timely completion of the project. This also affected computer components

such as motors. „Thanks to KEBA's in-house production, however, we were able to overcome this challenge much better than the market,“ laughs Malmgren looking back.

The high-performance robot opens up completely new possibilities for robot-assisted picking processes – especially when several picking and placing positions cover a large working area, as is typical in intralogistics warehouses and distribution centers. Malmgren explains: „While a human can maintain a pace of 300-500 pick & place cycles per hour, the HKM1800 can manage over 2,000 cycles per hour with the ability to reach much further than is reasonable for a human.“ The pick & place robot is therefore four times faster than a human and can sort complex goods such as fruit, vegetables or flexible items in boxes.

Compared to standard SCARA, Delta and 6-axis robots, it is optimized for pick & place applications with superior performance and designed with just the right degrees of freedom. The HKM1800 has a maximum load capacity of 7.5 kg, a reach of 1,800 mm and covers a working area of 10 m². Malmgren says: „We based the design on the German truss bridges.“ It is made of a lightweight high-performance material, the arms are made of carbon fiber and aluminum is used for the joints. „We have placed all the ser-



vo motors and gears at a central point that hardly moves. We use the laws of physics - so the entire moving mass is ultra-light and all the heavy things are basically stationary," says Malmgren enthusiastically. The HKM1800 is configured to move very little mass, which enables top performance with minimal energy consumption.

This makes the HKM1800 a very energy-efficient robot. The robot arm only weighs around 25 kg, which means that it consumes a minimum of energy when moving. As a result, it can accelerate and decelerate

quickly without major energy losses or heat generation. This results in reduced energy costs and simplifies installation procedures. "We see that brand owners are increasingly interested in these environmental features to strengthen their brands, i.e. using this very energy-efficient robot", says Malmgren.

With this project, KEBA was able to lay the foundation for the performance of Cognibotics, including servo drives, robot-specific safety technology, motion planners, program interpreters, mobile operating solutions and interfaces for system integration.



We are proud to be part of the HKM1800. This project demonstrates how our customers can implement their core technology based on our mature and powerful KeMotion robotics platform and bring their product to market quickly and reliably.

Michael Garstenauer, Product Manager at KEBA



Cognibotics and KEBA decided to celebrate their successful collaboration right where they had met a year earlier.

The HKM1800 was presented to the world for the first time at the joint stand at automatica 2023 and it was a complete success. The media even described the demonstration by Cognibotics as THE automatica highlight of 2023.



◀ Visitors to automatica 2023 were able to experience the world premiere of the HKM1800 live at the KEBA stand.

As a bonus, the first purchase contract for the HKM1800 was ceremoniously signed directly at the trade fair stand - by whom is not yet revealed, as extensive integration is taking place. In the meantime, another company, Nowaste Logistic from Helsingborg/Sweden, has made history by presenting the first installed HKM1800 handling robot to the media. The company is known for its pioneering role in warehouse automation. From its terminals, Nowaste Logistic supplies a large number of customers from a wide range of industries, from food and confectionery to interior design. The pilot project began at the end of February 2024, with more projects to follow this year.

