

2021/2022

**ctrlX**  
AUTOMATION  
MAGAZINE

**WE'RE**

**OPEN**

**From an open automation  
platform to an industrial  
ecosystem**

**rexroth**  
A Bosch Company

**X—plore**

The new world of automation: Limitless thanks to intelligent software and hardware, apps and co-creation

**X—cite**

A practical solution for practical applications: from AI, robotics and logistics apps to new business models

**X—change**

A change of perspective for the future: Developing award-winning innovations together

# WELCOME TO THE WORLD OF ctrlX AUTOMATION



Steffen Winkler,  
CSO Business  
Unit Automation,  
Bosch Rexroth AG

With ctrlX AUTOMATION, we've shown that we're receptive to change. We're breaking down established structures, overcoming boundaries and creating freedom. With this vision, we've reinvented automation. After all, connected industry needs open



solutions – to meet the needs of future generations, to make savings, to create added value and to allow co-creation. From the very beginning, our aim was to create a fully open automation toolkit with an

ecosystem – based on app technology, which would provide companies with a crucial advantage. Are you ready to change the game with us?

# DEUTSCHER INN



# VATIONS PREIS

**A paradigm shift in automation.  
That is what ctrlX AUTOMATION is all about. This turnaround  
was worthy of “Der Deutsche Innovationspreis 2021”.  
WirtschaftsWoche, Accenture and EnBW, under the  
patronage of German Federal Minister Peter Altmaier,  
named Bosch Rexroth the winner in the “Large Companies”  
category on June 25, 2021. What a reward!**

## X—plore: The new world of automation

<b>We're open</b> Open to the requirements of the future	P 06 – 07
<b>ctrlX World</b> The ecosystem	P 08 – 10
<b>Simple. Complete. Open.</b> Rolf Najork, Member of the Board of Management, Robert Bosch GmbH	P 11
<b>ctrlX CORE</b> The heart of the automation platform	P 12 – 13
<b>News from the world of ctrlX AUTOMATION</b> Software and engineering, hardware and services	P 14 – 15

## X—cite: A practical solution for practical applications

<b>How AI is making saws even sharper</b> Kohlbacher GmbH, filing room equipment	P 16 – 19
<b>Tangible progress</b> SCHUNK GmbH & Co. KG, gripping systems and clamping technology	P 20 – 22
<b>A robot ready for intralogistics</b> CIMCORP GROUP, intralogistics automation	P 23 – 25

## X—change: A change of perspective for the future

<b>Systematic automation</b> Component kit for all requirements	P 26 – 27
<b>Full-service package for automation</b> Service portfolio as your right hand	P 28 – 29
<b>ctrlX developR Challenge</b> Push your idea two steps ahead	P 30
<b>Award-winning solutions</b> A multi-award-winning innovation	P 31

# We're open

**Complex, rigid, proprietary. This is how automation technology was in the past. It lags behind the IT world and digitalization. However, the modern requirements in industry and the changing needs of users require exactly the opposite: Flexibility and connectivity. All components work together seamlessly. IT is connected with OT and domain knowledge. Open, easy-to-use and flexible automation solutions resulting from co-creation are the future.**

## **The aim: Being open to the needs of users**

Rigid automation systems are a thing of the past. After all, a new generation has emerged, one which would like to work in an agile, needs-based manner. Solutions should therefore be geared to the needs of users – not the other way around.

Another driver for the necessary paradigm shift in automation: The fact that machine control, the IT world and the IoT have long relied on each other and are becoming ever more closely linked. In this context, software is becoming an important factor when it comes to productivity and a competitive advantage for machine manufacturers and other players who'd like to add their own know-how to the control system and software. Accordingly, automation means software development. Popular software development tools

and programming languages are therefore being used more and more. And engineering processes will be completely digital and therefore much simpler in the future.

## **The answer: Open ecosystems**

All of this requires open, easy-to-use and scalable automation solutions. The main aim of users is to obtain a solution that meets their needs as well as possible. In addition, they want to use and pay for only what they really need and have the freedom to expand as required at any time. They therefore need an automation system



which works like an ecosystem. For users, the advantage lies in the fact that they can put together the solution according to their requirements.

However, the overall domain know-how required in automation today is so broad that one company alone cannot cover it.

Therefore, the willingness to collaborate increases in all directions.

The fact that all the parties work together to come up with the best solution means that the focus is on their own strengths. The resulting partial solutions fit together perfectly thanks to standardized interfaces.

This results in an ecosystem centered around an automation toolkit which is ideally based on a high-performance, communication-enabled industrial control unit, the Linux operating system, fully open standards, app technology, web-based engineering and IoT connections.

### **The added value: Open to opportunities**

A modern automation platform should be open to all trends in digitalization, for example in mechanical engineering, and to the implementation of AI, digital twin or simulation solutions and much more. The use of technologies such as

digital twins and simulations not only for development and commissioning but also for increasing efficiency will continue to grow – especially in mechanical engineering. AI and machine learning are also playing an increasingly important role in production – be it for predictive maintenance or for autonomous production.

With ctrlX AUTOMATION, all of these requirements can be easily met. The open automation system provides numerous apps from Bosch Rexroth and third-party providers as well as the software and hardware. It breaks down all previous boundaries in automation, makes life easier for users and allows for new value creation methods and business models in automation.



#### **Aaaaand action!**

Regular news from the world of automation is available on YouTube! Information about ctrlX AUTOMATION, live demos, personal experiences and tips and tricks – presented in an entertaining manner!



— To the playlist

## ctrlX World



WITTENSTEIN



NOKIA



Weidmüller

What would automation look like if it were reinvented by Google, Apple or another digital company? It would probably follow the example of a smartphone, with the highest level of functional integration possible and flexible app technology thanks to which users can easily individualize their devices. And that is exactly how ctrlX AUTOMATION works. Bosch Rexroth is opening up the entire automation cosmos and creating a common world: With the ctrlX World ecosystem.

ctrlX World successfully bridges the gap between an automation toolkit and an industrial ecosystem. Bosch Rexroth already provides numerous sector-specific applications. Third-party providers also contribute their own strengths and solutions through co-creation and can thus reduce the time to market. Individual expert knowledge and industry specifics can be easily incorporated in the form of functions. The network is growing all the time, adding hardware to ctrlX AUTOMATION and an increasing number of apps



# The ecosystem



conductiv.ai

TOSIBOX®

SELMO  
sequence logic modelling



iteratec

HUCON  
shifting limits

UNIVERSITY  
4 INDUSTRY

TURCK

Cybus

Your Global Automation Partner

VISION  
for industrial automation

influxdata

Fuzzy Logic  
ROBOTICS

infoteam  
software

HIVEMQ

UID

mirasoft



CODESYS

SMARTHMI

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maxon

XITASO

FORCAM  
smart factory experts

TechMass  
a TeamSystem company

which are available for downloading from the ctrlX Store.

Among other things, users can take advantage of a wide selection of functions for various requirements and benefit from ongoing expansions. They can incorporate their own knowledge at any time by programming the required applications themselves. In the process, they can choose from all popular programming languages. Classic programming is still possible, but no longer necessary. Numerous software and engineering tools as well

as services make life easier for users.

As a result, automation not only becomes extremely simple and individual – it also creates extra added value and new business models. And everyone involved can actively shape the future and create exactly the world that they want!

# STRONGER TOGETHER

Numerous third-party providers and customers enhance the ctrlX World through their know-how and take advantage of its influencer effects.

## 1 Reinhard Haslauer, Business Development Manager, SELMO:

“In order to launch our new technology on the market, it was important for us to join the ctrlX AUTOMATION ecosystem. The kit of components which centers around Bosch Rexroth’s automation platform has everything you could need for engineering in the digital world. Together, we satisfy the demands of the sector for stable, fail-safe systems which are easy to operate and maintain.”

**SELMO**  
sequence logic manufacturing

## 5 Bart van den Corput, Key Account Manager, IXON:

“Our aim is to encourage and support the IIoT transition among machine manufacturers by providing a secure cloud environment with all the technology needed to make the IIoT directly accessible anywhere in the world.”

**IXON**  
IIoT



## 2 Dr. Nawid Zarrabi, Managing Director, ATINA:

“Automation projects often require the interaction of different products and smooth data flow between different systems. In closed systems, interaction is often more difficult. Thanks to the open automation solution from Bosch Rexroth, we can easily implement new solution approaches and link them together.”



## 4 Patrick Hantschel, Head of Digitalization, WITTENSTEIN:

“Thanks to the maximum openness of ctrlX AUTOMATION, which is also reflected in the ctrlX World, we and our customers benefit from easy integration of overlapping applications and a constantly growing ecosystem. This also enables us to achieve a high reach for our solutions.”



## 3 Andy Wang, founder & CEO, Prescient Devices, Inc.:

“Working together with Bosch Rexroth, we’d like to simplify and speed up the development of IoT applications without having to use complex technology. The Prescient Designer is tailored to the Bosch Rexroth community and platform. This allows engineers to design and create a complete edge-to-cloud IoT solution for example within a few weeks. Compared to conventional IoT development, this leads to 12x quicker development, 6x lower costs and better and better real-time management and analysis intelligence.”

**PrescientDevices**





# **SIMPLE. COMPLETE. OPEN.**

**The Factory of the Future is highly variable and connective. At the center are software-based, automated and connected solutions. Bosch Rexroth sets new standards here and is investing to develop this**

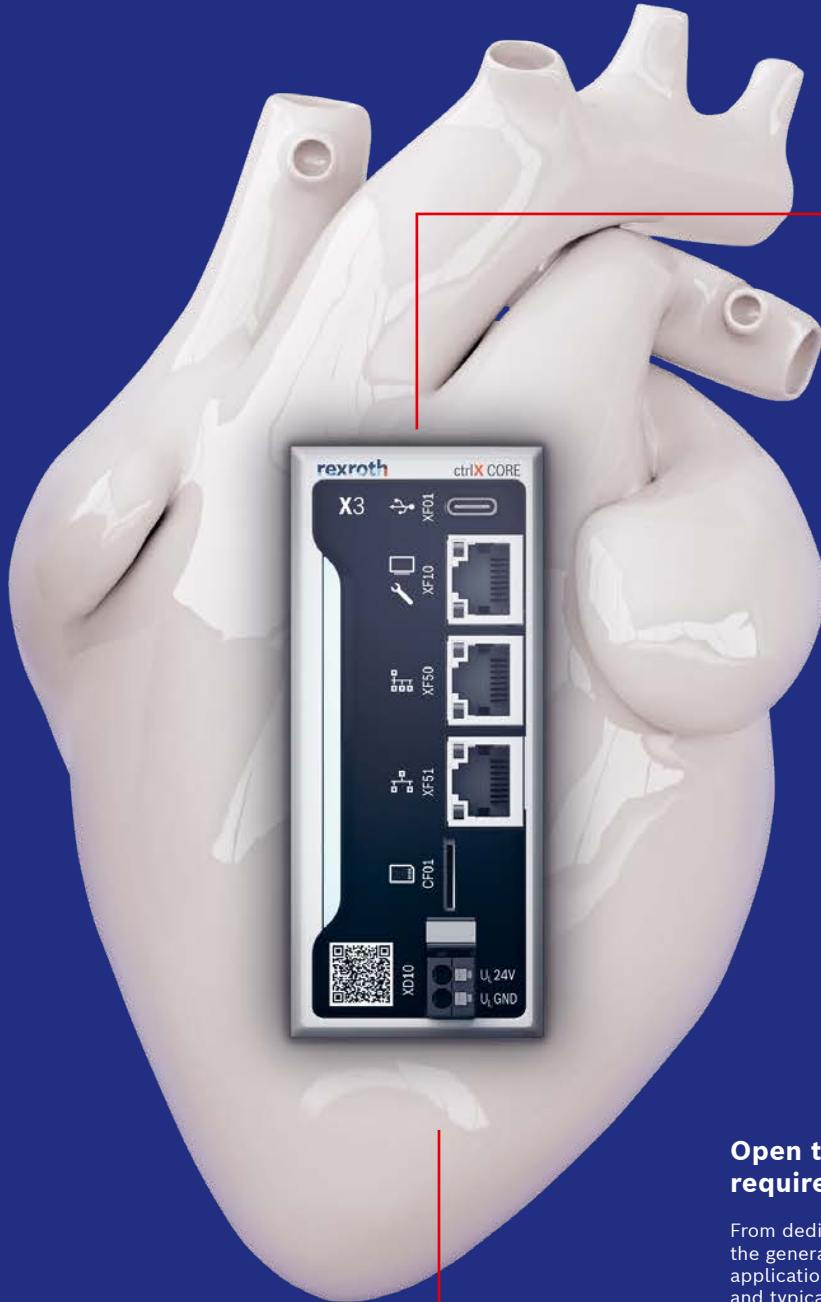
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**segment. In the area of factory automation, for example, we've positioned ourselves well in the market with the ctrlX AUTOMATION platform in just two years. And we still have a lot planned together with our partner companies and users. We're convinced that numerous new functions will come about, some of which no one can predict at the moment. Our world of automation knows no bounds."**

— [www.ctrlx-automation.com](http://www.ctrlx-automation.com)

Rolf Najork, Member of the Board of Management,  
Robert Bosch GmbH

# ctrlX CORE



## Much more than just control hardware

With its architecture, the Linux-based multi-core technology breaks down the boundaries between embedded control platforms and drive-based technology. For example, ctrlX CORE can serve as a gateway and bridge the gap between IT systems such as MES and OT systems on a production level. "One control system for everything" means less engineering, fewer components and higher productivity.

## Open to various sector requirements

From dedicated PLC applications for the general machine market to motion applications for simple handling tasks and typical platform applications where companies have built up their own expertise in niche markets and are now on the lookout for a high-performance future-proof hardware platform.

## Convincing on all levels

The most complete, flexible and open control platform with numerous features on all levels – from design and performance to software and connectivity.

# Heartcore

Provides complete  
freedom for functions

The modular ctrlX WORKS software toolkit is based on the latest app technology and opens up new degrees of freedom when producing, providing and using functions.

**Our heart beats for automation, resulting in the most compact control system of all time. ctrlX CORE is the heart of the ctrlX AUTOMATION toolkit and sets the pace. The pace for the market, which is now quicker than ever before.**

**ctrlX CORE is the central pump which supplies and controls the automation circuit. Linux shoots through its veins, breaking down all previous boundaries in the organism. It solves all automation tasks and can easily dock onto other family members and functions. Whether it be for the sprint or the long-distance run – ctrlX CORE offers maximum performance for all current requirements!**

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— [www.ctrlx-automation.com/ctrlx-core](http://www.ctrlx-automation.com/ctrlx-core)

# News from the world of ctrlX AUTOMATION



**X** Thomas Maag, Director of Product Management, Business Unit Automation, Bosch Rexroth AG

**Q1**  ctrlX AUTOMATION is known for making engineering processes easier. What is new?  
SOFTWARE AND ENGINEERING

Time and time again, we ask ourselves the question: How can we further reduce engineering outlay and give users more room for maneuver in an increasingly digital world? A wide range of new functions for even more efficient engineering processes have therefore been added.

We've raised virtual engineering to a new level and make rigorous use of web technology. The engineering with our ctrlX WORKS toolbox, for example, can now be carried out on the ctrlX CORE control platform via a web browser. A particular highlight is the fact that development can now take place directly on the ctrlX CORE software. This is possible thanks to a development environment for Python and Google Blockly which is integrated into the control system. Docker images can also be executed on ctrlX CORE.

When it comes to automating engineering processes, ctrlX WORKS now offers a simple, clearly structured script interface, the Automation Interface. Recurrent engineering processes can be automated using simple scripts, thus reducing the work involved by 80 to 90 percent. A comprehensive portfolio of libraries and building blocks for typical automation applications is also available. Because software for machine automation is becoming increasingly demanding and the development tasks often go beyond simple programming, we've also launched the Software Development Kit.

**Bosch Rexroth has taken the decisive step from an open automation toolkit to an industrial ecosystem. Thomas Maag, Director of Product Management within Bosch Rexroth's Business Unit Automation, discusses current developments and major new products by answering three questions.**

The assistance system offers various ways of individually developing and providing applications. Among other things, it allows apps to be developed for ctrlX CORE as necessary. This can therefore be freely and flexibly expanded with new functions at any time.

**Q2**   
HARDWARE

**Bosch Rexroth has improved its hardware too. How exactly?**

We've expanded and further developed our range in all areas including hardware. We've made a great leap when it comes to the ctrlX CORE control system. The first stage was launched in 2019. It can cope with virtually all general automation tasks. The product family is now gradually being expanded with new variants and functions. In addition to extra interfaces, on-board I/Os can now be used too.

And naturally, that's not all. In 2022, a new, extremely high-performance version of ctrlX CORE will revolutionize the market. It will use cutting-edge CPU technology to achieve approximately 7 times the power of the previous ctrlX CORE. The product family will be rounded off by an entry-level version with a reduced number of interfaces and options.

In order to expand the functions offered by ctrlX CORE and provide new connectivity options, we've also put in place a corresponding I/O portfolio. The ctrlX I/O solution for horizontal and vertical integration now offers comprehensive communication and performance enhancements as well as I/O modules geared to technologies of the future such as 5G, TSN and AI. Co-creation also plays an increasingly important role. Accordingly, we've expanded the ecosystem to include integration solutions and the first pilot projects with I/Os have already been validated.



+ 700 %

X7

ctrlX CORE

**Q3**   
SERVICES

**And what would an automation solution be without services? What can we expect here?**

Our aim is to allow users to solve their automation problems in the best way possible with the help of our support services. We've therefore been expanding this area gradually. With ctrlX SERVICES, we guarantee support over the entire product life cycle.

Our development work in the area of services focuses on a range of areas including the ctrlX Store. Numerous apps from Bosch Rexroth and third-party providers can be downloaded there. The ctrlX Store offers online access to all available apps and libraries for creating applications. By downloading additional apps or integrating provider applications, the functions offered by ctrlX AUTOMATION solutions can easily be expanded.

It's also important to us that all products and services are up to date. With the ctrlX Device Portal, updates can now be carried out easily via remote access. With the solution, we also offer central device management and a complete service – from remote access and backup/restore to a private software repository.

Our growing ctrlX AUTOMATION Community rounds off the services. Anyone who'd like to discuss technical matters or requires specialist support can take advantage of the ctrlX AUTOMATION Community which also provides tools, help, forums, how-to videos and usage examples. We support users with

services relating to all processes, allowing you to take full advantage of the potential offered by our automation solutions.

— [www.ctrlx-automation.com](http://www.ctrlx-automation.com)

*„Sharp as shark teeth“*  
**AI**



# HOW AI IS MAKING SAWS EVEN SHARPER

**When saw doctors retire, a worthy successor is needed – the more intelligent the better. In light of this fact, Kohlbacher GmbH equipped its fully automatic HAMMERHEAD 3000 straightening center with artificial intelligence based on ctrlX AUTOMATION. The result: Opening up new markets through unique innovation.**

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**Siegfried Kohlbacher,  
Managing Director, Kohlbacher GmbH**

“Equipping our straightening center with artificial intelligence has enabled us to introduce innovation into a stalling market segment.”

Saw doctors use their specialist skills to repair saw blades on saws manually – but the profession is dying out. A machine such as the HAMMERHEAD 3000 developed by Kohlbacher, the market leader for filing room equipment and saw production, tensions and straightens the band saw blades which are deformed during use in sawmills fully automatically. However, errors still occur in spite of the automated process.

Siegfried Kohlbacher, Managing Director of Kohlbacher GmbH, described the process: “During straightening, the back of the band saw blade is rolled to produce a slightly convex curved form.

This compensates for the lengthening of the toothed side when the saw is used. Grinding the bottom of the teeth also lengthens the tooth base line compared to the back. In spite of the automated process, the error rate is 10 to 15 percent. Reducing the error rate to below 5 percent requires manual reworking by experts – this is performed by saw doctors.”

Siegfried Kohlbacher explained: “These experts are very scarce and people are no longer entering the profession. The manual reworking of saw blades is also a very time-consuming process and costs a great deal of money.

Sawmills therefore require a specialist solution which makes it possible to repair saw blades. Staff who have not been given specific training are unable to do this. We were therefore on the lookout for a technical solution which would carry out this task.”

### **The lever: Sharp as shark teeth – SHARK performance thanks to artificial intelligence**

Kohlbacher GmbH and Bosch Rexroth put their heads together and developed an AI (artificial intelligence) app. The ctrlX AUTOMATION platform serves as the technological basis for the AI app. The AI “learns” during the process and thus minimizes straightening times and the resulting downtimes in sawmills.

The fact that Kohlbacher was involved in the development of the app and could put together the overall solution from the ctrlX AUTOMATION toolkit means that the complete system has exactly the properties that the company needs. This is possible thanks to the automation platform’s open design. The platform has an entire ecosystem for industrial applications. Users can use apps from Bosch Rexroth, apps from other companies or apps they have created themselves and thus expand the scope of func-

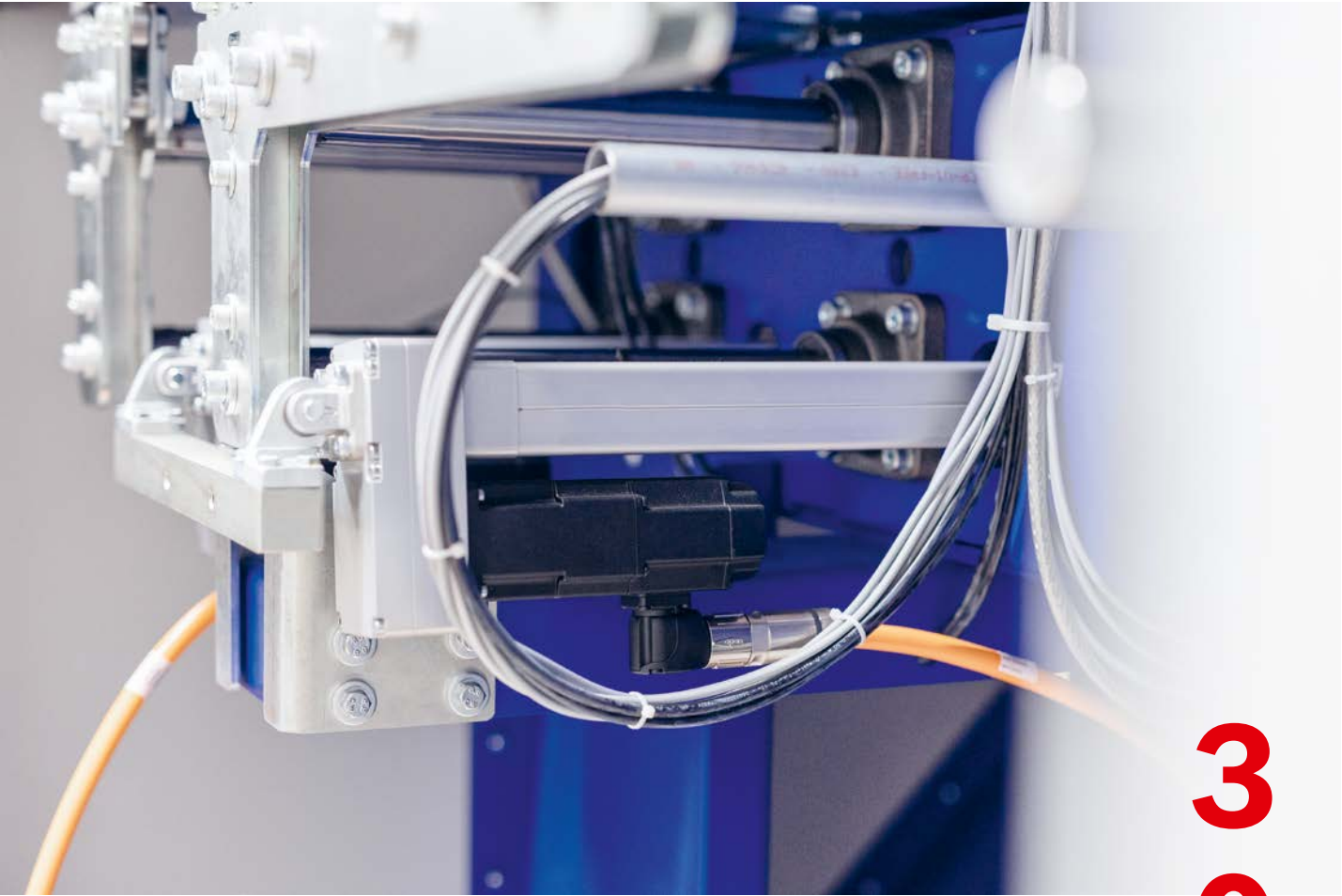
tions according to their individual requirements. As a result, software developers can develop and offer industrial applications in all popular programming languages – quickly, easily and flexibly.

### **Lever actuated: Opening up new markets with the app**

The AI app which can be combined with the HAMMERHEAD 3000 quickly proved successful. Siegfried Kohlbacher explained: “During the first learning phase, the straightening time could be reduced significantly. The longer the learning phases last, the better the AI can positively influence the straightening time by manipulating or putting pressure on the saw blade in a certain way.”

Kohlbacher could therefore tap into a new market which had come to a standstill in the past owing to a lack of innovations. Siegfried Kohlbacher continued: “Our AI solution is changing the market. For the first time ever, the experience of a saw doctor can be transferred to a machine and the machine can then continue learning independently. Not only can saw blades be reused, there are no more waiting times – the solution is always available.”





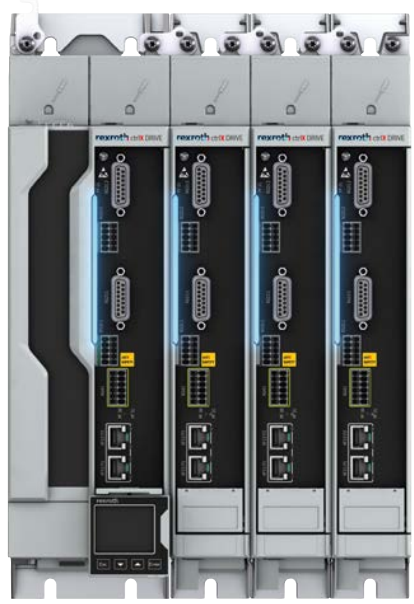
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HAMMER  
HEAD

Kohlbacher GmbH is already seeing increasing global demand for the system with these features. Kohlbacher is currently checking what other machines could be combined with ctrlX AUTOMATION and suitable apps.

“Not every machine needs artificial intelligence, but the openness of the system offers us as machine manufacturers and users maximum flexibility. When it comes to functionality and connectivity, ctrlX AUTOMATION is the future – and a great opportunity to offer additional added value,” said Siegfried Kohlbacher.

— [www.kohlbacher.com](http://www.kohlbacher.com)



ctrlX DRIVE: The most compact and modular drive system

Precision straightening: With the fully automatic HAMMERHEAD straightening center, band saw blades can be tensioned fully automatically or manually. As a result, the necessary production quality in band saw manufacture can be guaranteed.

# TANGIBLE PROGRESS

**The company SCHUNK has set itself a central task – making gripping systems more intelligent. After all, the future of these systems lies in the software which is used to operate them. The ctrlX AUTOMATION system offers support here too. It makes it possible, among other things, to control complex gripping and clamping processes as well as to test and shape software development.**

Clamping and gripping systems play a key role in the flexibility and precision of automated manufacturing processes. Acting as a direct interface to the work piece, they perform central functions in machine loading, among other areas. With more than 11,000 standard components, SCHUNK is the world's largest single-source provider of equipment for gripping systems and clamping technology.

To maintain and expand this strong market position, SCHUNK continuously develops new products, for example to optimize and add flexibility to gripping processes. Among other things, the company develops intelligent components in the areas of gripping and clamping systems that are being adapted to meet current and future needs. The gripping

system solutions set standards in robotics, handling, service robotics and human-robot collaboration.

To help with technical development work, SCHUNK has introduced ctrlX AUTOMATION.

## **Controlling complex systems the easy way**

Thanks to the openness and flexibility of the system, the Bosch Rexroth solution at SCHUNK can be used for various purposes. Dr. Martin May, Director of the Innovation Center and Head of Research Cyber Physical Systems and the IIoT at SCHUNK, explained: "First, we used ctrlX AUTOMATION to develop an application for a flexible gripping process. When we use the word 'flexible,' we are



not just talking about opening and closing. We are also talking about calculating a space between various gripping mechanisms into which the gripping fingers have to move – things like complex components with different gripping points. The ctrlX AUTOMATION control software enables us to control even complex systems.”

### Developing software the easy way

ctrlX AUTOMATION also appeals to SCHUNK because proprietary software can be easily added to the scalable, open platform. As a result, SCHUNK can also demonstrate its own expertise in software.

Over the years, the company developed its own software using a range of programming languages, including C, C++ and Python. It soon ported the prototype system to ctrlX AUTOMATION and tested it there.

Dr. Martin May explained: “We can now refine our own software and profit from the benefits of the automation platform in the work we do to ensure system security, run remote updates and offer other IT-related solutions.

We can easily integrate ourselves into the Bosch Rexroth IoT world and now have a partner who can market our solutions around the world and scale them accordingly. As a result, we can now focus on our core areas of expertise.”

### Ready for the future – the easy way

SCHUNK regards ctrlX AUTOMATION as the ideal platform as it allows the company to develop its ideas in such a way that they can be widely used in the market. “The system is highly scalable and meets the needs of virtually all applications.

In the future, we’re planning to work even more closely with customers and develop special applications which we’ll then offer via various app stores and in the ctrlX Store,” explained Dr. Martin May.

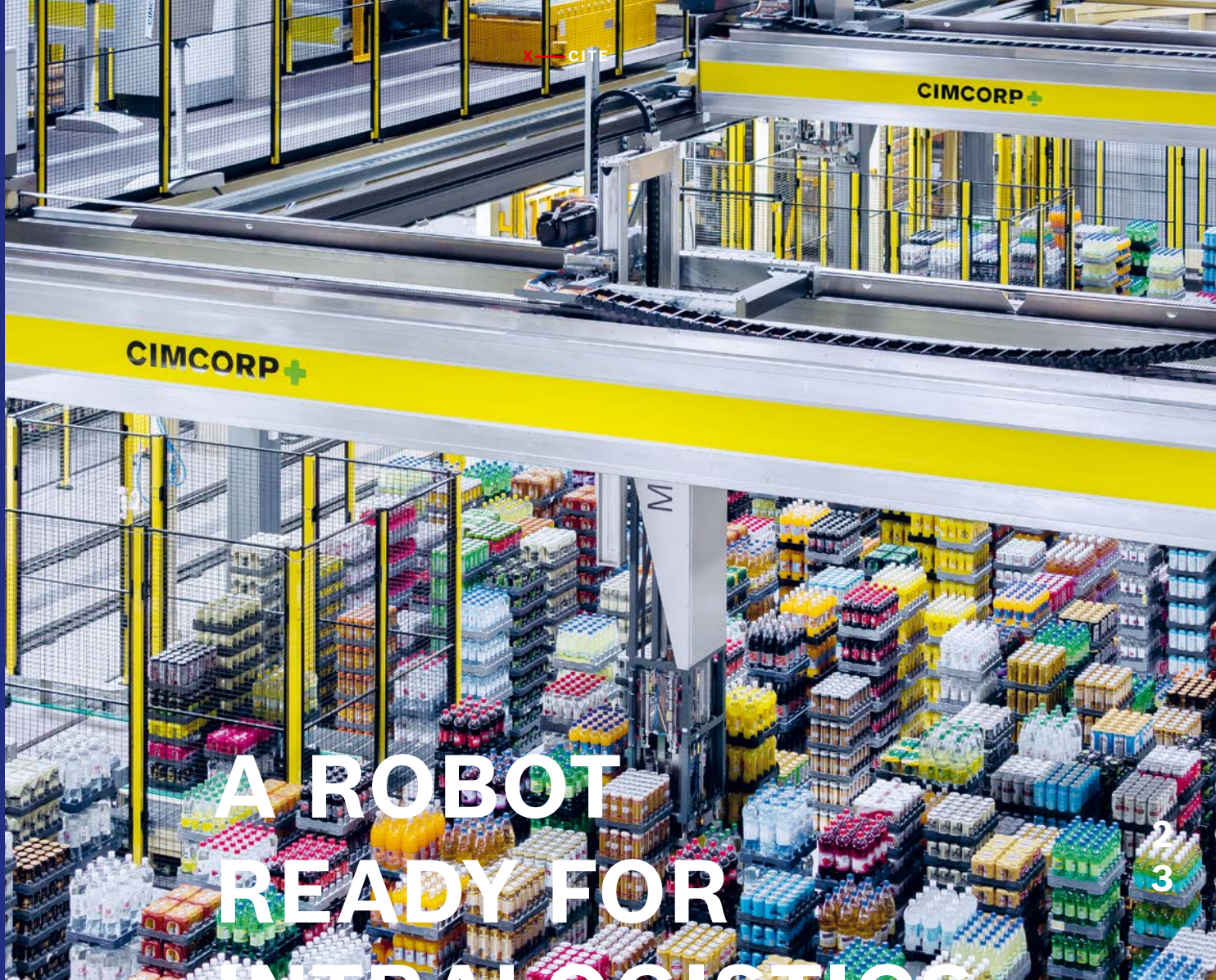
— [www.schunk.com](http://www.schunk.com)



**X**

**Dr. Martin May, Director of the Innovation Center, Head of Research Cyber Physical Systems, IIoT – Schunk GmbH & Co. KG**

“We can now easily implement our ideas in the form of apps and make these available on the market. This makes life easier for everyone and reduces costs thanks to economies of scale.”



# A ROBOT READY FOR INTRALOGISTICS

In modern factories, people and machines work hand in hand: Robots provide assistance. They too can be trained and equipped with features to ensure maximum performance – for example with know-how for artificial intelligence or communication standards such as OPC UA FX and 5G. CIMCORP therefore relies on ctrlX AUTOMATION and benefits in various ways, for example being involved in developing solutions from the very beginning.



The degree of automation in intralogistics is increasing, which helps to improve safety and increase speed. For this reason, automation solutions and robotics are increasingly being used in logistics and warehousing. As a manufacturer and integrator of material flow systems, CIMCORP has developed robotic solutions for order processing and storage and relies on maximum precision.

The CIMCORP GROUP is a leading global company offering turnkey automation systems for intralogistics which use advanced robotics, material flow and software technologies. Based in Finland, CIMCORP is not just a manufacturer and integrator of material flow systems for the tire industry – it also develops robotic solutions for order processing and warehousing in the field of food and drinks, retail, e-commerce, fast-moving consumer goods and postal services. The systems are designed to reduce operating costs, ensure traceability and increase efficiency. They're used in production and sales centers in over 40 countries across six continents.

### **Central requirement: A future-proof automation solution**

In order to maintain and consolidate this strong market position, CIMCORP

works constantly to improve its robotic solutions. This applies to its portal robots for example which are used in tire production and intralogistics. CIMCORP relies on the ctrlX AUTOMATION solution from Bosch Rexroth for support.

Jani Tuomola, Head of Machine Development at CIMCORP, explained: "We already had a close business relationship with Bosch Rexroth so we immediately opted for the new system. Bosch Rexroth had previously supplied control systems to CIMCORP and we were always very happy with the quality of the products and the service and support offered. Our collaboration began when CIMCORP developed a new generation of portal robots which were delivered to customers for the first time in 2010."

### **Specific portal robot solution developed together**

Nowadays, CIMCORP is a lead customer for ctrlX AUTOMATION and could therefore make its requirements known very early on in the development process. When CIMCORP and Bosch Rexroth began working together on ctrlX AUTOMATION, they defined all key functions and requirements in a lead customer specification. This specification took into account all current and known future requirements for all CIMCORP

product families which can use the system.

As a result, the company was able to play an active role in developing a special solution for intralogistics. The key component here is the gantry portal robot. CIMCORP was involved in developing ctrlX AUTOMATION from the very beginning. As a result, it offers the functions and properties that the company needed for the gantry portal robot. This is possible thanks to the open nature of Bosch Rexroth's automation platform.





### The control system: Lighter, smaller and more open for the IT world

One of the first applications is the gantry portal robot featuring ctrlX AUTOMATION. This resulted in various benefits and savings for CIMCORP. For example, the system's footprint in the control cabinet was reduced by 30 percent and the control cabinet components were rearranged to save space. The control cabinet including the automation solution now weighs 35 percent less than before.

CIMCORP uses the entire ctrlX AUTOMATION toolkit. At the heart of this is the ctrlX CORE control platform, which is integrated into the drive in a space-saving manner, and the ctrlX MOTION software for Cartesian robots. The ctrlX DRIVE system is a key component for CIMCORP and is used here as a compact, intelligent and regenerative solution.

Jani Tuomola described the benefits: "The ctrlX CORE control system is lighter, smaller and open to the IT world. Its small size and

low weight are very important as the control system is installed on a moving machine – the portal robot. These properties reduce the overall weight moved and give us greater freedom when it comes to positioning the control cabinet."

The control system for integrating IoT and security can easily be connected to logistics software. The solution also offers the company future viability – for example thanks to the option of integrating artificial intelligence solutions or using new communication standards such as OPC UA FX and 5G.

Its openness towards the IT world offers benefits when integrating the ctrlX CORE control system into CIMCORP's higher-level control system. It also allows more efficient integration and quicker commissioning.



### Significant learning effects and realizing ideas – also in future

ctrlX AUTOMATION is based on new and modern IT technologies and is different from other conventional PLC control technologies which are used at CIMCORP. For the automation specialists at CIMCORP, it had a significant learning effect.

Jani Tuomola explained: "The automation platform from Bosch Rexroth is the ideal basis for realizing our ideas. The system has all of the components needed for complete automation solutions. It's highly scalable and meets the requirements of nearly every application. We now have a flexible and secure platform which already takes into account future technologies. In the future, we hope to use it in an increasing number of areas."

— [www.cimcorp.com](http://www.cimcorp.com)

**Jani Tuomola,**  
Head of Device Development CIMCORP

"Our previous automation solution had been in use for more than ten years and had reached its limits. We were therefore looking for a future-viable alternative. Most importantly, the new solution should offer high performance and be compact and open. The ctrlX AUTOMATION system meets all of these criteria."

# MIXING IS POSSIBLE

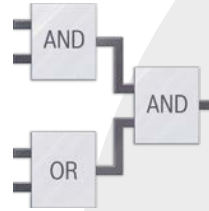
## SOFTWARE



ctrlX IOT



ctrlX MOTION



ctrlX PLC



ctrlX WORKS

## CONTROL SYSTEMS I/O SYSTEMS



ctrlX CORE



ctrlX I/O



ctrlX SAFETY

## DRIVES MOTORS



ctrlX DRIVE

The ctrlX AUTOMATION solutions portfolio is modular, scalable and meets the needs of virtually all applications. It breaks down all boundaries and allows interoperability.

All available components – from existing and new Bosch Rexroth solutions to applications from the ctrlX World ecosystem – can be combined as desired. Individual, flexible and future-proof. This is exactly the kind of freedom that is needed in the modern world of automation. And it results in the perfect match for all requirements.

INDUSTRIAL PCS AND DISPLAYS

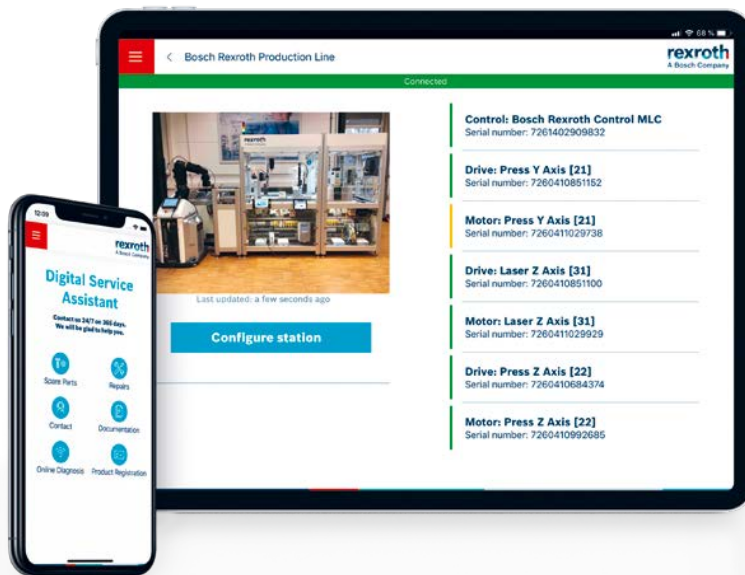


ctrlX IPC

ctrlX HMI

# FULL-SERVICE PACKAGE FOR AUTOMATION

ctrlX SERVICES keep products working and are often our customers' right hand. Various digital services are available during the customer journey. They simplify processes and ensure greater efficiency.



## ctrlX Digital Service Assistant

The ctrlX Digital Service Assistant is available around the clock on your smartphone or tablet. It provides direct access to all service tools, a status report regarding the machines in operation and quick contact with the help desk.



— Scan now and download the app

## OUR SERVICE PORTFOLIO



### ctrlX Device Portal

Digital service for providing new software functions, management and maintenance of device settings or remote maintenance.



### Simulation models

Simulation models for automation products and partner apps for digital twin applications from the ctrlX World.



### ctrlX Configurator

Configure automation solutions individually and make them more efficient. Create and request graphical system topologies with no need for in-depth knowledge.



### Training courses

Basic and practical training courses provide first-hand expertise.



### ctrlX AUTOMATION Community

Platform centering on ctrlX AUTOMATION for sharing specialist knowledge and usage examples, developing ideas or direct access to the ctrlX Store, documentation and GitHub.



### Documentation

Download operating instructions, technical data, safety notes etc.



### ctrlX Store

Download Bosch Rexroth and provider apps, applications and libraries for creating individual apps.

— [www.ctrlx-services.com](http://www.ctrlx-services.com)

# ctrlX developR Challenge – Push your idea two steps ahead



X

“Who knows better than those who actually use automation solutions what the market currently needs? The ctrlX developR Challenge gives developers the opportunity to realize their creative ideas,” explained Jasmin Heim, Director of Marketing within Bosch Rexroth’s Business Unit Automation. The ctrlX developR Challenge is an international competition. The aim is to apply the ideas and requirements of the target group in a practical context. Those who win over the jury can realize their vision with the ctrlX CORE control platform. Bosch Rexroth is thus encouraging innovations and is once again showing how ctrlX AUTOMATION supports co-creation!

**Jasmin Heim, Director of Marketing,  
Business Unit Automation, Bosch Rexroth AG**

## 2021

DECEMBER 31

Closing date  
for registration

## 2022

**JANUARY**

**Getting ready**

Selecting participants, introducing them to mentors, handing over the Challenge Kits

**MAY**

**Evaluation**

Selecting the finalists for the pitch event

**Pitch event – The stage is yours!**

Pitching solutions, jury assessment, presenting the award

**FEBRUARY – APRIL**

**ctrlX developR  
Challenge**

Implementing ideas, support from mentors, documenting results along the way on social media and [ctrlx-developr-challenge.com](http://ctrlx-developr-challenge.com)

**The best ideas are assigned to the five categories:**

**Simplify engineering:**

Who connects complex processes, systems and applications and makes them quicker, simpler and easier to operate? From IoT solutions and Node-RED to the use of power functions for automating engineering routines.

**Extend and connect:**

Who extends the existing ctrlX AUTOMATION infrastructure in the cleverest, most creative and the most useful way? Everything revolves around extensions, APIs and robotics projects here.

**Smarten up automation:**

Who teaches systems to think, work and play independently and without supervision? With AI applications or for example condition monitoring solutions.

**Empower the user:**

Who uses the ctrlX AUTOMATION tools most effectively in order to maximize the benefits and simplify operation?

From human-computer interaction and mobile automation and robotics to projects with a positive influence on society and our planet.

**Create your own:**

Who has an idea for a completely new application which goes beyond all imagination and the given categories? The participants develop their own ideas but, in keeping with the co-creation principle, are not left alone. Bosch Rexroth mentors and partner companies from the ctrlX World provide specialist support. Specialists for questions and discussions relating to the challenge are also available in the ctrlX AUTOMATION Community. The participants can even meet renowned figures from the automation sector and talk to the ctrlX AUTOMATION development team.

**ctrlX** | developR  
AUTOMATION | challenge

**Who will develop the winning code?  
[www.ctrlx-developr-challenge.com](http://www.ctrlx-developr-challenge.com)**

# AWARD-WINNING SOLUTIONS

Developing innovations together – the market too thinks that this is a great idea. Numerous awards in just a year prove that ctrlX AUTOMATION is “two steps ahead” when it comes to ideas, design and technology!

03/2020

**RED DOT AWARD**

05/2020

**GERMAN INNOVATION AWARD**

10/2020

**PALMARÈS TECHNOLOGIQUES – MESURES**

01/2021

**ROBERT BOSCH INNOVATION PRIZE**

04/2021

**PRODUCTS OF THE YEAR 2021  
“CONTROLLING AND REGULATING”**

04/2021

**PLANT ENGINEERING PRODUCT OF THE  
YEAR: GOLD & SILVER**

06/2021

**DER DEUTSCHE INNOVATIONSPREIS**

07/2021

**GERMAN PRIZE FOR ONLINE COMMUNICATION**

3  
1

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AUTOMATION