

Stäubli Automatica News

June 2023



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EDITORIAL

Solutions for tomorrow's production



Dear readers,

One year has passed and the next automatica is already around the corner. At our booth, No. 329 in Hall B5, you will experience how much the world of automation has expanded within this short period of time. The innovative power of the automation industry has never been more impressive than it is today. Driven by the

most sweeping transformation processes in the history of industrialization, one development is chasing the next.

The turn of the millennium and issues such as sustainability, CO2 reduction, climate protection and many more demand completely new

technologies. Stäubli has taken up this challenge, steered developments, and created new solutions for the market that make manufacturing processes even more efficient, safer and simpler. Today, we can support you in all areas of production, from e-mobility and green technologies to addressing the issue of skills shortages.

Whether it's handling battery packs with the new TX2-200 heavy-duty robot in combination with the PF3 AGV, a compact high-payload transport platform, laser cutting with the TX2-160L HDP six-axis robot, or battery and fuel cell production with our robots certified specifically for these processes, Stäubli is always at your side as an expert partner.

Digital solutions of the latest generation

Let us also inspire you with our digital solutions. At our automatica booth, a digital twin will stand alongside the actual robot cell in a demo application that brings to life the immense advantages of virtual commissioning. You will also learn how our innovative SCOPE platform facilitates the monitoring and optimization of robot fleets.

You can find out all about the advantages of our robots, mobile robot systems, AGVs and digital solutions in personal discussions with our specialists at automatica. We look forward to seeing you in Munich.

Sincerely,

Christophe Coulongeot
Executive President Stäubli Robotics



Stäubli at automatica

AUTOMATICA BOOTH LAYOUT

Flexible Solutions for evolving industries

Enabling faster, easier and sustainable production

At our booth, you experience how synergetic technologies from our Robotics, AGV as well as Electrical and Fluid Connectors divisions can help you master digital transformation and open up rewarding new business areas.



Stäubli Fluid Connectors is considered one of the pioneers in the development of robotic tool change systems and offers a comprehensive product range for all robot payloads and all robots. Earlier this year, Stäubli Fluid Connectors has now expanded its offering to include material handling components and systems. This gives the company the product portfolio and know-how to offer end-of-arm tooling solutions even for particularly complex handling processes.



Solutions from **Stäubli Electrical Connectors** ensure reliability and efficiency in factory automation. The modular connector system CombiTac is a compact and performant solution for applications with high mating cycles such as automated test benches, smart factory and battery technology.



Handling different battery blocks for Electrical Vehicle (EV) production
New TX2-200 CS9 HP

- Latest safety and functionalities SIL 3 / PLe and control technology
- Compact controller redesigned for busy industrial areas and industrial footprint reduction
- Improved quality and reliability for better sealing and cleanliness
- Easy maintenance and integration for multi-concept industrial lines

New Stäubli PF3 AGV platform streamline the material flow for greater productivity.

- Ultra-compact design allows to carry and lift up to 3-ton payloads with high positioning precision (+/- 5 mm)
- Max. speed: Up to 1.6 m/s

Efficient laser processing with High Dynamic Precision robot
TX2-160L HDP

- Six-axis laser cutting robot
- Reach (between axis 1 and 6): 2010 mm
- Repeatability – ISO 9283: +/- 0.05 mm
- Max. accessibility even with complex 3D parts
- Unmatched dynamic performance and high path accuracy



SCOPE
Smart. Connect. Optimize. Prevent. Enable.
EDGE data mining solution for Smart Factory.

Digital twin in action
The digital twin is a virtual replica of a physical demo cell, in which a SCARA TS2 robot in ESD (electrostatic discharge) protection is entrusted with the handling of battery cells.
Digital twin: Siemens NX MCD + Virtual CS9

NEW Discover MyStäubli Portal, your personal account
MyStäubli Portal makes your life easier and gives you access to all the information you need whenever you want in one place.



STÄUBLI ASSISTED REALITY (SARA)
Efficient remote service thanks to augmented reality

Preventive Maintenance
Protect high value-added components and increase the durability of your robot

Care Packages
Customized service packages to secure your robot's performance



ESD compliant robot range to prevent electrostatic discharges

- Market: Electronics
- TS2-80 SCARA ESD CS9
- Load capacity: 8.4 kg
- Reach: 800 mm'
- Equipped with MPS 010 robotic tool changer

Coming soon:
CS9 SE controller

- Designed for SCARA robots
- More compact and light-weight design
- Easier to integrate
- Energy savings by optimized power management

Hygienic and humid environment (HE) compliant with EHEDG regulations

- Markets: Food & Food packaging
- TX2-60 HE CS9
- Load capacity: 4.5 kg
- Reach: 670 mm
- Hygienic design
- NSF H1 compliant food oil

Supercleanroom industrial robot range

- Markets: Semiconductor & Medical
- TX2-60 SCR CS9
- Load capacity: 4.5 kg
- Reach: 670 mm
- Cleanroom standard: ISO 14644-1 Class 2 compatible



Simplicity reinvented with Stäubli Easy-to-Program
Easy-to-Program offers for any kind of user profile a graphical programming environment directly on the SP2+ handheld to create robot applications easily, quickly and without much training. Drag and drop blocks and edit their properties to develop your application even without sophisticated robot skills.

Telemanipulation
Many industries, like Medical Robotics and Pharma are moving to telemanipulation phase. A big step ahead is the feeling of what you touch in the joystick with such sensibility. Haptic device from Force Dimension and Stäubli make a great proof of concept that can inspire many other applications in other industry.

Hand Guiding
Our development allows to hand guide our stiff robot, with high transparency of the movement that is unique for an industrial based robot, managing the singularity, without compromise rigidity and precision.

OUR COMMITMENT

Enabling sustainable improvements in industry and society

Sustainability at Stäubli
Sustainability has been part of our DNA at Stäubli since 1892. We have always taken responsibility for our social, economic and environmental activities, with the aim of creating value of all our stakeholders.

The rationale behind our actions rests on three “pillars”, namely value for customers, through the sustainable performance of our products and our commitment to customer proximity; the welfare of our employees, whose development, health and safety are paramount; and the protection of our planet through preservation of the environment. These founding principles are reflected in our products, which are outstanding for their high durability, recyclability and energy efficiency. As a result, our products contribute significantly to making industry more sustainable.

Christophe Coulongeat, Executive President Stäubli Robotics: „We at Stäubli welcome the shift towards greater sustainability and climate-neutral production from both an environmental and economic perspective. New markets for

green technologies are already generating significant growth. For example, robots are now being deployed in the photovoltaic sector in considerable numbers.“

For the moment, however, these advances are almost exclusively taking place in Asia. Adrien Brouillard, Global Head of General Industry & Customer Services Robotics, is none-theless optimistic about a renaissance of the German and European solar industry: “In my view, if the energy transition is to be achieved as planned, it is essential that Europe rebuilds its own production capacities along the photovoltaic value chain. There are some early initiatives in this direction – a promising development.“

Other emerging sales markets for Stäubli robots can be found in lithium-ion battery production and in fuel cell production. Particularly in the case of the latter, it will be crucial for Europe to quickly position itself in the market and establish manufacturing structures to prevent this technology of the future from also being the sole preserve of Asia.

Robots for battery and fuel cell production
 Stäubli can already supply suitable robots for all process steps in battery and fuel cell production. All four- and six-axis robots are fully compliant with the special requirements for such operations. In battery production, the robots must be able to work in an extremely dry environment where relative humidity has to be kept below the incredibly low threshold of one percent.

In fuel cell production, robots are required to operate in a corrosive production environment while still meeting the extreme specifications for dynamics in stack production. Stäubli robots have been approved for both applications and are already proving themselves in practice.

Christophe Coulongeat points out that Stäubli robots are ideally positioned to play a role in the rapid growth of these industries: „Our robots are made to adapt to changing needs, and this is especially important in industries that are relatively new and likely to present unforeseen challenges and demands. We can help ensure that manufacturers are prepared.“

Sustainability also means long life and digitalization

For Stäubli, sustainability also means long maintenance intervals and above-average service life. Peter Pühringer: “Here we also offer general overhauls of our robots, in which we make the machines fit again for a second life and thereby make a decisive contribution to minimizing resources.“

Stäubli is also making a huge contribution to sustainability with its digitalization offensive. All robots are Industry 4.0-compatible and can be readily integrated into smart environments. They also have all the necessary interfaces for

virtual commissioning, AI applications and the like. This saves users time and money as well as reducing their CO2 emissions.

Long-term productivity thanks to flexibility and quality

The more durable a Tool Changing system and End-of-Arm-Tooling solution is, the longer it can remain productive and generate revenue. The general scarcity of resources heightens this effect: long periods of use are desirable from both an ecological and an economic point of view. But who knows which robot applications will be needed tomorrow and in the days to come? In their own words, Stäubli Fluid Connectors is showing the way forward here with the high level of flexibility inherent in their solutions. According to Norbert Ermer, Global Head of Tool Changer Business, “The systems should be adaptable to new conditions at any time, for example within the scope of a retooling or retrofit”. In this way, durable products can really be given a long life.

From reliable on-board braking systems to pioneering advancements in hydrogen vehicle filling, we engage with our clients for a sustainable tomorrow.

Stäubli Fluid Connectors Division is providing industry with unrivalled connecting solutions: our long-lasting products and proximity services ensure employees’ safety, reduce energy consumption, and carbon footprint and develop high-effective industrial processes. Our quick release couplings equipping railway braking systems, which are still reliable after decades of intensive usage, as well as recent major innovations in the field of hydrogen vehicle filling, are both meaningful examples of how our Fluid Connectors Division contributes to a more sustainable and resilient future.

Robotic applications for greater sustainability

3 GOOD HEALTH AND WELL-BEING

- Automated manufacturing of cell & gene therapies (CGTs)
- Fully automatic vaccine production
- Robot-assisted surgery

7 AFFORDABLE AND CLEAN ENERGY

- Electromobility applications such as stacking in battery production
- Production of photovoltaic systems
- AGVs in highly flexible flow production of wind turbines

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

- Resource-efficient fully automatic cheese handling
- Mobile robot systems in additive manufacturing
- Optimization of energy consumption for TX2 & TS2 robots

13 CLIMATE ACTION

- AGVs handling lightweight CFRP components for the aerospace industry
- Multimodal non-destructive inspection of composite aircraft parts

Supporting the UN’s Sustainable Development Goals (SDGs)

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

THE GLOBAL GOALS

Some facts & figures

Training for more product safety
 +4.000 customers trained each year
 20 training centers worldwide

Ecological responsibility
 Our production sites in Bayreuth and Sulzbach-Rosenberg work according to internationally recognized management standards in the areas of environment (ISO 14001), OHS Occupational Health and Safety (ISO 45001), quality (ISO 9001) and other industry-specific regulations.

A new building at our German location according to the latest energy-efficiency standards.
 The expansion of the new building in Bayreuth serves as an example of how to combine both ecological responsibilities in terms of energy efficiency and integrate the complex demands of the different Divisions to make it future-proof (from the rooftop photovoltaic system with an output of 400 kWp, a generously dimensioned charging infrastructure for electric vehicles to the most modern building air conditioning via heat pumps).

Stäubli Automatica News 3



PERFORMANCE

Compact all-purpose AGV with high payload



The new PF3 automated guided vehicle (AGV) platform from Stäubli has everything users need: It is compact, dynamic, and has a high payload. The range of applications for this AGV is also broad. Whether working on the production line or transporting goods of up to three tons, the PF3 excels in many scenarios.

Jan Louwen, Global Head of AGV and Managing Director of the Stäubli site in Sulzbach-Rosenberg, sees the vehicle's versatility as an outstanding feature: „The PF3 is a true all-rounder. For example, it can be used to first lift Euro pallets and then move goods from point A to point B in production. These are strong arguments for users because they can fulfill different applications with one type of vehicle. With this solution, you are universally positioned in the load range of up to three tons.“

The goal was to provide a compact AGV whose high payload could be fully developed even with structural hurdles and insufficient space. Stäubli has more than succeeded in this with

the PF3. With dimensions of just 1,750 x 970 x 400 mm, the mobile transport platform fits into the dimensions of common industrial vehicles, but at the same time impresses with an exceptionally high payload of three tons.

Safety is a priority

Thanks to its standardized, scalable design, combined with countless possible applications, the new PF3 is the flexible all-rounder in intralogistics and production environments. Your own applications and add-ons, such as conveyor technology, can be designed and installed independently of Stäubli due to the open interface. Good accessibility to components such as batteries complement the service-friendly AGV, as spare parts can be replaced within a few minutes without any downtime to speak of.

Stäubli places a high value on quality, not only for individual components. In addition to its proven industrial suitability, the PF3 makes no compromises when it comes to protecting employees. Its intelligent 360° sensor system detects potential obstacles both horizontally



and vertically and, if necessary, ensures that the AGV stops automatically before a collision can occur.

In addition, five emergency stop buttons are installed around the vehicle as a further protective measure. And with the LED bar clearly visible from all sides, the PF3 shows the status of the vehicle at a glance. All this, combined with turn signals, predefined distances and fixed speeds ensure the necessary safety that must be provided in logistics and production environments.

Stäubli's answer to the shortage of skilled workers

The PF3 is intended to act safely when working with people. Above all, however, it is intended to make their work easier. „With the automation solutions around the PF3, we provide our customers with an effective solution to the shortage of skilled workers. So that this succeeds, it was also important for us to ensure a high level of acceptance among employees with the PF3,“ Jan Louwen emphasizes.

Stäubli is also closing a gap in the market with the PF3. Its compact dimensions, combined with a high payload of three tons and modular structures, open up completely new possibilities for the industry.



„Traditionally, we come from the heavy-duty transport sector, where we sometimes have to deal with up to 450 tonnes. With the PF3, we have succeeded in transporting this unique know-how in a scalable way into intralogistics and production halls. The focus here was primarily on a high level of industrial suitability and user-friendliness - both for end customers and integrators.“

Jan Louwen

Global Head of AGV Stäubli Robotics / Managing Director Stäubli Sulzbach-Rosenberg

PERFORMANCE

TX2-200 CS9 HP



World premiere: the new generation TX2-200 CS9 HP six-axis robot
Stäubli's new heavy-payload robot makes its debut at automatica 2023. The new robot TX2-200 provides a more flexible and easy to use alternative to traditional industrial concept requiring protective barriers. Extending the possibility for Man Machine collaboration, by removing the need for segregated work areas, manufacturers can maximize their efficiency while ensuring a safe workspace for their operators. The TX2-200 brings new levels of safety, flexibility and ease of use, matching the perfect need for busy industrial areas.

With a load capacity of up to 170 kg and a reach of 2209 mm, the TX2-200 is ideal for handling and palletizing heavy parts, taking heavy as-

sembly, parts transfer and machine tending applications in stride, even in the harshest environments. By virtue of a fully enclosed structure, superior sealing and enhanced hygienic attributes, it is equally suited to sensitive environments, offering users optimum flexibility.

In conclusion having an industrial robot suitable for use in specific industrial environments ensures greater productivity, flexibility as well as cost-savings and consistent output.

Optimized for safety and ease of use

The new TX2-200 delivers the latest safety functionalities which are certified and meet the strict requirements of the SIL 3 / PLe safety category bringing the TX2-200 to the highest level of safety. The robot can operate in proximity to operators and humans without compromising safety and efficiency for more dynamic and collaborative approach.

User friendliness and a more flexible and easy integration are also fundamental for Stäubli. A compact IP54 CS9 HP controller being 40 per cent smaller than its predecessor, was designed also to reduce industrial footprint and supporting a safe, unimpeded flow of activity on the factory floor. The design reinvented enables easier maintenance and integration for flexible, multi-concept production lines.

Made for laser cutting



In 2022, the TX2-160L HDP, a special version for fiber laser cutting, celebrated its premiere at Automatica. This year, the optimized six-axis machine will again demonstrate its unique precision during the laser processing of a vehicle pillar.

"This robot sets the benchmark in terms of laser cutting," says Adrien Brouillard, Global Head of General Industry & Customer Services Robotics. "It is superfast and ultraprecise, as well as having a long reach and an exceptionally rigid structure – a combination of properties that makes it the number one choice in fiber laser cutting."

The legendary JCS drive technology, a proprietary invention of Stäubli Robotics, is what guarantees the high dynamics and accuracy. In the TX2-160L HDP, Stäubli engineers have taken precision to the next level with the incorporation of an ingenious absolute measurement feature. The fine-tuned six-axis robot achieves a repeatability that surpasses even that of the standard TX2-160L model which, with its accuracy of $\pm 50 \mu\text{m}$, is already one of the most precise robots on the world market.

Stäubli's success in extending JCS drive technology from the basic axes to axis 5 brings further decisive advantages: the robot now has significantly enhanced stiffness of wrist and achieves impressive dynamics. The maximum speed on the fifth axis is 500 %/s.

Highly flexible and exceptionally versatile

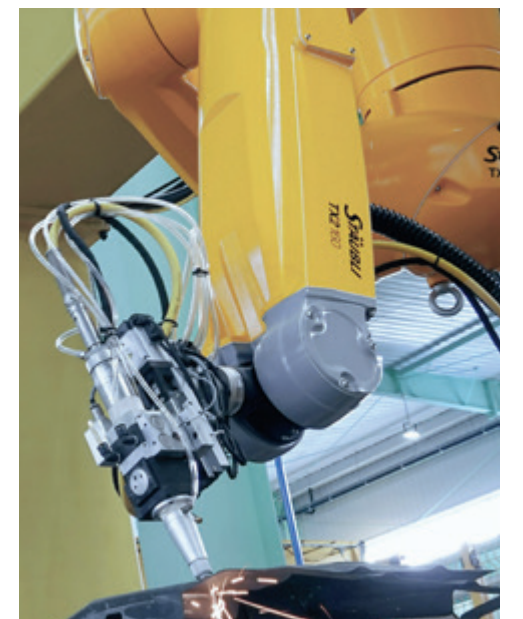
With a reach of just over two meters, the TX2-160L HDP can cut geometric shapes as well as complex free-form surfaces in three dimensions with unprecedented accuracy. It has

been designed for use with fiber lasers supplied by any of the current manufacturers.

The Stäubli engineers are also particularly proud of the highly compact design of this robot.

The manufacturer is thus fulfilling the wish of many integrators and end users for an easy-to-integrate six-axis machine with a small footprint that facilitates the realization of production cells and lines in minimum factory space. The machine is equally suitable for floor and ceiling mounting.

With its extensive safety features, Industry 4.0 compatibility (including OPC-UA server), mechanical qualities and above-average maintenance intervals, the new TX2-160L HDP looks set to quickly establish itself in classic and digitally networked environments.



Exceptionally precise laser cutting with the new Stäubli TX2-160L HDP six-axis robot.

PERFORMANCE

Intralogistics solutions for the production of the future



Designed to transport heavy payload in industrial environments

Stäubli AGVs offer an ultra compact footprint with a very high payload (for instance L x W [m] = 2,35 x 1,3 for 6-ton payload). This opens up new applications for the Electrical Vehicle (EV) production. Thanks to its unique design, Stäubli AGVs can be seamlessly integrated on the EV factory floor. By linking different battery blocks manufacturing processes together, Stäubli AGVs streamline the material flow and increase the productivity.



More info

DIGITALIZATION

Digital solutions for your Smart Factory



Digital transformation is one of the major topics and trends dominating this year’s automatica. Discover the facility and speed with which four- and six-axis robots of Stäubli Robotics can be integrated into digital environments.

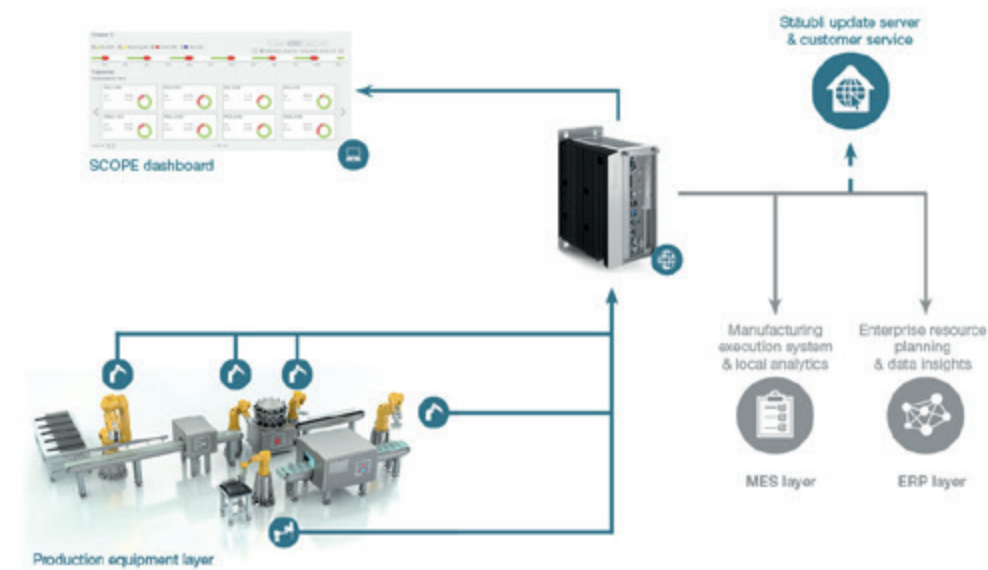
The trade fair will also highlight the pace at which digital integration is making inroads into all industries around the globe. This is a deve-

lopment that comes as little surprise to Adrien Brouillard, Global Head of General Industry & Customer Services Stäubli Robotics: “The benefits of digitalization are so far reaching in almost all areas of production that all manufacturers would be well advised to incorporate this technology without delay. Our comprehensive robot portfolio is already making an impact in digital applications of all kinds. We will be delivering the proof of this at automatica.”



More info

SCOPE: Digital solution for smart industry



On SCOPE, the robot-specific data is aggregated, processed, analysed and visualised.

SCOPE is our secure solution for continuous EDGE data mining from your robot fleet offering open and transparent data routing (to your MES or ERP system) for any of your needs. It analyzes robot health and stress on the fly, it notifies on upcoming maintenance, thus offering an overview of your production assets for better control of your Overall Equipment Efficiency (OEE).

The acronym stands for “Smart, Connect, Optimize, Prevent and Enable”, which neatly summarizes the nature of this digital solution for robot fleet monitoring. The on-site platform aggregates, processes, analyzes and visualizes the robot-specific data. Users can view a multiplicity of relevant operating data for each individual robot system on a central dashboard. This creates the conditions for detecting irregularities or gradual departures from spec, and for taking appropriate preventive action before

quality is compromised, components start to get damaged or the production line even grinds to a standstill. With SCOPE, issues are detected ahead of time before they even become a problem, bringing manufacturing professionals to smarter and more efficient processes, and getting your industry one step closer to zero downtime.

SCOPE integrates the latest Stäubli technologies improving the performance of your production processes and extending the lifetime of your fleet on one single platform.

Ready for virtual set-up? See the digital twin in action

Stäubli will show what the digital twin looks like, in detail and in practice. The digital twin is a virtual replica of a physical demo cell, in which a SCARA robot of the TS2 series with ESD (electrostatic discharge) protection is entrusted with the handling of battery cells.

This Stäubli application provides only indirect evidence of the impressive performance of these four-axis models in terms of their dynamics and precision. The focus is rather on the digital twin, which is visualized alongside the real application. Visitors will be able to see for themselves just how conveniently a virtual trial run allows optimizations and adjustments to be made, without risk or error, before being implemented on the actual application.

Whether discrepancies become apparent in the simulation within the Siemens NX Mechatronic Concept Designer or when programming the PLC or robot, errors and the need for time-

consuming corrections can reliably be avoided or cost-effectively eliminated from the outset without resulting in downtime in the cell later on. Virtual trial runs and virtual engineering also offer many other advantages, including shorter commissioning times, parallel development of plant components across sites in different countries, and pre-startup training of employees on the digital twin.

Open architecture of the robot controller facilitates integration

Stäubli Robotics Global Head of General Industry & Customer Services Brouillard: “Thanks to the open architecture of our CS9 robot controller, we have been able to rapidly create appropriate interfaces, for example for connection to Siemens SIMIT. This means all our robots can be immediately integrated into the Siemens world. All the usual advantages of virtual engineering and virtual commissioning are available here as well.”



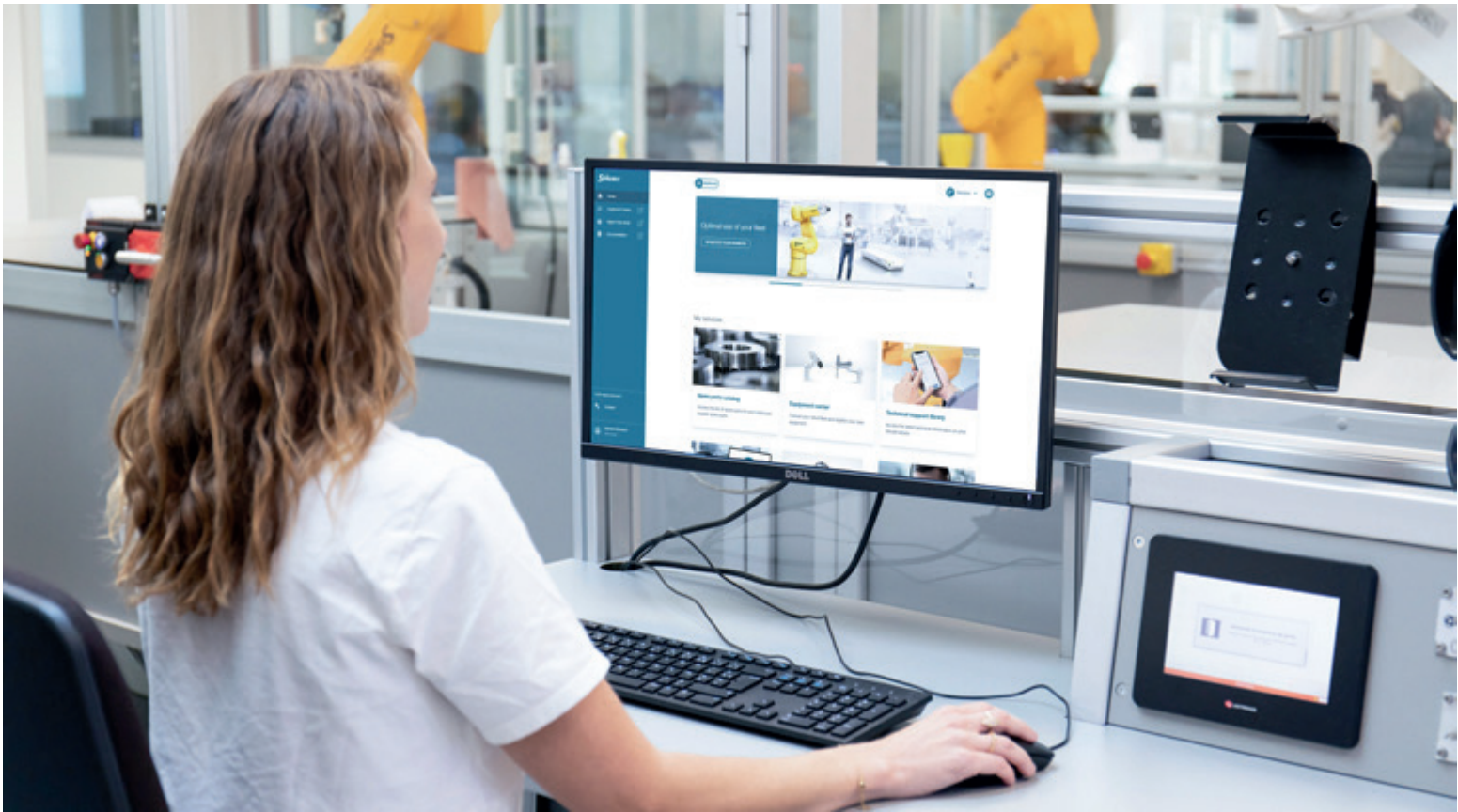
The digital twin is visualised directly next to the real application.

The robot programming can be done with Stäubli VAL 3 or uniVAL pi via the Siemens PLC; the visualization can be done with the Stäubli Robotics Suite or Siemens NX Mechatronic Concept Designer; and a virtual PLC can be

simulated with PLCSIM Advanced and virtual fieldbus to the robot. Whichever option is chosen, Stäubli has the virtual connection for every setup.

DIGITALIZATION

MyStaubli portal



[Link to portal](#)

A new portal for fast, easy, optimized fleet management

Automation solutions have become indispensable in various industries, revolutionizing productivity, precision, and flexibility. Despite the initial investment, the long-term benefits of automation technology are undeniable. To maximize the potential of your automation investment, Stäubli Robotics has launched the all-new MyStäubli portal offering an enhanced online experience that optimizes your fleet management.

Accessible through the Stäubli Robotics website on both computers and smartphones, the MyStäubli portal serves as the central hub for all your fleet management needs. The recently revamped portal now offers an extensive range of features, in addition to essential functionalities, making it easier than ever to access crucial information.

Seamless day-to-day management

Registering your robot is a seamless process. Scanning the serial number gives you access to valuable product details, including warranty dates, maintenance records, and express service codes for subscribers to care packs. With a comprehensive overview of your entire fleet and detailed information about each robot, you can efficiently manage your fleet. Conveniently available through the portal, the Spare Parts Catalog allows you to swiftly and effortlessly identify and order parts, minimizing downtime and maximizing efficiency.

Up-to-date and easy-to-find information

With a multitude of new functionalities, the revamped portal aims to make managing your robots transparent. The redesigned homepage offers an intuitive user experience, while the expanded technical library provides improved

search capabilities. You can now search via the resource center or your robot serial number, as well as access the software center to find appropriate software and the CAD library to download the latest 3D files. All the information you need is available in one place.

Personalized assistance and peace of mind

Should you require assistance, experienced Stäubli experts are just a click away, ensuring prompt support whenever you need it. With new features for instant service requests and incident reporting, troubleshooting technical difficulties is now even smoother and more straightforward. Using the portal, you can quickly resolve any issues to minimize downtime and ensure your operations run smoothly. As added benefits, new robots still under warranty now receive a 3-month extension, provi-

ding you with additional peace of mind. Moving forwards, the functionalities will continue to be optimized, and new options added to streamline further your fleet management.

Keen to unlock the full potential of your automation investments? Discover the power of efficient fleet management with the all-new MyStäubli portal.



“Our customers and their requirements determine the breadth and depth of the services we offer. The new portal simplifies day-to-day management on the shop floor and gives easy access to expert support and guidance, as well as detailed information to make informed decisions.”

Baptiste Ligot
Global Service Leader Robotics

CUSTOMER SERVICES

SARA: Stäubli Augmented Reality App



Augmented reality for enhanced customer service

As the industrial world becomes smarter, more connected, and more flexible, automation specialists like Stäubli Robotics are also adapting. By launching Stäubli Augmented Reality app, our latest customer support solution, Stäubli aims to make it easier for customers to connect with skilled technicians and solve technical issues as quickly as possible – without requiring on-site interventions.

Providing concrete solutions on the spot

The Stäubli Augmented Reality app facilitates remote guidance and support by establishing a voice and video connection with a Stäubli expert. This means you can share your environment in real time via your smartphone or computer to reduce knowledge gaps and quickly identify problems – and find solutions. Features such as image freezing, sending files and on-screen annotations enable clear communication, even in noisy environments.



“Our customers count on us to meet and exceed their needs. With technical solutions like Stäubli Augmented Reality app , you bring the expertise of our technicians to your manufacturing site to provide fast, adapted solutions – and maximize your uptime.”

Adrien Brouillard
Global Head of General Industry & Customer Services Robotics

On contacting the hotline, you are invited to download the application via Google Play Store or App Store. The solution is based on TeamViewer Assist AR from leading connectivity specialist TeamViewer. All data is encrypted.

world. The teams are now adapting the tech to develop augmented reality glasses for an intuitive and immersive hands-free experience.

Towards tomorrow’s troubleshooting

Stäubli Augmented Reality app has been launched in Germany, France, the United States, Switzerland, the UK and Italy, and will soon be deployed in 15 other countries around the

CUSTOMER SERVICES

Care Packages for preventive maintenance



Maximizing uptime and efficiency with tailored maintenance packages

In the world of industrial automation, robots are revolutionizing manufacturing processes, driving productivity gains, and reducing costs. However, unexpected technical issues can arise, undermining the advantages of automation. To ensure smooth operations and minimize disruptions, it is crucial to prioritize preventive maintenance.

One step ahead of your fleet management

Proactive maintenance plays a key role in ensuring maximum availability. With a comprehensive maintenance package, you can detect and eliminate potential issues before they impact your production. Choosing a leading automation specialist like Stäubli gives you access to a team of highly trained technicians with unparalleled expertise – and comprehensive support and guidance, either on-site or remotely, via a dedicated hotline.

When it comes to repairs, you have the reassurance of certified parts that are stocked for at least 15 years. Your team members can also make the most of training opportunities through the Stäubli Robotics Academy.

Three new care packages to service your robots

To further optimize your fleet management, Stäubli Robotics now offers three service packages tailored to different requirements, providing you with more peace of mind and better control over your budget. The Care Compact package offers all the essentials including 24-hour spare part shipment and a robot health check-up visit. The Care Plus and Care Premium packages extend this protection with a Stäubli services warranty and comprehensive preventive maintenance plans. Designed using Stäubli’s proprietary Preventive Maintenance Configurator, these plans enable you to customize your maintenance profile and schedule.



“Entrusting maintenance to the experts who made your robots gives you access to deep experience and precise knowledge. Our tailored care packages bring together this expertise in optimized formats that make it easier to manage your fleet and extend the lifespan of your robots, while keeping costs under control.”

Julie Lafage
Global Product Manager Services Robotics



CLEAN & HYGIENIC ENVIRONMENTS

Specialists for special applications

Medical, pharmaceutical, biotechnology, food, electronics, cleanroom, laboratory, isolator - automation in sensitive areas is advancing. For these hygiene-sensitive environments and applications, Stäubli Robotics offers the world's widest range

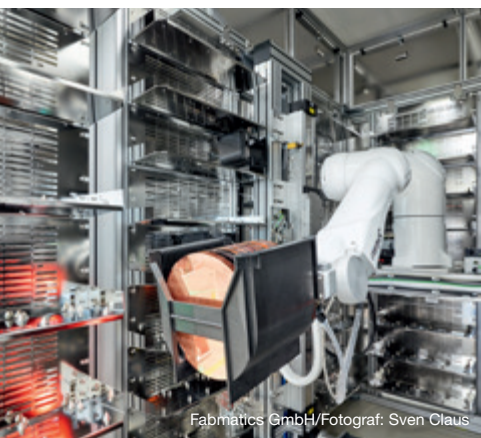
of four- and six-axis robots in specialized designs.

Additional designations such as HE (Humid Environment), Cleanroom, Supercleanroom, ESD, Stericlean and Stericlean+ identify industry-

specific robot designs that we have developed and modified to meet the high demands required for use in sensitive industries. In doing so, Stäubli has succeeded in very efficiently turning standard robots into industry specialists.

Cleanroom and Supercleanroom robot range designed for Semiconductors

The standard version of the encapsulated Stäubli robots already complies with cleanroom class ISO 5. In the Supercleanroom version (SCR), they meet the strict specifications according to ISO 14-644-1 class 2/3 or FED209E subclass 1. Compared to other wafer robots, the Stäubli SCR robots offer high flexibility, higher load capacity and exactly meet the requirements for sensitive handling of wafers/photomasks or cassettes.



Fabmatics GmbH/Fotograf: Sven Claus

Automated storage of wafers in semiconductor production

Fabmatics, Germany, specializes in the transport, storage and handling of the highly sensitive silicon wafers used in semiconductor production. When handling the valuable wafers, the main focus is on precision, particle-free operation and 100 percent safety. The CubeStocker from Fabmatics is a floor-based and fully automated storage system for wafer transport carriers. In each carrier, 25 wafers are transported through the factory. A transport system

on the cleanroom ceiling automatically transfers the carriers to the stocker.

A separate ISO 3 cleanroom atmosphere is created inside the CubeStocker in order to store the wafers absolutely cleanly before the next processing step. A TX2-90 XL in Supercleanroom design picks up the cassettes from the transport system and stores them in and out of the storage locations.



More info

ESD-versions avoiding electrostatic discharge

Stäubli also offers a perfect solution for the problem of electrostatic charging, which is particularly relevant in electronics production. All six-axis and SCARA kinematic systems are available in so-called ESD versions, in which they offer optimum protection against uncontrolled electrostatic discharges.



Robot-assisted testing of printed circuit boards

Human lives depend on the reliable functioning of electronic assistance systems. This has led one renowned automotive supplier to install a state-of-the-art, ultra-flexible inspection system for the 100% testing of PCBs destined for use in sensitive electronics applications. The system is even able to perform high-temperature tests at 140°C.

list baumann, Germany, a flexible standardized platform for PCB test applications on either side of room temperature, i.e. from a low of -40°C to a high of +140°C. Thanks to exceptionally flexible features and design, this multipurpose system is able to test PCBs of widely varying types. In this specific case, 100% room temperature and high temperature tests must be conducted under rigorous cycle time criteria.



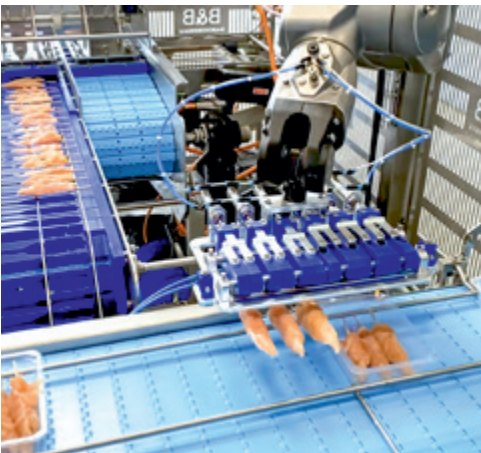
Watch video

They chose the telbox of the automation special-

HE-robot series in hygienic design made for the food processing and packaging industry

The HE robot portfolio complies with the recommendations of the EHEDG as well as the Machinery Directive 2006/42/EC or DIN ISO 14159.

To meet our customers' needs for increased efficiency, sustainability, competitive advantage through more automation and product safety, the washdown-capable food robot series meet the following requirements for your success: Hygienic Design to avoid contamination with bacteria; use of NSF H1 oil; pressurisation of the arm to prevent the ingress of microorganisms; and a complete robot portfolio for all applications from the first process step to secondary packaging.



Neat skewering followed by rapid packaging

The packaging of meat kebabs is a strenuous and monotonous task. This is not the only reason why hardly any personnel can be found for this activity. With a new system, Busch & Busch is turning the tide and using Stäubli HE-robots for packaging. The company has developed a robot-assisted „skewering machine“ in which a Stäubli TX2-60 HE robot inserts the skewers hygienically and precisely into the packaging. 6,000 skewers are thus packaged per hour in a process-safe manner.



Watch video

Mobile robot modules for greater flexibility in production



Picture left:
The mobile assembly modules can be docked manually and are immediately ready for operation.

Picture right:
The Stäubli six-axis TX2-40 is the first choice for use on mobile modules due to its compact design, precision and dynamics.

At its factory in Weil am Rhein, Germany, Stäubli Electrical Connectors is demonstrating how unprecedented flexibility can be achieved in series production. The solution is a groundbreaking assembly system in which mobile assembly modules equipped with robots can be docked onto the production line in less than a minute. And it doesn't stop there.

The realization of such a novel assembly line called for considerable creativity and expertise. In it, sockets and plugs are fitted with Stäubli's patented MULTILAM contact element in a multitude of variants. MULTILAM contact technology represents the pinnacle of quality in electrical connectors. In a production context, it means robot-supported zero-defect assembly in the tolerance range of 20 to 30 micrometers for fluctuating batch sizes of 20,000 to 2,000,000 units.

Identifying suitable robots for this high-precision assembly was relatively easy for Stäubli, as the most accurate machines on the market are made by the company itself. Five of them, including four six-axis TX2-40s and one TS2-40

SCARA, now work in the assembly plant at Weil am Rhein.

Initially there was skepticism. Is it possible to dock mobile assembly modules with robots onto the line within a minute and start assembly without calibrating the robot or making other adjustments?

Many said it wouldn't work. Stäubli said it was possible. John Dallapiccola, Managing Director of Stäubli Electrical Connectors comments: "The concept of this unique system is based on the use of synergies within the Stäubli Group. We have our own precision robots and innovative interface solutions, which in this case were key to the realization of the plant. And, of course, we had a brilliant idea."

A visionary concept

Crucial to the system's realization was the coupling of the mobile modules to the assembly line with precision down to one hundredth of a millimeter. In addition, the time factor played a decisive role. The specification was to position the module manually, center it automatically, lock it in place, and set it to work. Within a few

seconds, the power and compressed air supply for all module components must start to flow.

This is where the CombiTac modular connector from Stäubli Electrical Connectors comes in, automatically connecting all energy and media circuits synchronously with the docking process. High-precision guides and a pneumatically actuated quick coupling from Stäubli Fluid Connectors ensure that the mobile module fits correctly onto the assembly line.

Four- and six-axis robots mounted on mobile modules

The complete assembly line consists of 12 modules connected by a linear transport system. There are part-specific fixtures on 20 "movers" which the first two Stäubli six-axis robots on modules 1 and 2 equip with a MULTILAM and, depending on the variant to be produced, with a plug or socket.

The components then reach the processing station, where both parts are "married." Depending on the model, further work steps follow. If a socket ring has to be fitted, this task is performed by an ultra-compact Stäubli TS2-40

SCARA, which works with impressive precision and dynamics.

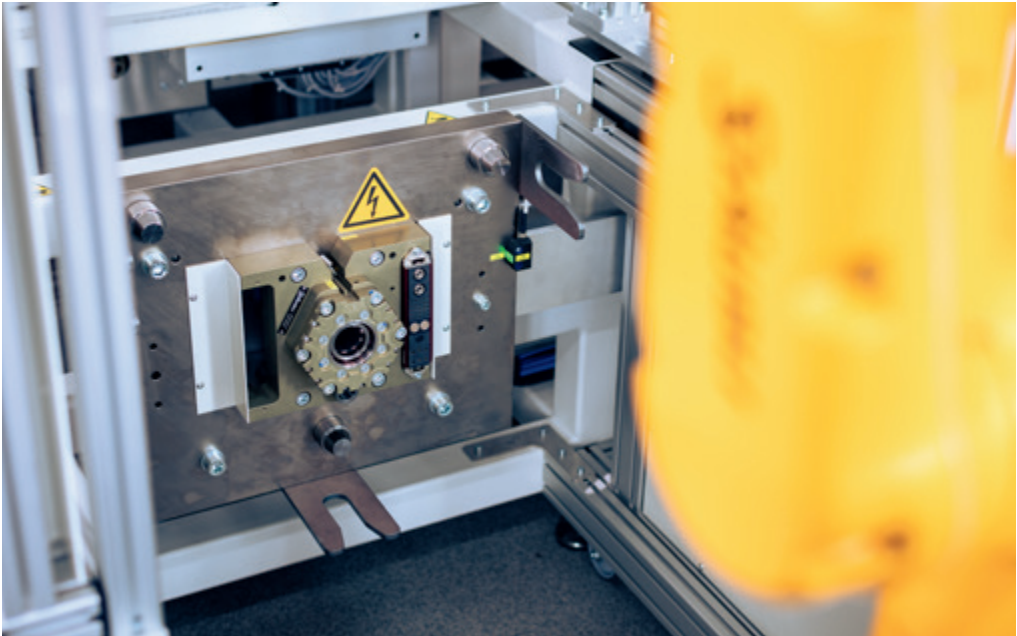
100% quality control

Ensuring product quality is one of the most important tasks performed on this production line. Every piece undergoes 100% quality control, including a mating force test as well as a camera-based final inspection. Complete part handling at the final pass/fail inspection is the responsibility of another Stäubli six-axis machine, whose high dynamics ensure that the specified cycle time is maintained.

"That's the beauty of this groundbreaking system," says John Dallapiccola with justifiable pride. "Thanks to its immense flexibility, we are no longer subject to any restrictions. We can produce any number of variants and integrate further processes if required. The synergies of Stäubli's Robotics, Fluid and Electrical Connectors business units have played a major role in making this unique assembly system a reality."



Watch video



Picture left:
The ultra-compact Stäubli TS2-40 four-axis also impresses with its small footprint and impressive accuracy.

Picture right:
While the CombiTac connector ensures the simultaneous connection of all energy and media circuits, a quick-release coupling ensures the correct fit of the module on the assembly line.



The modular connector system CombiTac – individually configurable, vibration-resistant, reliable, and long-lasting

STÄUBLI ELECTRICAL CONNECTORS

Modular high-performance battery systems: Innovation for e-mobility

Darmstadt-based technology leader AKASOL develops and produces an impressive range of innovative, modular high-performance battery systems for electric and hybrid utility vehicles. International vehicle manufacturers count on its reliable and scalable batteries. Thanks to robust and compact CombiTac connectors including custom pre-assembled cables, AKASOL AG can guarantee safe, long-lasting operation for its customers' electric vehicles.

What started as the “Academic Solar Technology Group” at the Technical University of Darmstadt is now an international market leader and global player in the field of modular, high-performance lithium-ion battery systems for utility vehicles, headquartered in Darmstadt, Germany. AKASOL's innovative battery systems are used in electric and hybrid utility vehicles for passenger and freight transportation on roads, railways, and waterways, as well as in industry. Innovative visions and a passion for creating

alternative drive concepts are the foundation of AKASOL's business success. Today, AKASOL's cutting-edge products are an integral part of the design concepts of some of the world's leading utility vehicle manufacturers.

The business needs

AKASOL's modular and flexible product portfolio stands out for its very high energy density and exceptional thermal management, allowing for compact and freely scalable design. Developing a high-performance, modular OEM battery system called for a highly powerful, robust and reliable pluggable connection solution that was also extremely safe and had the necessary certification for use in the automotive industry.

The challenge

Stäubli worked jointly with AKASOL to configure a solution based on the modular Stäubli CombiTac system, flexible enough to support a 30% increase in the battery design's performance even without any design modifications.

Stäubli also implemented the connection with pre-assembled cables according to the specifications of AKASOL's OEM customer.

The solution

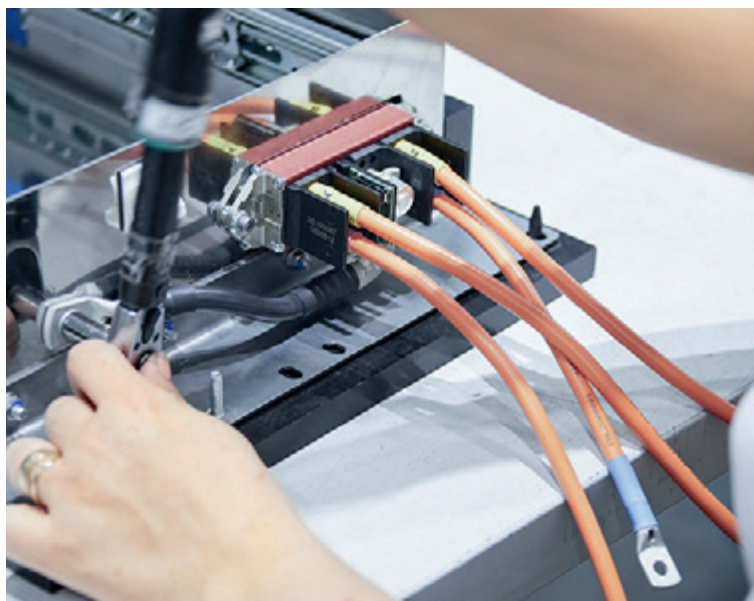
These connections, which carry current as well as data signals between the individual battery modules and to the power electronics, allow for safe battery maintenance operations. Simply unplugging the power module from the battery enables technicians to work safely with no live voltage. Therefore, it's possible to change fuses without the need for an electrician or additional safety staff. This solution ensures that there is absolutely no voltage at the power module.

The modular connections also ensure fast, safe connections during assembly of the individual battery layers. Thanks to its robust design, the high-quality CombiTac solution can even stand up to strong vibrations in continuous operation. At the customer's request, an additional circuit board for monitoring was built into the power

electronics with the CAN bus as part of the safety technology. This is another area of Stäubli's expertise, making the solution even safer.

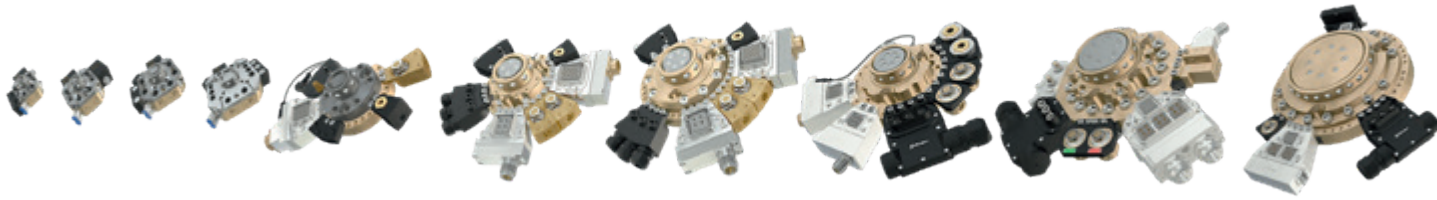
The added-value provided

The Stäubli CombiTac connector system impressed the engineers at AKASOL with its proven reliability and robustness. AKASOL also appreciated the Stäubli team's flexibility and expertise in implementing the additional technical specifications and strict safety requirements of the international utility vehicle manufacturer. The user-specific cable solution allows for safe and efficient assembly of battery modules. For AKASOL's customers, the use of Stäubli's safe connector solution in the high-performance battery systems guarantees continuous, long-lasting electric vehicle operation and the highest level of safety for maintenance work.



Picture left: CombiTac for power and data transmission for battery modules

Picture right: CombiTac with pre-assembled cables for quick and safe installation



STÄUBLI FLUID CONNECTORS

Customized material handling solutions

The global supplier of industrial and mechatronic solutions has consistently expanded and repositioned its tool changing systems in robotic material handling. Stäubli has invested considerable resources in developing its range of End-of-Arm-Tooling solutions for robots of all brands. Now, requirements from all industrial sectors can be implemented faster, more efficiently, and in a more targeted manner under the highest safety standards.

All solutions are based on a modular system through which individual adaptations can be made for almost any requirement. Furthermore, maximum functional reliability can be guaranteed since everything comes from a single source at Stäubli. In addition, all models meet the safety requirements according to Safety Category 3 Performance Level d and can be used in a process-safe manner regardless of the robot manufacturer.

Cooperation gives End-of-Arm-Tooling offering significant push

Thanks to a collaboration with FIPA GmbH, a global manufacturer of innovative vacuum and gripping components, Stäubli can now customize material handling solutions for various robots and applications.

In addition to this extended range of solutions, Stäubli offers full customer support, as well as the delivery of fully assembled gripper solutions. This benefits plant operators and developers by reducing interface complexity and simplifying coordination with various contacts.

Versatile product range for all robots, all payloads and all applications

Stäubli's systems are capable of handling small to heavy payloads. This diversity enables the company to provide customized solutions for a wide range of industrial applications and requirements. Exemplary of this is the new MPS 2531 changing system, which expands the product range to high payloads and is capable of safely and precisely carrying loads of up to 2.5 tons. The five MPS sizes, which cover the payload range up to 80 kg, are also particularly impressive thanks to the variety of transmission technologies that can be used and very precise repeatability. Regardless of whether light, medium, or heavy loads are involved, customers can rely on the proven precision, reliability, and efficiency of Stäubli's tool changing systems.

Years of experience in the development of customized solutions

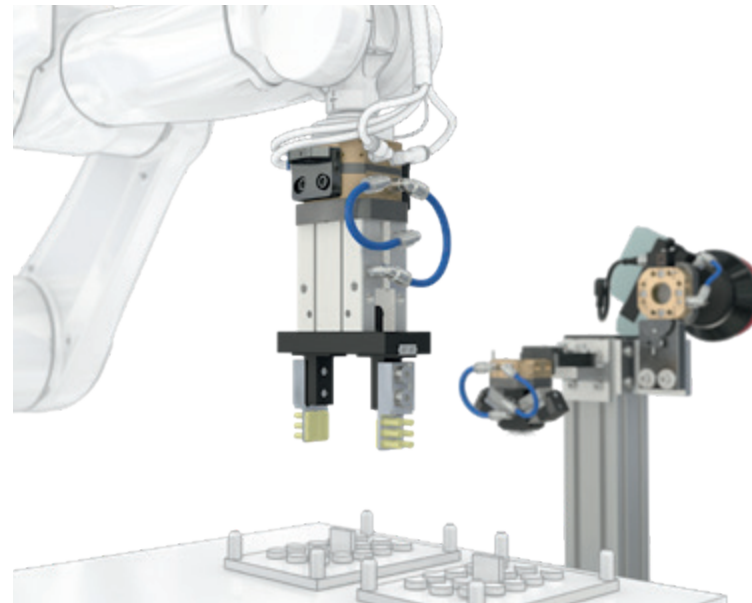
To ensure maximum productivity, Stäubli prioritizes the durability of its EOAT solutions and

their adaptability, with all development and manufacturing carried out in-house to guarantee high quality and delivery reliability.

The more durable an End-of-Arm-Tooling solution is, the longer it can remain productive and generate greater revenue. The general scarcity of resources reinforces this effect: long periods of use are desirable from both an ecological and an economic point of view. But who knows which robot applications will be needed tomorrow and the day after? This is where Stäubli Fluid Connectors shows a way forward with the

high flexibility of its solutions: the systems can be adapted to new conditions at any time as part of a retooling or retrofit. Durable solutions can achieve a long service life and increase revenue.

With locations worldwide, Stäubli also provides an extensive network with deep expertise to help companies implement global EOAT concepts, always considering country-specific regulations and standards.



Ready-configured tool change system for immediate use.

About us

Stäubli is a global industrial and mechatronic solution provider with four dedicated Divisions: Electrical Connectors, Fluid Connectors, Robotics and Textile, serving customers who aim to increase their productivity in many industrial sectors. We are an international Group that currently operates in 29 countries, with agents in 50 countries on four continents. Our global workforce of 5.700 shares a commitment to partnering with customers in nearly every industry to provide comprehensive solutions with long-term support. Originally founded in 1892 as a small workshop in Horgen/Zurich, Switzerland, today Stäubli is an international Group headquartered in Pfäffikon, Switzerland.

www.staubli.com

Contact:

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