spokesperson. "Not only will the robots be able to start performing their tasks sooner, but the manufacturers will save on both engineering and hardware costs. With an ROI of less than 12 months, MIRAI-supported robots are also affordable for small-to-medium enterprises ."

For more information contact:
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718-440-7353
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Automation Solution with Robotic Gripper and Pneumatic Vise

Kurt Workholding and Absolute Machine Tools have teamed up to create an easy and smart way to introduce turn-key automation to a shop. The exclusive package features a Mitsubishi LoadMate Plus, Kurt 3600A Pneumatic Vise and Kurt RV36 Robotic Gripper working in tandem with a Tongtai VP-10 mass-production high-speed vertical machining center (VMC).

The Mitsubishi LoadMate Plus Machine Tending Robotic Cell was a collaboration between Absolute Machine Tools and Mitsubishi Electric. "Absolute is very excited to have this opportunity to collaborate with Mitsubishi Electric to design and build the LoadMate Plus robotic automation cell," said Courtney Ortner, Absolute Machine Tools Director of Marketing. "This is a big deal for both Absolute's A+ Automation Team and Kurt Workholding Automation Products."

The LoadMate Plus is virtually a plug & play machine tending robotic cell. Along with a Kurt RV36 gripper and Kurt's automation-ready pneumatic and

hydraulic workholding solutions, it is an easy way to integrate automation into a shop's production processes.

The Tongtai VP-10 has XYZ axis travels of 40.2" x 20.1" x 23.6" (1,021 mm x 510 mm x 600 mm). High power servo motors produce 1,890 IPM (48 m/min) in X and Y, and 1,417 IPM (36 m/min) in Z. Acceleration in X, Y and Z is 1.18G, 1.0G and 0.7G. Standard is a 10K RPM 20 HP direct drive spindle and a tool changer that can hold as many as 30 tools. The standard Mitsubishi M80A control features a 10.4" (265 mm) touchscreen.

Also featured in the demo package is the Kurt 3600A VersatileLock pneumatic vise and RV36 Robotic Gripper. "Designed for precision clamping, the vise's pull-type action and Ang-Lock jaws reduce stationary jaw deflection by at least 80%," said a spokesperson. "A one-piece body and stationary jaw design reduce weight and increase strength while providing .0005 clamping repeatability. The RV36 Robotic Gripper offers the versatility of customizable, quick-change fingers in a compact, cost-effective package." Pneumatically actuated steel or aluminum finger configurations are available and attach to the vise using pull studs for changeability with a maximum payload of 50 lbs.

"Pull-stud equipped quick-change fingers allow a robot to change gripper fingers while still in operation without manual intervention," said Kevin Rinehart, Absolute Machine Tools Sr. Automation Engineer. "This kind of technology is a huge benefit to reducing cycle time and eliminates manual changeovers, allowing a shop's operator to be away from the cell to perform other responsibilities or more value-added tasks."

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Medium Payload Robot

Continued from Page 10

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AI-Driven Control System Speeds Robot Training and Deployment

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robots to flexibly react to variances in their tasks in real time by learning from humans.

"Variances in position, shape, surface properties or lighting conditions are a common challenge for robotic automation of machine tending, assembly or test applications," said a company spokesperson. "With MIRAI's new 'positioning skills' feature, giving examples of quality movements to the robot has become much easier, and the robot will generalize and understand what to do much more quickly. With the new feature, MIRAI customers will notice quicker setup times, down from two to three days per skill to about three hours. In addition, robot speeds have increased, which also enables shorter cycle times."

Companies wanting to use a robot to perform precise and complex skills—such as gripping and inserting a bendable or soft component, like a cable, into differently arranged sockets—would primarily use the MIRAI controller at the first and last decisive centimeters of a manufacturing step.

With MIRAI, preparing robots to perform tasks that include variances requires a human worker to guide the robot arm several times through typically occurring scenarios to show the robot to its destination, such as sockets in which freely hanging cables need to be inserted. A machine learning process then derives a motion intuition for the robot from the given examples. For a robot that is not required to follow specific paths to perform its task, MIRAI users can deploy the new positioning skills to teach the robot to find the destination even faster because a human worker needs only to show MIRAI the surroundings of the target with the camera. The robot then independently searches for the shortest path to the object.

Through demonstrations, the robot can learn almost any task, including all precise tasks that involve variances, whether tracing lines, bolting differently placed screws or even checking solder joints at varying positions. This enables the automation of production steps in industries such as assembly or quality inspection, which previously could only be performed manually by human workers.

"Training the robots purely by demonstration is an enormous advantage for manufacturers who have variant-rich production," said the spokesperson. "Not only will the robots be able to start performing their tasks sooner, but the manufacturers will save on both engineering and hardware costs. With an ROI of less than 12 months, MIRAI-supported robots are also affordable for small-to-medium enterprises and are so quickly equipped for new tasks that even the automation of three-month production runs is worthwhile."

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Easy-to-Use Robot Programming Approach

Continued from Page 10

a concept that is fully aligned with Comau's vision of making robotics accessible to end users," said the spokesperson. "As such, it also mirrors the company's HUMANufacturing approach, through which industrial equipment and human operators work together in complete safety and with the help of innovative digital technologies."

The spokesperson added, "By removing barriers to automation, Comau is well-positioned to support companies of any size, in any industry, enjoy higher productivity. They simply use the same Siemens PLC that is already deployed for other applications, and all the necessary intelligence is instantly transferred from the Siemens library to the robot without any extra work."

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Sidebot for High-Speed Collaborative Automation

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activity, allowing it to maximize performance when on its own and slow down to a safe operating speed when a human is in close proximity. "As a result, manufacturers can now enjoy the performance of an industrial robot combined with the versatility and compact size of a cobot," said the spokesperson.

To meet a variety of production needs, Wyzo is designed to fit anywhere on the production floor. At less than 0.5 sq. m and 1.80 m in height, the sidebot fits through standard doors and elevators, offering flexibility with a small footprint. It can easily be moved from one workstation to another, eliminating bottlenecks and enabling fast ROI.

For manufacturers switching between products, Wyzo is highly compatible with all regular grippers on the market and features changeover speeds of less than nine seconds. To meet ever-changing production demands, it also offers integrated pneumatic, electric and vacuum controls.

Wyzo's human machine interface (HMI) is simplified for intuitive use by operators with no prior training in automated solutions. "Its mobile terminal is as easy to operate as a smartphone and requires neither script nor programming to get Wyzo up and running," said the spokesperson. "Based on more than 30 years of software development for Delta robots, Wyzo's state-of-the-art pick & place software has been specially refined for ease of use and control."

For more information contact:
Wyzo
www.thewyzo.com

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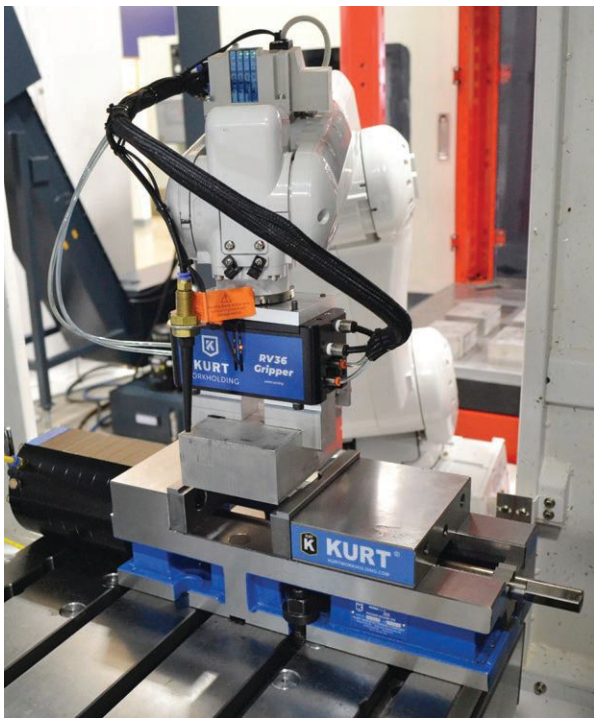

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Standard Automation, Improved Results

Automation can be intimidating. Between choosing a robot, automatic pallet and tool changers, developing a custom program, end-of-arm tooling options, infeed/outfeed systems and the myriad of "right" answers, it can be overwhelming to find the best fit for individual needs.

But not every automation solution needs to be an intricate, hand-crafted cell designed from scratch.

Standard automation systems, commonly referred to as "bolt-on" options, are straightforward, cost-effective ways to maximize a shop's throughput and provide a competitive advantage.

"We did not design these systems overnight," said Zachary Spencer, Robotics Automation Manager. "We have utilized decades of hands-on automation knowledge to craft cells in order to give shop owners greater throughput, lower cycle times and increased value through unmanned machining."

Most recently, Methods Machine Tools unveiled the MB 650U Automatic Manufacturing Package (MB 650U AMP) and the Plus Big-K. The MB 650U AMP combines the speed and precision of Methods' MB 650U 5-axis CNC machining center and the reliable automation of a 6-pallet Indunorm automatic pallet changer.

"It gives shop owners and managers a complete machining and automation system, no assembly required," said Nicholas St. Cyr, Methods Machining Center Product Manager.

Methods developed the Big Plus-K to fill the automation market gap for high-volume standard automation systems. The cell can be paired with medium-bed RoboDrills and Methods' MB 650U and can hold up to 120 pallets and 280 tools.

Other standard automation systems include the JobShop Cell PRO, the RoboDrill Plus-K and Plus-K 60 and RoboDrill Plus-E.

"These advanced plug & play cells were intended for effortless automation; they are easy to integrate and even easier to operate and maintain," Spencer said.

The JobShop Cell PRO is comprised of a 6-axis FANUC robot in an aluminum enclosure, allowing users to place the robot on either side of the RoboDrill. In the twin cell, the robot is placed in the middle of two RoboDrills, giving operators complete access to the machine tools for tool changes, offsets and maintenance. Removable panels allow for different infeed and outfeed options such as conveyors, drawers, lazy Susan-style systems and interfaces for bulk feeding solutions.

Designed for seamless integration with medium-bed RoboDrills, the Plus-K and Plus-K60 are versatile automation systems designed to boost productivity overnight. Since these systems hold a common component on each workpiece, the cells reduce set-up times and make them well suited for high mix, low volume jobs.

The cells encompass a FANUC robot that loads/unloads workpiece carriers from the RoboDrill to a rotary storage carousel. The Plus-K can have numerous configurations, ranging from 24 pallets and 112 tools and 60 pallets and 64 tools. The RoboDrill Plus-K60 comes equipped with 60 pallets and 64 tools.

Methods' Plus-E automation cell contains a vertical pallet pool, minimizing additional floor space. Users can adjust the distance between each pallet to maximize the number of pallets in the elevator. Stacking the pallets vertically saves floor space and enables the system to excel at mid to high volume/low mix work.

"Standard automation systems are the easiest way to increase throughput and expand a shop's capabilities," said Thomas Saur, Vice President of FANUC America Products. "It is easy to succeed with these cells, and one does not need new hardware, software or skills to start making more parts."

Authored by Methods Machine Tools

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Progressive Die Tapping for Fastener Industry

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The in-process material is then pulled into the multispindle tapping machine where all threaded holes are produced in one pass, then onto a blanking press where finished pieces are punched out. The feed is continuous, with a precise amount of slack between stations, so each time the material is positioned, all three operations are performed simultaneously. The process produces from two to 128 fasteners every 10 seconds.

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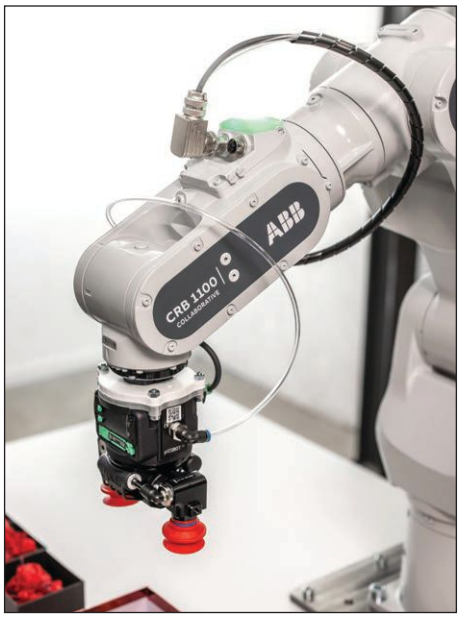
Cobots Enable Automation for New Sectors, First-Time Users

ABB has expanded its collaborative robot (cobot) portfolio with the GoFa and SWIFTI cobot families, offering higher payloads and speeds, to complement YuMi and Single Arm YuMi in ABB's cobot line-up.

"These stronger, faster and more capable cobots will accelerate the company's expansion in high-growth segments including electronics, healthcare, consumer goods and logistics, among others, meeting the growing demand for automation across multiple industries," said a company spokesperson.

GoFa and SWIFTI are intuitively designed so customers need not rely on in-house programming specialists. "This will allow customers to operate their cobots within minutes of installation, straight out of the box, with no specialized training," said the spokesperson.



"Our new cobot portfolio offers the potential to transform workplaces and help our customers achieve new levels of operational performance and growth," said Sami Atiya, President of ABB's Robotics & Discrete Automation Business Area.

"They are easy to use and configure and are backed by our global network of on-call, online service experts to ensure that businesses of all sizes and new sectors of the economy can embrace robots for the first time," Atiya said.

GoFa and SWIFTI are engineered to help businesses automate processes and assist workers with tasks including material handling, machine tending, component assembly and packaging in manufacturing, medical laboratories, logistics hubs and warehouses, workshops and small production facilities.

"With this expansion, we are making cobots easier to use and deploy, with real-time support to help speed their adoption in businesses that may have not considered their use previously," Atiya said. "Our experience is that the best performing operations harness peoples' skills alongside the potential of new technologies."

Users comfortable with operating a tablet or smartphone will be able to program and reprogram the new cobots using ABB's fast set-up tools.

For more information contact:
ABB Robotics, Inc.
1250 Brown Road
Auburn Hills, MI 48326
248-391-9000
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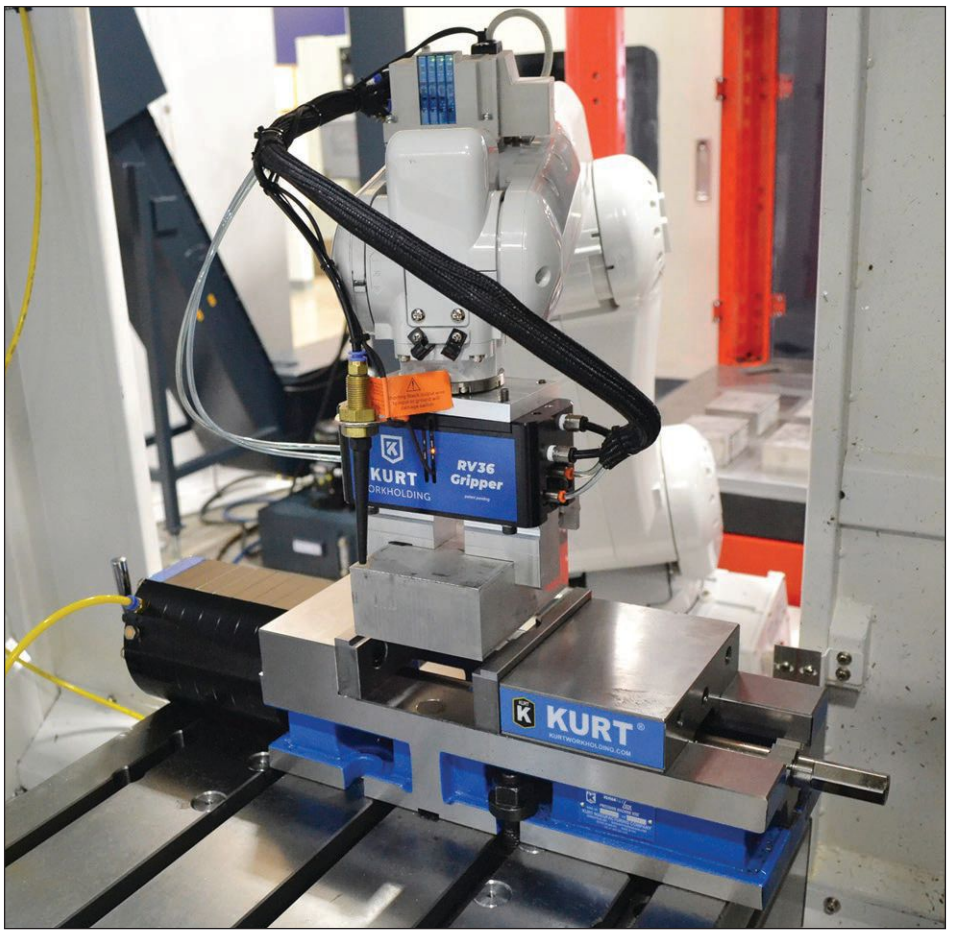
Automation Solution with Robotic Gripper and Pneumatic Vise



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Rotary and Linear Pallet Storage Solutions

GROB Systems, a provider of manufacturing systems and machine tools, highlights its PSS-R rotary and PSS-L linear pallet storage systems.

The GROB PSS-R rotary pallet storage system expands the G-module to a flexible production cell to offer optimum entry to automated, highly efficient production. Features include versions with up to 15 pallet storage positions at one to three levels, an easily accessible set-up station arranged next to the machine control panel, fast pallet change when using two pallets due to an innovative pallet changing device, visualization and organization of production orders with flexible production control software, and state-of-the-art production control software with a 19" touchscreen panel.

"Benefits of the PSS-R for the customer include a complete solution from a single source in a standardized design, economic production with increased machine capacity utilization, capability to produce in unmanned or lightly manned shifts, optimized view into the work area and toward the pallet storage positions, parallel loading and unloading of the pallets during the machining operation, and a high storage capacity with a small footprint," said a company spokesperson. "The PSS-R offers a storage solution for a small initial investment and can be retrofit easily on existing machines."

The GROB PSS-L linear pallet storage system includes the ability to connect up to five machines to one system, an expandable modular system consisting of at least one basic module, system flexibility to expand by up to four expansion modules and additional set-up stations, an easily accessible set-up station with crane-loading capability, visualization and organization of production orders with a flexible production control software, applicability to machines with and without a pallet changer, and a highly dynamic loading unit with an optimized control system for reduced pallet change time.

The PSS-L is flexibly configurable according to the customer's requirements, offers a complete solution from a single source in a standardized design and an interface that is optimally matched to the machine.

"It allows for cost-effective production through increased machine utilization, permits longer and unmanned production periods and allows optimum access to the work area of the machine during automation—for example, for manual loading or set-up work," said the spokesperson. "Like the PSS-R, this model also offers high storage capacity with a small footprint and is a pallet storage solution with a low investment."

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Technology to Increase Heavy Fabrication Productivity

Novarc Technologies offers the Spool Welding Robot+HyperFill, a dual torch system that increases heavy fabrication productivity by increasing weld deposition rates, all while delivering excellent weld quality, the company said.

The SWR uses a floating long reach manipulator with a 3-axis robotic arm at the end, which works with a human operator to increase dexterity and flexibility. It is designed specifically for pipe, small pressure vessel and other types of roll welding, and is capable of welding flanges, tees, elbows and reducers.

"Implementation of the SWR has shown a 3-5x increase in pipe welding productivity, potentially allowing the collaborative robot's capital cost to be recovered in six to 18 months, on average," said a spokesperson.

The SWR+HyperFill uses the Lincoln STT GMAW process on the root, and twin wire GMAW-P (HyperFill) on fill and cap passes. SWR+HyperFill utilizes Lincoln Electric's patented twin-wire GMAW solution, HyperFill, to boost productivity and profitability. It can be used on carbon steel pressure process pipes or vessels with 0.5" to 2.5" thickness and as low as 6" in diameter. It also has the flexibility of using root to cap GMAW or seamlessly switching to FCAW or MCAW for the fill and cap passes.

For more information contact:
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833-3NO-VARC
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www.kurtworkholding.com/automation-solutions

SCARA Robot Boosts Electronics Production

To meet the growing automation needs of the electronics industry, among others, KUKA Robotics Corporation offers its KR 6 SCARA robot. "The new 4-axis robot is faster and lighter than traditional smaller 6-axis robots to provide manufacturers ease of use and significant increases in production speed," said a company spokesperson.

For electronics applications, the KR 6 provides a 6-kg payload and positions at a repeatability of +/-.02 mm. It offers reach/radius options of 500 mm and 700 mm and Z-axis stroke of 200 mm.

For maximum acceleration and velocity, KUKA's optimal motion planning software calculates and sets the correct motion path to ensure that all the robot's axes can finish moving simultaneously at the desired point in space. In electronics applications, there is little need for changes in part orientation, so necessary robot moves are up, down and inserting. It is for this reason that the KR 6 is easy to use, as well as light weight and fast.

In addition to the KR 6 robot, the system includes a KUKA smartPAD teach pendant, robot controller and motor and data cables.

The new KR 6 is backed by KUKA's service and support for training, complete system engineering and simulation, readily available spare parts, robot refurbishment and more. All of these are accessible through my.KUKA.com. and KUKA maintains corporate offices and production operations, along with integration partner facilities, throughout North America.

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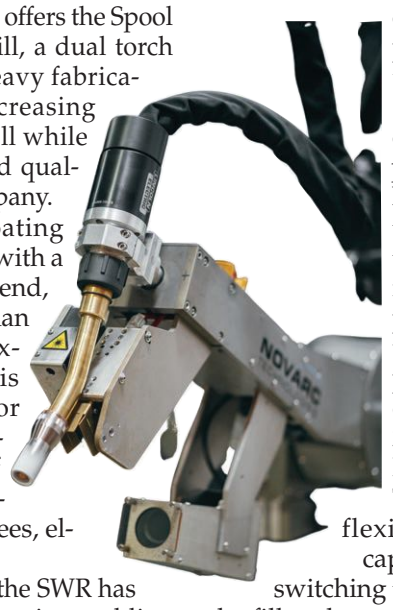

The SWR uses a floating long reach manipulator with a 3-axis robotic arm at the end, which works with a human operator to increase dexterity and flexibility. It is designed specifically for pipe, small pressure vessel and other types of roll welding, and is capable of welding flanges, tees, elbows and reducers.

"Implementation of the SWR has shown a 3-5x increase in pipe welding productivity, potentially allowing the collaborative robot's (cobot's) capital cost to be recovered in an average of six to 18 months," said a company spokesperson.

The SWR+HyperFill uses the Lincoln STT GMAW process on the root, and twin wire GMAW-P (HyperFill) on fill and cap passes. SWR+HyperFill utilizes Lincoln Electric's patented twin-wire GMAW solution, HyperFill, to maximize productivity and profitability. It can be used on carbon steel pressure process pipes or vessels with 0.5" to 2.5" thickness and as low as 6" in diameter. The system also has the flexibility of using root to cap GMAW or seamlessly switching to FCAW or MCAW for the fill and cap passes.

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Medium Payload Robot

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AI-Driven Control System Speeds Robot Training and Deployment

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robots to flexibly react to variances in their tasks in real time by learning from humans.

"Variances in position, shape, surface properties or lighting conditions are a common challenge for robotic automation of machine tending, assembly or test applications," said a company spokesperson. "With MIRAI's new 'positioning skills' feature, giving examples of quality movements to the robot has become much easier, and the robot will generalize and understand what to do much more quickly. With the new feature, MIRAI customers will notice quicker setup times, down from two to three days per skill to about three hours. In addition, robot speeds have increased, which also enables shorter cycle times."

Companies wanting to use a robot to perform precise and complex skills—such as gripping and inserting a bendable or soft component, like a cable, into differently arranged sockets—would primarily use the MIRAI controller at the first and last decisive centimeters of a manufacturing step.

With MIRAI, preparing robots to perform tasks that include variances requires a human worker to guide the robot arm several times through typically occurring scenarios to show the robot to its destination, such as sockets in which freely hanging cables need to be inserted. A machine learning process then derives a motion intuition for the robot from the given examples. For a robot that is not required to follow specific paths to perform its task, MIRAI users can deploy the new positioning skills to teach the robot to find the destination even faster because a human worker needs only to show MIRAI the surroundings of the target with the camera. The robot then independently searches for the shortest path to the object.

Through demonstrations, the robot can learn almost any task, including all precise tasks that involve variances, whether tracing lines, bolting differently placed screws or even checking solder joints at varying positions. This enables the automation of production steps in industries such as assembly or quality inspection, which previously could only be performed manually by human workers.

"Training the robots purely by demonstration is an enormous advantage for manufacturers who have variant-rich production," said the spokesperson. "Not only will the robots be able to start performing their tasks sooner, but the manufacturers will save on both engineering and hardware costs. With an ROI of less than 12 months, MIRAI-supported robots are also affordable for small-to-medium enterprises and are so quickly equipped for new tasks that even the automation of three-month production runs is worthwhile."

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Easy-to-Use Robot Programming Approach

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a concept that is fully aligned with Comau's vision of making robotics accessible to end users," said the spokesperson. "As such, it also mirrors the company's HUMANufacturing approach, through which industrial equipment and human operators work together in complete safety and with the help of innovative digital technologies."

The spokesperson added, "By removing barriers to automation, Comau is well-positioned to support companies of any size, in any industry, enjoy higher productivity. They simply use the same Siemens PLC that is already deployed for other applications, and all the necessary intelligence is instantly transferred from the Siemens library to the robot without any extra work."

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Sidebot for High-Speed Collaborative Automation

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activity, allowing it to maximize performance when on its own and slow down to a safe operating speed when a human is in close proximity. "As a result, manufacturers can now enjoy the performance of an industrial robot combined with the versatility and compact size of a cobot," said the spokesperson.

To meet a variety of production needs, Wyzo is designed to fit anywhere on the production floor. At less than 0.5 sq. m and 1.80 m in height, the sidebot fits through standard doors and elevators, offering flexibility with a small footprint. It can easily be moved from one workstation to another, eliminating bottlenecks and enabling fast ROI.

For manufacturers switching between products, Wyzo is highly compatible with all regular grippers on the market and features changeover speeds of less than nine seconds. To meet ever-changing production demands, it also offers integrated pneumatic, electric and vacuum controls.

Wyzo's human machine interface (HMI) is simplified for intuitive use by operators with no prior training in automated solutions. "Its mobile terminal is as easy to operate as a smartphone and requires neither script nor programming to get Wyzo up and running," said the spokesperson. "Based on more than 30 years of software development for Delta robots, Wyzo's state-of-the-art pick & place software has been specially refined for ease of use and control."

For more information contact:
Wyzo
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Automation Solution with Robotic Gripper and Pneumatic Vise

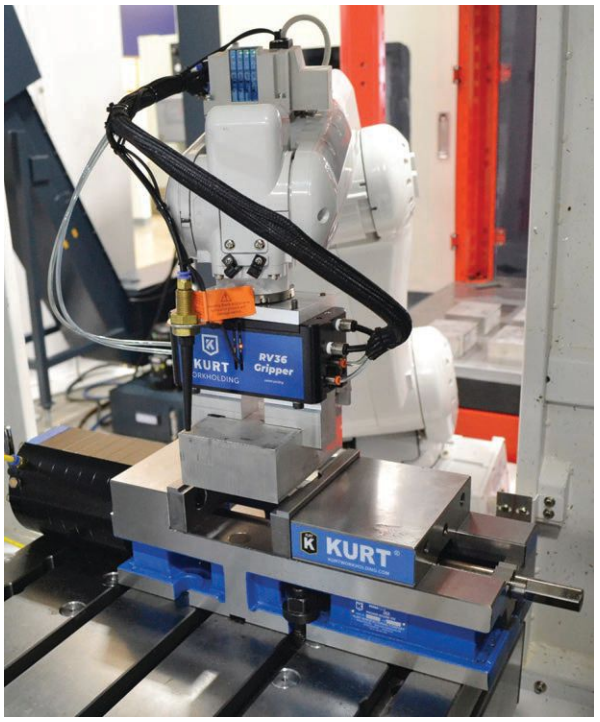
Kurt Workholding and Absolute Machine Tools have teamed up to create an easy and smart way to introduce turn-key automation to a shop. The exclusive package features a Mitsubishi LoadMate Plus, Kurt 3600A Pneumatic Vise and Kurt RV36 Robotic Gripper working in tandem with a Tongtai VP-10 mass-production high-speed vertical machining center (VMC).

The Mitsubishi LoadMate Plus Machine Tending Robotic Cell was a collaboration between Absolute Machine Tools and Mitsubishi Electric. "Absolute is very excited to have this opportunity to collaborate with Mitsubishi Electric to design and build the LoadMate Plus robotic automation cell," said Courtney Ortner, Absolute Machine Tools Director of Marketing. "This is a big deal for both Absolute's A+ Automation Team and Kurt Workholding Automation Products."

The LoadMate Plus is virtually a plug & play machine tending robotic cell. Along with a Kurt RV36 gripper and Kurt's automation-ready pneumatic and hydraulic workholding solutions, it is an easy way to integrate automation into a shop's production processes.

The Tongtai VP-10 has XYZ axis travels of 40.2" x 20.1" x 23.6" (1,021 mm x 510 mm x 600 mm). High power servo motors produce 1,890 IPM (48 m/min) in X and Y, and 1,417 IPM (36 m/min) in Z. Acceleration in X, Y and Z is 1.18G, 1.0G and 0.7G. Standard is a 10K RPM 20 HP direct drive spindle and a tool changer that can hold as many as 30 tools. The standard Mitsubishi M80A control features a 10.4" (265 mm) touchscreen.

Also featured in the demo package is the Kurt 3600A VersatileLock pneumatic vise and RV36 Robotic Gripper. "Designed for precision clamping, the vise's pull-type action and AngLock



jaws reduce stationary jaw deflection by at least 80%," said a spokesperson. "A one-piece body and stationary jaw design reduce weight and increase strength while providing .0005 clamping repeatability. The RV36 Robotic Gripper offers the versatility of customizable, quick-change fingers in a compact, cost-effective package." Pneumatically actuated steel or aluminum finger configurations are available and attach to the vise using pull studs for changeability with a maximum payload of 50 lbs.

"Pull-stud equipped quick-change fingers allow a robot to change gripper fingers while still in operation without manual intervention," said Kevin Rinehart, Absolute Machine Tools Sr. Automation Engineer. "This kind of technology is a huge benefit to reducing cycle time and eliminates manual changeovers, allowing a shop's operator to be away from the cell to perform other responsibilities or more value-added tasks."

Absolute Machine Tool customers can purchase Kurt vises and RV36 grippers as part of a package with the Tongtai VP-10 and Mitsubishi LoadMate Plus. The LoadMate Plus also packages as a stand-alone robot cell using an RV-8 Mitsubishi robot.

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Rotary and Linear Pallet Storage Solutions

GROB Systems, a provider of manufacturing systems and machine tools, highlights its PSS-R rotary and PSS-L linear pallet storage systems.

The GROB PSS-R rotary pallet storage system expands the G-module to a flexible production cell to offer optimum entry to automated, highly efficient production. Features include versions with

up to 15 pallet storage positions at one to three levels, an easily accessible set-up station arranged next to the machine control panel, fast pallet change when using two pallets due to an innovative pallet changing device, visualization and organization of production orders with flexible production control software, and state-of-the-art production control software with a 19" touchscreen panel.

"Benefits of the PSS-R for the customer include a complete solution from a single source in a standardized design, economic production with increased machine capacity utilization, capability to produce in unmanned or lightly manned shifts, optimized view into the work area and toward the pallet storage positions, parallel loading and unloading of the pallets during the machining operation, and a high storage capacity with a small footprint," said a company spokesperson. "The PSS-R offers a storage solution for a small initial investment and can be retrofit easily on existing machines."

The GROB PSS-L linear pallet storage system includes the ability to connect up to five machines to one system, an expandable modular system consisting of at least one basic module, system flexibility to expand by up to four expansion modules and additional set-up stations, an easily accessible set-up station with crane-loading capability, visualization and organization of production orders with a flexible production control software, applicability to machines with and without a pallet changer, and a highly dynamic loading unit with an optimized control system for reduced pallet change time.

The PSS-L is flexibly configurable according to the customer's requirements, offers a complete solution from a single source in a standardized design and an interface that is optimally matched to the machine. "It allows for cost-effective production through increased machine utilization, permits longer and unmanned production periods and allows optimum access to the work area of the machine during automation—for example, for manual loading or set-up work," said the spokesperson. "Like the PSS-R, this model also offers high storage capacity with a small footprint and is a pallet storage solution with a low investment."

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