

Automated pipetting solution ensures rapid evaluation of Covid-19 samples

With the continuing changes seen within the Covid-19 virus strains, it's vital that any samples can be analysed as rapidly as possible. Two Bavarian companies, GriPS Automation GmbH and D&T engineering GmbH, have worked together with OMRON to streamline the pipetting part of the process.

As a result, the three companies have developed the PT600 laboratory processing system for the transfer of samples, using an OMRON Cobra 450 robot for contactless transport. The new solution was developed because the testing of standard Covid-19 samples requires removing a measured sample of the liquid and transferring it to a tube in which it can be properly tested. To do this task manually is time-

intensive and can also introduce a level of human error. The automation of the pipetting process is designed to eliminate such errors.

The OMRON Cobra 450 is a four-axis Scara robot with a reach of 450mm. Designed for processes such as material handling, assembly and precision machining, it offers excellent repeatability. This particular project requires the sample to be pipetted into a 'deep well' plate, with 96 compartments. A tip has to be placed on the pipette, which is then used to draw a sample. A measured amount of this is then transferred into one of the compartments in the plate. The process is repeated for the other 95 compartments.



The PT600 laboratory processing system uses an OMRON Cobra 450 robot for contactless transport.

A complete, smart solution

The solution, that included the industrial robot, as well as a MicroHAWK V330-F compact barcode reader, highly precise G5 Series servo actuator, Gigabit Ethernet Vision Cameras and an industrial panel PC NYP35, automates the entire process, including the reading of the QR codes on the original tubes of liquid, and allocating each sample to the correct compartment. It eliminates any mistakes that can happen when this process is carried out manually. The speed of the automated operation is also much faster than the manual process. The latter can take up to an hour to fill a complete plate of 96 samples, whereas the robot can complete the task within ten minutes. It therefore saves a significant amount of time. The whole solution is controlled by our Sysmac platform and the NX1 controller is continuously updating the database with the barcode information of the samples via OPC-UA.

The development of the new processing system started in December 2020 and was completed by May 2021. Guido Grimberg, CEO of GriPS Automation, says: "The first fully automated PT600 machine is now being used in a laboratory and everything works perfectly."

He continues: "We've been working closely with OMRON for 25 years now, and we've developed a lot of system integrations together. They were therefore a natural choice for automating this solution. OMRON offers a very wide product range, which has supported us in developing the overall solution. From the displays to robots, barcode readers, drive technology, and the control system etc. This simplifies our life, as one company can deliver a total, smart solution."

Guido Grimberg adds: "Industry 4.0 is a key topic at the moment. This project involved issues such as the pandemic, traceability and the need to collect and analyse reliable data. This is a passion for us, which is why we were involved in developing the PT600."



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The solution eliminates any mistakes and speeds up the process.

About GriPS Automation GmbH

Based In Oberhaching, Bavaria, the GriPS engineering office started providing comprehensive services in automation technology in 1995. It proved very successful and GriPS Automation GmbH was subsequently founded in 2007. The company is a system partner of various manufacturers of automation technology components. Its aim is to provide sustainable and needs-based solutions. GriPS focuses mainly on the area of specialist machines, and manufactures suitable applications and production processes for industry. It provides everything from simple design and advice through to complete solutions. This includes the planning of hardware and software solutions, as well as the design of machines. For more details, visit www.grips-automation.com

About D&T engineering GmbH

D&T engineering GmbH is based in Ampfing, Bavaria, and acts as an expert partner for automation, special purpose machines and intra logistics. The company has years of experience and can provide advice and assistance, using innovative technologies to realise future-oriented projects. It supports companies from conception and design through to the final realisation of the project. To find out more, visit <https://en.dt-gmbh.com/>.

About OMRON Corporation

OMRON Corporation is a global leader in the field of automation, based on its core technology of 'Sensing & Control + Think'. OMRON's business fields cover a broad spectrum, ranging from industrial automation and electronic components to automotive electronic components, social infrastructure systems, healthcare, and environmental solutions. Established in 1933, OMRON has over 30,000 employees worldwide, working to provide products and services in 120 countries and regions. In the field of industrial automation, OMRON supports manufacturing innovation by providing advanced automation technologies and products, as well as through extensive customer support, in order to help create a better society. For more information, visit OMRON's website at: industrial.omron.eu.