ControlTec helps Polish hospital tackle the pandemic with a UVC mobile robot

Healthcare organisations across the world are looking for automated solutions for safely disinfecting individual rooms and public spaces to meet a range of new hygiene procedures due to the Covid-19 pandemic. One of the companies that has responded to this need is ControlTec, a Polish system integrator. Using an OMRON LD mobile robot, ControlTec was one of the first companies in the world to develop a sterilisation robot equipped with a UVC irradiator.

ControlTec devised the concept of the UVC robot to help fight against the virus.

Hospitals and healthcare institutions have needed to develop new approaches and use new technologies to meet the strict hygiene and safety regulations needed to face the recent pandemic. One solution is to use mobile robots that are fitted with ultraviolet (UV) lamps, which are unsafe for manual use. UVC is a type of UV light that can kill bacteria, germs and viruses, especially on surfaces and in areas that can't be continuously cleaned with disinfectants. When installed on mobile robots, UV light disinfection can be achieved automatically, precisely, quickly and efficiently.

Developing a UVC robot

ControlTec is one of OMRON's partners based on Poland. It specialises in automation and electrical solutions, and has carried out projects for the largest energy and industrial companies in Poland and beyond. The company has a team of over 150 technologists, designers, automation specialists, robotics experts and electricians.

In response to a request from a nearby hospital, ControlTec's development team devised the concept of the UVC robot to help fight against the virus. ControlTec realised that it had the technology that could play an important role in the struggle to care for infected patients. The project started as a non-profit exercise to help the hospital, Wojewódzki Szpital Specjalistyczny. Since then, the company has rolled out the solution to the wider Polish market.

The use of UVC technology in a robot was a new business strategy for ControlTec. The company has been using OMRON's LD series of mobile robots since 2018, and realised that these provided an ideal basis for the new solution. They are perfect for disinfecting areas because, unlike traditional automated guided vehicles (AGVs), the autonomous mobile robots navigate using the natural features of a facility and don't need any expensive modifications to be made to the facility. They use safety lasers and sonar to detect any obstacles in their path and to prevent collisions. Multiple mobile robots can operate within a facility using OMRON's fleet management software.

Challenges and benefits

The development of the UVC robots took about two months. Although it was the first time that ControlTec had used UVC technology, it had extensive experience of using mobile robots. Previously, all of its mobile robot solutions had been developed for industrial use. This was the first time that it had faced the challenge of developing them for the healthcare sector.

The key advantages of using a robot are health and safety. If stationary UV lamps are used, operators and medical staff need to enter the room or area that is contaminated with the virus. However, a UVC mobile robot can be operated autonomously, preventing the risk of infection to the operators and healthcare professionals. The UVC mobile robot can also be operated remotely, using a PC or tablet.

The main challenge that ControlTec faced in developing the UVC robots and introducing them into hospitals was time. The company wanted to be able to deliver the solution to hospitals as soon as possible, as they were struggling to treat many infected patients.

Grzegorz Goral, CEO of ControlTec, says: "The only technical issue was compliance with EMC standards, but the most important challenge for us was to convince hospitals that UVC mobile robots can be operated safely." The company achieved compliance with EMC standards fairly quickly with the help of neighbouring universities.

Polish hospitals and healthcare institutions have used UVC lamps for virus sterilisation for a long time, so ControlTec didn't need to explain the sterilisation benefits of UVC lamps. One of the first actions that the company took was to ask a Polish research institute to test and confirm whether UVC could kill the Covid-19 virus. It also checked evaluation data from Philips, the manufacturer of the UVC lamps, and Boston University in the US. These data showed that the Philips UVC lamps were able to kill almost 100% of the Covid-19 virus.

A successful operation

The original UVC mobile robot has now been deployed at the hospital for over four months, and has been running smoothly without any problems. The hospital operators are now able to use it confidently without needing support from ControlTec.

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Automated applications relieve the burden on employees while improving safety and meeting regulations.

Grzegorz Goral concludes: "We have some expectations for future firmware improvements and updates, but we are very happy with the current system. We have received various requests from hospitals, such as adding cameras and sensors to check the surroundings of the UVC mobile robots during sterilisation; and connecting to a database that automatically reports the operation record of the UVC mobile robots.

"UVC mobile robots are solutions that need to be customised for each medical institution, and we have dealt with those requests one by one. In addition to medical institutions, we have received enquiries about UVC mobile robots from companies who provide sterilisation services and companies in the industrial sector. We are in the middle of responding to those enquiries as well."

Jaroslaw Drzazga, Industry Solutions Team Leader at OMRON Electronics Sp. z o.o. in Poland, comments: „The pandemic poses huge challenges for many companies and institutions. Many of them have realised that automated processes, innovative robotics and technologies such as UV disinfection can provide them with valuable support in coping with this challenge. Such applications relieve the burden on employees while improving safety and meeting regulations."

About ControlTec Sp. z o.o

ControlTec Sp. z o.o is a specialist in the comprehensive implementation of industrial automation systems. Their team is made up of designers of electrical installations and automation systems, programmers of industrial controllers, robotics engineers, constructors of industrial machines, and engineers developing production management databases and systems. For more information, please visit: www.controltec.pl

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