

BSL-4 laboratories work with deadly viruses - and have maximum safety requirements also for maintenance

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Michael Steinkraus and his team venture into places that others avoid like the plague: they maintain maximum containment laboratories – research facilities that work with the most deadly viruses on the planet. In Germany, Caverion is one of the few providers that offers everything from planning to installation, maintenance, and validation in this field.

There are already four maximum safety or 'Biosafety Level 4' (BSL-4) labs in Germany: Marburg University, the Friedrich Loeffler Institute on the island of Riems, the Robert Koch Institute in Berlin, and Hamburg's Bernhard Nocht Institute. They research viruses such as Ebola, SARS, and Lassa. So when it comes to safety, all of these institutions rely on Caverion technology.

Unlike other suppliers, Caverion covers the entire BSL-4 lab lifecycle and has also been awarded the maintenance contracts for the labs in Hamburg and Berlin.

Potential pathogens are killed off before maintenance

Maintaining a high-containment lab involves a different set of rules to routine applications. Consequently, two representatives from the German Environment and Energy Agency are always on site to give final acceptance. "We've known each other for years, so we work very well together," says Michael Steinkraus, Facility Service Project Manager.

Given the extremely hazardous nature of the viruses involved, access to the labs is subject to the most stringent controls. The research scientists have to wear protective suits with external ventilation and can only enter and leave rooms via a decontamination airlock. "To make it possible for us to work safely and meticulously, the lab is shut down before maintenance and gassed with hydrogen peroxide to kill off any potential pathogens," says Steinkraus. "That means we can then move around without any additional safety measures."

The safety systems have to be checked at least once a year. "We change the H14 filters and check the containment and control systems. We also have to verify that the lab is properly sealed. We do that by creating a vacuum which has to remain stable for 20 minutes," explains Steinkraus.



When it comes to cleanrooms, it's time to call in the experts

This type of maintenance requires advanced training as a cleanroom technician including a German Chamber of Industry and Commerce examination. "The course usually takes about a week," says Steinkraus, who "fell into" this line of work many years ago. "At the time, the Hamburg branch was looking for new business areas and started by fitting out cleanrooms. Then we ended up providing services alongside installation, with our own specialist staff and resources."

"Our core business areas also include hospital operating theatres and cleanrooms in industries like microelectronics," he says. It's a market with potential, because very few companies offer a one-stop service in this particular field. "Lots of firms can handle standard maintenance. But when it gets complicated – for example, assessing facilities for compliance with the VDI6022 hygiene recommendations or determining ISO classifications – customers need experts."

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