With radicals against corona viruses

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Courtesy translation by Alan Cheetham

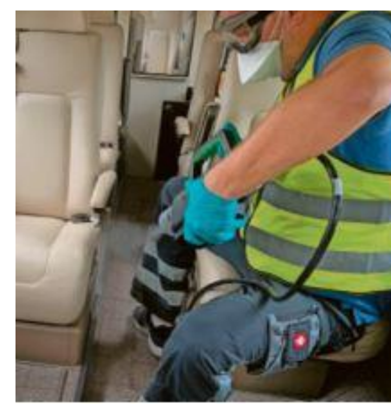
Frankfurt Two flight enthusiasts from Frankfurt have secured an American method for making aircraft germ-free in a short time. But not every airline wants so much cleanliness.

By Patricia Andreae

The order to maintain a business jet that had previously been used to fly home passengers from the cruise ship "Diamond Princes" gave the impetus. Flight engineer Jonas Scheld asked himself how a an aircraft that had had Covid-19 infected passengers on board could be handed over not only technically safe but also medically sound and ready for service. As Scheld's business partner Heiner Börger reports, the independent provider of maintenance services researched intensively and discovered the technology in America. It is called Steramist and relies on a patented method that was developed after the attacks of September 11, 2001, "to protect people against microbiological terrorist attacks". The system is now being sold by Tomi Environmental Systems in America, Canada and Great Britain in the disinfection in hospitals.

Scheld and Börger, the latter, being a professional and active helicopter pilot but having little opportunity to fly during the lockdown, ordered their first disinfection unit and passed an initial training course to use it. They have been enthusiastic about the product ever since. The main advantage of Steramist is that it does not cause corrosion. And that is only one of the many virtues compared to other traditional hydrogen peroxide nebulizing methods. These are usually used in a concentration of 19 to 30 percent. Apart from the lengthy time required for the final ventilation, another major disadvantage is that hydrogen peroxide causes damage to most materials and surfaces in the long run and corrodes metallic parts due to its strong oxidation effect. "If an aircraft is regularly treated this way, the next five-year check could be very expensive," says Börger, "because it could reveal damaged aluminum parts, screws, rivets, cables and electrical components. That is why most airlines rely on the classic cleaning method, which is also approved by the authorities." To do this, disinfectants would have to be applied generously and allowed to act for a at least 5 minutes. "Only then, for example, are viruses on a table rendered harmless", explains Börger. After that, however, the surface still would have to be wiped with a fresh cloth so that no harmful residues remain. To effectively achieve this an aircraft with 200 seats, would require approximately a dozen employees and two to three hours´ work according to his calculations. With this method, however, the cockpit basically has to be left out, so Börger, because it is impossible to completely disinfect all switches, levers and electronic devices with rags and spray bottles: "Much to the concern of the pilots".

Cleaning men:
Heiner Börger (left) and Jonas Scheld disinfecting a helicopter and a private jet with Steramist. Photos: Börger



But Börger also questions in general if using other disinfection methods is truly effective. "In today's day-to-day flying, teams of three to six people go through the airplane and wipe tables and armrests at lightning speed." Even if disinfectants were used, an aircraft would certainly not be virus-free after such treatment. Börger further claims, that one airline proudly demonstrates this quick-cleaning in their advertising efforts.

But hand cleaning using cloths is quick and cheap. "What matters for the airline is that the airplane is ready for service with the shortest possible ground time, and the costs are kept low in accordance with all necessary regulations. But the adherence to regulations may not necessarily mean the aircraft is fit and safe for passenger transportation", says Börger. This however does not apply to all carriers. Scheld and Börger, for example, include a southern European holiday airline in their customer portfolio which preferred not to be named. At the present time these are mainly companies that offer private jets. "Currently there is high demand in the private charter segment of the industry. This increase is due to the preference of travelers to use smaller aircraft", says Börger. Egelsbach Airport, where his helicopter flights are based, is currently showing higher demand. This is due to charter airlines efforts to offer their customers not only a clean, but also a clinically sound aircraft. In order to guarantee this, they use the Steramist method offered by Börger and Scheld..

The two also work with hydrogen peroxide in a low concentration, but this is ionized using the patented process. The spray is passed between two electrodes with a voltage of 17,000 volts, explains Börger. This is how so-called hydroxyl radicals arise, which render all organic, pathogenic structures harmless in a few seconds: "According to the manufacturer corona viruses are inactivated in 3.5 seconds". In addition to this hydroxyl radicals are safe for use on all structures which are not organic. These include metals, plastics, wood and textiles. That is why the ionized mist can be used safely in the cockpit without cause for concern. Neither switch nor lever needs to be touched, by human hand because wiping is not necessary. Any residue left at the end of the disinfecting process disappears in a few seconds".

Börger, who began his career armed with a doctorate in communications, first founded his own event agency before founding his helicopter business. He offers not only sightseeing flights for passengers, but also camera flights for events such as the one currently car race at the Nürburgring. Börger is furthermore convinced that the market for this disinfection method will continue to grow. Three disinfection units are in use; one is permanently installed in Munich, where a particularly large number of private jets are stationed.

More are on order, since this method of disinfection surely has other applications than is required in the aviation industry. Although cleaning has its price, which varies depending on the aircraft type, Börger and his partner are convinced that the traveling public would happily pay a small premium for the assurance that they are able to fly safely. He believes that airlines and airports could also cope with the somewhat longer ground-times required, given the likely long-term reduction in air traffic. According to Börger, air traffic will only begin to recover when passengers feel confident it is safe to travel.