

Cleaning and disinfection policy for equipment related to training devices

This applies to all training devices such as:

- Full-flight simulator (FFS)
- Flight training devices (FTD)
- Low-level devices (LLD), such as desktop trainers, virtual or augmented reality goggles, etc.

Types of equipment:

- Oxygen mask
- Communication control (headset, microphones)
- Airplane controls (touch point, handles)
- Training equipment touch points (IOS table & touch screens, door knobs)
- Engineering workstations
- Interface cabinets
- Work surface

In order to minimize the risks of transmission of the virus, additional measures must be taken for cleaning and disinfecting, mainly hard surfaces. Surfaces should always be cleaned before they are disinfected.

Transmission from a hard surface is unlikely; however, the coronavirus can live and be infectious for up to 72 hours on such surfaces. The coronavirus can be inactivated by using alcohol. Best practices should include cleaning of the surfaces with a detergent, followed by a disinfectant. Frequently touched surfaces should be cleaned and disinfected more frequently.

Cleaning techniques:

A careful and thorough cleaning must precede disinfection. It is carried out through manual application of a detergent or a cleaner-disinfectant.

- on horizontal and vertical surfaces;
- the fixed and movable equipment or furniture.

Hard surfaces (aircraft panels, displays, etc.): to protect electrical equipment, avoid spray application of the products. Apply the cleaning solution on a lint free cloth (damp with the disinfectant) and wipe down the surface, allowing it to dry. For other hard surfaces (plastic surfaces, walls, metal surfaces, tools, workspace), light spray application can be acceptable (do not overspray).

Soft Surfaces (carpets, upholstery, leather, other textiles): spray application is acceptable. Apply carefully and locally a spray mist of the disinfectant to all soft surfaces (do not overspray) and allow disinfectant to dry.

Types of disinfection:

1. Regular disinfection: should occur between every training session with new clients.
2. Complete cleaning and disinfection: must occur after an employee or customer suspected of being infected has left.

1. Regular disinfection

For training devices in training sessions

The cleaning and disinfection steps are performed by designated people. See table below for roles and cleaning frequency.

Elements	Instructions
Oxygen masks	1. Oxygen masks must be cleaned and disinfected between every training session with new clients.
Communication controls (headset, microphones)	2. Boom mic: replace foam on the microphone mouth piece (if applicable) once the mouth piece has been disinfected.
Airplane controls (touch points, handles)	3. Instructors must confirm completion and sign-off.
Training equipment (touch points, IOS table, touch screen, door knobs, etc.)	4. Instructors must confirm completion and sign-off.

For training devices in pre-delivery

A high number of people use training devices during the in-plant phases. Specific cleaning and disinfection steps have been defined to better prevent transmission risks. See table below for roles and cleaning frequency.

Elements	Instructions
Oxygen masks	1. Site chief (or delegate) must clean the communication controls every morning with disinfecting wipes.
Communication controls (headset, microphones)	2. Boom mic: replace foam on the microphone mouth piece (if applicable).
Airplane controls (touch points, handles)	3. Site chief (or delegate) must document cleaning completion and sign-off.
Training equipment (touch points, IOS table, touch screen, door knobs, etc.)	4. User must clean before each session with disinfecting wipes. Site chief must ensure all users comply.

2- Complete cleaning and disinfection:

Must occur after an employee or customer suspected of being infected has left.

1. If someone feels sick while on site and the medical staff or the supervisor suspects a coronavirus contamination
 - The supervisor/instructor must restrict access until cleanup is completed
 - All work surfaces and equipment must be cleaned with a disinfectant wipe
2. If someone is physically sick at the office (vomiting, etc.)
 - The supervisor/instructor must call the cleaning crew to disinfect the work area.
3. If someone who is not on site, but has called in sick with symptoms of coronavirus
 - If they left the work area for over 72 hours - no action required
 - If not, follow instructions from number 1.
4. If an employee suspects someone has contracted the coronavirus (none of the above conditions) and wants the workspace to be disinfected
 - Disinfectant wipes will be provided to them so they can clean the surfaces deemed suspect.

Choice of disinfectants:

A disinfectant must have:

- bactericidal activity (bacteria);
- fungicidal activity (fungi, mould);
- virucidal activity (virus).

Important notes:

- Most aviation products (including CAE Simulated panels) are not rated as waterproof. Spraying or wetting the devices could damage them.
- Avionics manufacturer recommendations for disinfecting cockpit avionics equipment should always be referred to prior to the usage of a specific product.
- Caution is recommended when applying a disinfectant product to any surfaces. As always, prior to application, CAE recommends testing the product on a small, and non-visible area to ensure there are no adverse effects prior to a widespread usage. If any undesired effect is encountered, immediately discontinue use the disinfectant on the material tested.
- Simulators operators should refer to relevant public health authorities, like Environmental Protection Agency (EPA), CDC or WHO, regarding how effective products may be against specific viruses/diseases. Unfortunately, CAE do not have the capability of performing such test.

The following table indicates choice of disinfectant to be used and recommended concentration based on what we know at this time.

Detergents-disinfectants	Recommended use	Precautions
Isopropyl Alcohol (70% to 90%*) (including in the form of wet wipes)	Soft surfaces (carpets, upholstery, leather, other textiles, etc.) Hard surfaces (plastic surfaces, walls, metal surfaces*, tools, workspace, etc.) Preferred for Aircraft instruments, displays, including cover glass	Instructor and Observer leather seats shall be treated with a balm (protection cream) to protect them after disinfection. * Refer to manufacturer's instructions for application, dilution and use of any disinfecting products. Apply using a lint free cloth.
Durokleen* ¹ Klercide 70/30 (60-100% IPA, water)* ¹	Soft surfaces (carpets, upholstery, other textiles, etc.) Hard surfaces (plastic surfaces, walls, metal surfaces*, tools, workspace, aircraft instruments, etc.) Excluded: displays and screens: Use alcohol isopropyl	* Refer to manufacturer's instructions for application, dilution and use of any disinfecting products.
Bacoban for Aerospace* ¹ Netbiokem DSAM* ¹ Zip Chem Calla 1452* ¹	Hard surfaces (plastic surfaces, walls, metal surfaces*, tools, workspace, aircraft instruments, etc.) Excluded: displays and screens: Use alcohol isopropyl	IMPORTANT NOTE: For use on hard surfaces only, do not apply to soft furnishings. * Refer to manufacturer's instructions for application, dilution and use of any disinfecting products. Apply using a lint free cloth.
SpectrEco* ¹ Zoono Z-71* ¹	Hard surfaces (plastic surfaces, walls, metal surfaces*, tools, workspace, etc.) *Soft surfaces (carpets, upholstery, other textiles, etc.)	* Refer to manufacturer's instructions for application, dilution and use of any disinfecting products.
Disinfecting /Hand wipes	For disinfection of work surfaces, PC keyboard, mouse, telephones	
Masks	For the sick employee prior to leaving	None

Note: dispose of all products and equipment used for cleaning and disinfection in a closed bag

¹ It is important to note that, up to now, CAE has not carried out any specific test of these products on the materials making up its simulators. Consequently, CAE cannot guarantee the absence of undesirable effects following intensive use of the aforementioned products.

The following products are NOT recommended:

Hydrogen peroxide, Ethanol (70%), Sodium Hypochlorite (0.1%) (Bleach) or any disinfectants containing chlorine.

Formaldehyde, products with ammonia, npropanol-based and ethanol-based disinfectants are also not authorized.

Tests performed by many OEMs with these products resulted in paint degradation with continued use. Cleaners containing ammonia will also have an effect on the anti-reflective coating on aviation displays.

Cleaning Log (Best Practice):

In order to further enhance the visibility of the cleaning protocols we recommend to display a Cleaning Log at the entrance of the training devices. A Cleaning Log example can be found in the Annex A.

Other Disinfecting techniques:

CAE has look at several air and surface purification systems that are claimed to kill pathogens, allergens and volatile organic compounds (VOCs) (Ionization, Ozonation, UV-C, Electrostatic sprayer, fogging machine)

At the time of writing, CAE cannot recommend any of these systems due to multiples raisons.

For some (Ionization), because of the lack of available data on their efficacy against the coronavirus and their long-term effects on organic matter inside the simulators (rubber seals, leather, pipes, etc.). For others (UV-C, ozone) due to the safety and health problems associated with them.

Aerosols projected by a fogging machine or electrostatic sprayer are not authorized to be use in a simulator due to the delicate nature of cockpit equipment, instruments and displays.

Given the rapidly evolving situation, this document will be updated as more relevant information becomes available.

Should you have any questions or require more information, please contact your CAE Customer Service Experience Lead.

References and Sources of information:

Center for Disease Control and Prevention (CDC):

<https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment.html>

<https://www.cdc.gov/quarantine/air/managing-sick-travelers/ncov-airlines.html>

World Health Organization (WHO):

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

The European Union Aviation Safety Agency's advice for airlines and crew (SIB No: 2020-02, Coronavirus '2019-nCoV' Infections – Operational Recommendations):

<https://www.easa.europa.eu/newsroom-and-events/news/coronavirus-further-advice-airlines-andtheir-crews>

<https://ad.easa.europa.eu/ad/2020-02R4>

The Federal Aviation Administration's health guidance for disease control and prevention for air carriers and crews:

<https://www.faa.gov/news/media/attachments/CDC%20FAA%20airline%20guidance.pdf>

International Air Transport Association (IATA) 3.1.

<https://www.iata.org/en/programs/safety/health/diseases/#tab-2>

Additionally, refer to link below from NBAA.

<https://nbaa.org/aircraft-operations/safety/coronavirus/aircraft-disinfection-coronavirus/>

You will find the NBAA's recommendation, as well as procedures that other companies in the industry are implementing.

Disclaimer: Like others, CAE offered these procedures in good faith; no responsibility is recognized for claims arising from the procedures suggested.