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September 2020

TECHNICAL POSSIBILITY OF THE SITUATION-DEPENDENT DISINFECTION OF A VEHICLE INTERIOR AND VARIOUS PARTS OF THE VEHICLE EXTERIOR WITH THE HELP OF A DRONE

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Recommended Citation

Blunder, Verena, "TECHNICAL POSSIBILITY OF THE SITUATION-DEPENDENT DISINFECTION OF A VEHICLE INTERIOR AND VARIOUS PARTS OF THE VEHICLE EXTERIOR WITH THE HELP OF A DRONE", Technical Disclosure Commons, (September 30, 2020)
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TECHNICAL POSSIBILITY OF THE SITUATION-DEPENDENT DISINFECTION OF A VEHICLE INTERIOR AND VARIOUS PARTS OF THE VEHICLE EXTERIOR WITH THE HELP OF A DRONE

Technical task:

Vehicles can be used by different people.

The vehicle interior can be contaminated by viruses/bacteria to varying degrees.

There is currently no suitable technical solution for a corresponding cleaning.

Initial situation:

Today's vehicles are equipped with simple scenting and/or ionization devices.

These are mostly M-equipment and are currently switched on or off by the customer. This equipment is used to improve the air quality, but no cleaning is done with it.

Solution:

The core of the idea is a drone located in the vehicle interior (preferably under a flap). This should clean the interior if necessary (if there is no customer inside).

The drone should be equipped with cleaning facilities by appropriate devices. These can be for example the following possibilities:

- Ionizer
- UV LED
- Spraying device with disinfection spray
- And more...

These can be placed individually and/or partially in combination in the drone.

If a disinfection device (liquid or gaseous) is provided, the drone should have the possibility to refuel itself from a tank installed in the vehicle.

The drone shall have the possibility to charge the batteries via the on-board power supply at its starting point.

With a certain amount of intelligent interior monitoring, cleaning should then be carried out as required.

This includes, among other things: Seat evaluation; number of passenger changes; time interval to the last cleaning, ...

The drone should move in the interior in a flying manner and clean the corresponding areas (hot spots):

- Steering wheel
- HMI operation
- Various operating elements
- seat/headrest
- Files
- Further...

An intelligent HMI should enable the customer to make the following settings:

- Manual activation of the disinfection if the customer is not inside the room (run-on mode)

- this disinfection mode can be switched on for a certain time.

At this time the vehicle should be locked and the customer should not enter it.

For this purpose a notice on the vehicle should be visible in some way.

There should be an automatic detection of the interior surveillance.

The following technical possibilities can be used for this:

- Camera(s),
- Indoor sensors, outdoor sensors;
- seat detection

Furthermore, the air conditioner or blower can be used by the air conditioner as a support for the cleaning process.

When cleaning the outside area, a window pane(s) should be opened and then e.g. the door handles, trunk operation should be cleaned. When the cleaning mode takes place can depend on various factors. After the cleaning process, the drone should fly into the interior again automatically and the windows should close automatically.

Technical implementation:

- Vehicle with drone in the interior as disinfection system
- Drone with appropriate intelligence

- Tank in the vehicle for cleaning agent
- Appropriate sensor technology in the vehicle interior (as described above).
- Control unit with corresponding software.
- Control and display unit for the user to make the appropriate settings.
- If necessary, display unit outside the vehicle to indicate the outside cleaning.

Advantages:

- With this device the customer has the possibility to disinfect his vehicle inside and outside.
- It is ensured that the interior and affected exterior areas can be kept "clean".
- The drivers/passengers are relieved of the manual cleaning and thus have a comfort gain.