

Compact air disinfection system against biohazards

Summary

Profile type	Company's country	POD reference
Technology offer	Spain	TOES20230518006
Profile status	Type of partnership	Targeted countries
PUBLISHED	Research and development cooperation agreement	• World
Contact Person	Term of validity	Last update
Rita Elste - Tomsone	18 May 2023 17 May 2024	18 May 2023

General Information

Short summary

A Catalan (Spanish) research centre has developed an innovative air filtering device that can be integrated in any air circulation or air conditioning system, including air supply circuits of cabins in transport systems, surgery rooms, hospitals, biohazard laboratories, commercial premises and domestic air circulation systems. Its filtering efficiency is controlled by magnetic induction or laser heating. Partners interested in R&D collaboration are sought.

Full description

The Catalan (Spanish) research centre is a non-profit global leader organization, focused on the newly-discovered physical and chemical properties that arise from the behavior of matter at the nanoscale.

The air disinfection, purification and sterilization markets are growing at a fast pace due to the increased air pollution in developed areas and a rise in airborne pathogens, especially in highly populated regions. The recent COVID-19 pandemic has caused a huge expansion of this sector, as it has significantly increased public concern about airborne pathogens, especially in hospitals and medical campuses.

Current air filtering systems are based on the use of HEPA filters, which only mechanically trap the pollutants and do not guarantee the filtering of small viral particles. In addition, they must be regularly replaced and do not support high temperatures or air pressures. On the other hand, ozone or UV disinfection systems can be used to treat surfaces but cannot guarantee a proper disinfection of fast airflows. Furthermore, they require harmful radiation or radicals and cannot therefore be applied in the presence of people.

The air filtration device developed by the research centre consists of a 3D sintered stainless steel microporous structure, whose surface is modified to maximize the inductive or laser heating. The small, meandering pores of the filter provide a passive particulate arresting for nano- and microscale contaminants. The filter is wirelessly heated inside the pipe either by inductive or laser heating to create a dry heat-sterilizing environment. The air filtration device is heated to over 100°C with a low power consumption to deactivate all microorganisms in the air, and it can operate in the presence of large air flows. This technology provides a compact, highly efficient, low-cost air disinfection system.

The research centre is looking for companies and R&D institutions interested in leading proof of concept studies to validate the technology for specific applications under a R&D with technical assistance collaboration agreement.

Advantages and innovations

The main advantages and innovations of the technology are:

- Inductive heating
- Laser heating
- Dry heat sterilization.
- Microporous structure designed to maximize the heating efficiency and trapping of small particles and pathogens
- Works under high air pressure
- Can work in any type of pipeline
- Allows for large airflows.
- Pyrolytic self-cleaning, reducing maintenance requirements
- Filter recyclability

Technical specification or expertise sought

Stage of development

Lab tested

IPR Status

IPR applied but not yet granted

Sustainable Development goals

- **Goal 11: Sustainable Cities and Communities**
- **Goal 17: Partnerships to achieve the Goal**
- **Goal 3: Good Health and Well-being**
- **Goal 15: Life on Land**
- **Goal 13: Climate Action**

Partner Sought

Expected role of the partner

The research centre is looking for research institutes and companies commercializing air circulation or air conditioning systems, including air supply circuits of cabins in transport systems, surgery rooms, hospitals, biohazard laboratories, commercial premises and domestic air circulation system, interested in leading proof of concept studies to validate the technology in relevant environmental conditions.

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **Big company**
- **SME <=10**
- **SME 11-49**
- **R&D Institution**
- **SME 50 - 249**

Dissemination

Technology keywords

- **005006003 - Laser Technology**
- **010002001 - Air Pollution/Treatment**

Market keywords

- **08004001 - Air filters and air purification and monitoring equipment**

Targeted countries

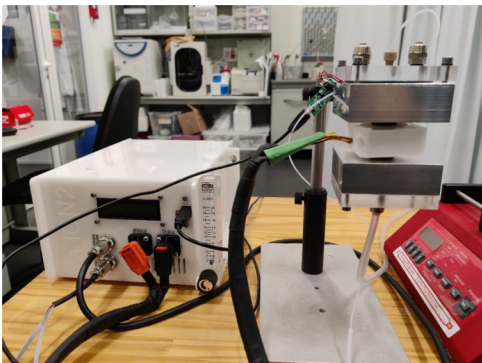
- **World**

Sector groups involved

- **Electronics**

Media

Images



[The compact air disinfection system against biohazards](#)