Elevator Car Air Quality and Modernization -

Elevator Car Air Purification, Sterilization and Isolation Solution

By supplying treated air to form invisible matrix air curtain "isolations" to cut off/block the transmission of viruses caused by breathing, droplets or aerosols and avoid contact or cross-infection. And it will kill the viruses on the elevator car surface periodically when in unoccupied condition. Improve your indoor air quality in elevator cabs with our system TODAY.
Installation Effects
Research Background

The elevator is needed healthy and comfortable indoor air quality (IAQ) for using many people. Usually, air in the elevator car is sucked from the elevator's hoistway straight into the car using a fan, which may be filled with dust, mold and bacteria. And there are many air pollutants such as aerosol, virus, pathogenic bacteria, PM2.5, odor gas, droplets, mites and formaldehyde in the elevator car as well. All the pollutants can accumulate to levels that can pose serious health and comfort problems.
Main Principle

- UVC
- Photocatalytic nano-TiO2 Technology
- High efficiency filter

- UVC ultraviolet radiation (Ozone Free) can effectively kill and eliminate pollutants such as bacteria, viruses, allergens, aerosols;

- Under the irradiation of 253.7nm ultraviolet light, nano-TiO2 catalyzes the excitation of oxygen and water molecules in the air into active OH- and O²-free radical ions, which can effectively degrade pollutants such as formaldehyde, benzene, xylene, ammonia, TVOC;

- The specially designed ceiling air supply system can supply treated air to the elevator cars and form invisible Matrix air curtain “Isolations” to effectively eliminating cross infection caused by personnel breathing and sneezing;

- High-efficiency air filter can screen and reduce PM2.5, dust, and second-hand smoke to ensure clean air supply.
The effective sterilization band of ultraviolet rays is concentrated at 253.7nm (UV-C band). When bacteria, viruses, parasites, and other pathogens are irradiated with UVC ultraviolet rays, the DNA structure in their cells and tissues is destroyed. The bond is broken or due to the photochemical reaction, the thymine in the DNA is changed to kill bacteria and viruses without any chemical drugs. Finally, the realize the purpose of disinfection and purification.
Principle Diagram

- Multiple purification and sterilization
- Ultraviolet + Nano photocatalysis technology
- High-Efficiency Filtration
- Surface sterilization technology
- Intelligent human body induction
- Multi-level intelligent control
Principle Diagram
Validations and Test Reports

河南省建筑科学研究院有限公司
国家建筑工程室内环境检测中心
质量检验报告

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项目名称：（项目名称）室内环境检测项目
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委托内容：（委托内容）

委托内容：（委托内容）

检测仪器：（检测仪器）

检测仪器：（检测仪器）

所使用仪器设备表

<table>
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<th>序号</th>
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四、现场调查

该检测项目位于郑州市二七区政通路109号郑州市某建筑办公楼1楼大厅，大厅内有电梯两部，生产厂家为上海三菱电梯有限公司，为乘客电梯，可乘坐人数为14人，电梯尺寸为1.5×1.6×2.5（m）。其中一部电梯的轿厢顶部装有空气净化消毒一体机，机器型号为 FREPQ-600，风量为 600 m³/h，该机为瑞德公司采用日本三菱电机研发的新型消毒设备，设备配置初步过滤器+光触媒过滤+UV 紫外线灯多重杀菌模块，对电梯内空气中
五、检测方法及步骤
参照《民用建筑工程室内环境污染控制规范》GB 50325-2010（2013年版）和委托要求，电梯井内空气中污染物采用现场采样和实验室检测的综合方法进行检测。电梯井内空气中污染物采用《民用建筑工程室内环境污染控制规范》GB 50325-2010（2013年版）附录F和附录G进行检测。检测方法和《公共场空气中苯测定方法》GB/T18204-2000，采用酚试剂分光光度法。

六、测试结果
详细检测结果见附表1。
Other Features

- The system is composed of the air purification and sterilization box and ceiling air supply system. The former is installed on the elevator car top, the latter is installed within the elevator cars to replace the original decorative ceilings (If any).
- Fully replace the original decoration structure without damaging the car structure.
- Independent control and will not affect the elevator control system.
- The ceiling LED lighting system is designed based on the original lighting power and will be connected to the original lighting circuit.
- The control system is equipped with leakage protection, one-key power-off, etc. to increase safety and facilitate later maintenance.
Equipped with noise insulation and vibration isolation devices, with PVC Aluminum foil duct to connect the sterilization box and the ceiling air supply system to reduce the operation noise.
Installation Option - Connect to external air conditioning unit

Freedom Sterilization box is small in size and with compact structure design. The reserved air intake tube make it possible to connect the elevator car air conditioning with the sterilization box.

With a flexible ventilation ducting to connect the 2 system.

Dimension – Sterilization box

Air conditioning connection
Ceiling Installation Diagram

- Air Intake Tube
- Elevator Cars
- Ceiling Air Ventilation System
The installation has fully taken into consideration the safety requirement, and with safety bolts and dovetail screws to strengthen the connection point between the elevator car top and the ceiling air supply system.
Independent control and will not affect the elevator control system. Power supplied by backup sockets.

Imported electronic parts and accessories. The power for the whole system is less than 300W.
The control system is equipped with leakage protection, one-key power-off, etc. to increase safety and facilitate later maintenance.
Customized Ceiling Air Supply system
Research and Development Base
Company Certificate
ISO 9001/ISO14001/OHSAS18001

The quality and reliability of our equipment is well known with production fully certified and audited to ISO9001, ISO14001 and OHSAS 18001 International occupation health and safety management system.
Advanced Design and Manufacturing Capability

Imported Facilities
With advanced imported facilities for lean manufacturing. Brand including Trumpf (Germany), Amada (Japan), Accurpress (American), Eurotec (UK)

Fine Materials
To provide our customers with consistent and reliable quality products, we have been working with fine material suppliers, including Baosteel steels, Akzonobel powder coating, Golden Dragon Copper.

Smart CAD Engineering
With parametric driven design to coordinate on-site data collection and manufacturing, and accelerate the full life cycle of the project.
智造设备

Trumpf CNC Machine - Germany
Amada CNC and Laser Cutting Machine - Japan
Accurpress Bending Machine - USA
Eurotec Automatic Powder Coating Line - UK
Trumpf Laser Cutting Machine - Germany
Installation Qualification

National Certified Professional Electro-mechanical Construction and Installation Qualification

Involved in whole project life circle for better service
Project Diagrams

Consulting and Communication
- Communication
- Project Needs
- Project Design
- Consulting

Design
- Interior and Architectural Design Aid
- HVAC Design
- Structural Design

Manufacturing and Installation
- On-site measurement
- Production
- Installation

After-Sales Service
- Full Service Tracking
- Lifelong Maintenance
Thanks

Freedom (Zhengzhou) Industry Co., Ltd
One customer, one product.

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