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P-1325-EN 08.2021



MERAK DIELECTRIC BARRIER DISCHARGE

AIR PURIFICATION DEVICE



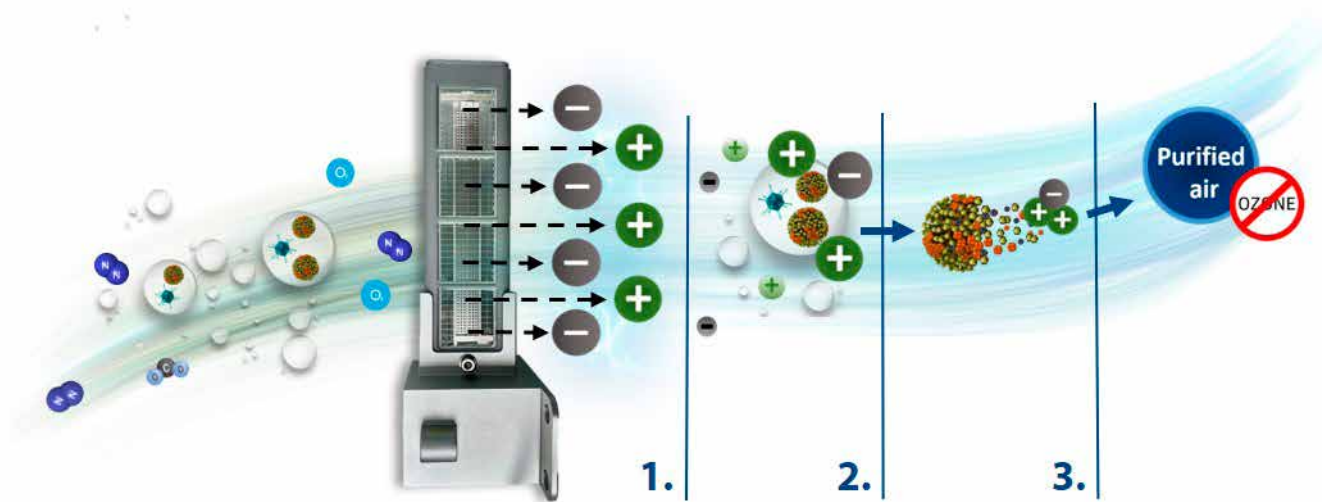
MDBD Merak Dielectric Barrier Discharge

Merak introduces to rail carriage disinfection applications, the Merak Dielectric Barrier Discharge¹ (MDBD). This innovative approach to disinfecting air will transform passenger safety for rail travel.

Performance

The MDBD generates positive and negative ions to continuously purify air while passengers travel. The device generates **millions of ions**² in the carriage ductwork, then passes them to the carriage to purify the air and surfaces. As disinfection ions come into contact with infectious droplets or particles, they deactivate the virus, microbes or bacteria to safely minimize passenger infection risk.

- Deactivate **98.95%** Influenzavirus in 1-hour test³
- Deactivate **99.78%** MS2 Bacteriophage in 1-minute test^{3,4}



1. Ions dispersed

Positive and negative ions are created through MDBD's Technology

2. Ions contact droplets

The ions neutralize their charge by breaking down the airborne pollutants (germs, bacteria and viruses), reducing their presence in the air

3. Contaminant inactivated

Safe ozone levels⁵ and free from odors and allergens

¹ Patent pending

² Measured at the device (million/cm³)

³ Tested in a controlled lab environment

⁴ MS2 has been used as a surrogate to show effectiveness against SARS-COV2 virus

⁵ Ozone level measured below safe limit of 0.1 ppm as recommended by EPA for 8h TWA value

Knorr-Bremse can provide customized solutions for any carriage size and/or environmental condition

Key Features

Easy Installation

Compact and easy to configure

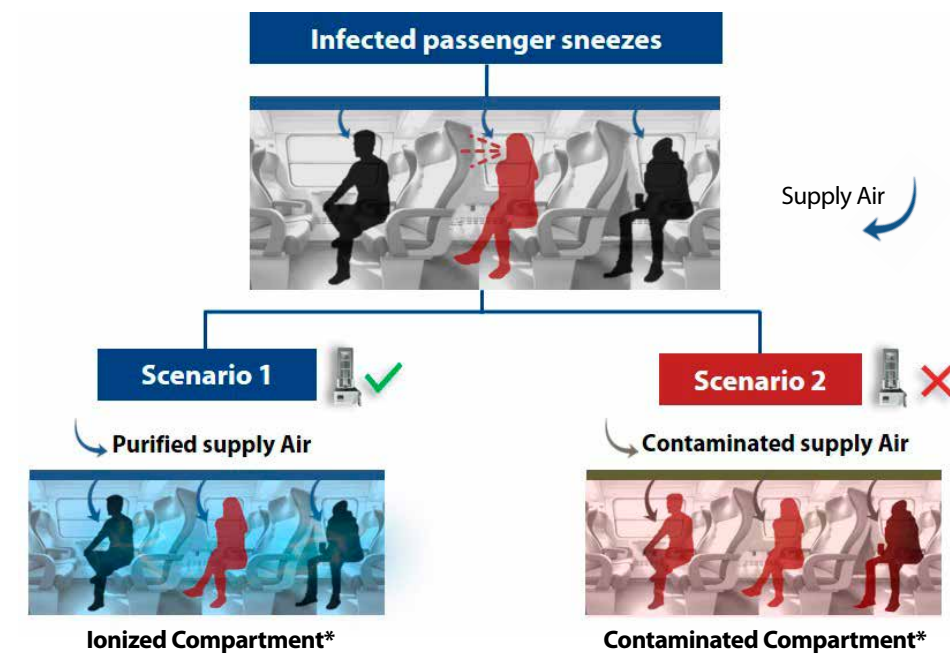
Low Power Consumption

Minimal power draw of 5 Watts

Maintenance Free

No moving parts, simple to clean, robust & safe

MDBD Protects Passenger Health



*Capability of performing CFD analysis on Aerosols for each scenario.

Technical Data

Size, Weight	205 mm (L) x 87 mm (W) x 65 mm (H), 450 g
Power Supply	24 VDC, supplied within the HVAC unit
Power Consumption	< 5 Watts per MDBD device
Operation Temperature	-25°C to +80°C
Storage Temperature	-40°C to +80°C

Worldwide Railway Applications

This unique MDBD Technology already under trial in countries like North America, Canada, Australia and China with various carbuilders like Kawasaki, Hitachi Rail, CRRC, Bombardier.

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