HEALTHY JOURNEY
by Embraer
Hospital Operating Room

5x Outside air changes per hour
Every 2-3 minutes the full cabin volume of external air is injected in the aircraft.
Clean air designed to cycle from top to bottom minimizing cross-cabin flow
E-Jet HEPA filters capture 99.9+% of airborne contaminants bigger than 0.1 micron

<table>
<thead>
<tr>
<th>Air contaminants</th>
<th>Micrometer (log scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco Smoke</td>
<td>0.01</td>
</tr>
<tr>
<td>Fuel Ash</td>
<td>0.1</td>
</tr>
<tr>
<td>Foundry Dust</td>
<td>1.0</td>
</tr>
<tr>
<td>Asbestos</td>
<td>10</td>
</tr>
<tr>
<td>Human Hair</td>
<td>100</td>
</tr>
<tr>
<td>Mist</td>
<td>1000</td>
</tr>
<tr>
<td>Rain</td>
<td>1000</td>
</tr>
</tbody>
</table>

Range of Typical Contaminants Sizes

Size of SARS-COV-2 is around 0.1μm

HEPA Filter Retention

Source: SARS-Cov-2 (COVID-19) by the numbers, doi: 10.7554/eLife.57309
Filter removal and inspection follows a strict maintenance schedule
Our extensive CFD studies determined the best air distribution design
In-house testing on full-scale E-Jet mockup validated CFD results
Test data used for modeling/final cabin design

Measuring cabin air flow

Assessing air quality

State-of-the-art testing techniques and experiments
developed in association with academic & scientific research institutes
Our CFD studies tracked the spread of droplets

1. Cough droplets emitted
2. Droplets entering each PAX breathing zone detected
3. Droplet count tabulated
4. Mass fraction computed

7-row CFD droplet dispersion model, 200 µg in a cough distributed in 16 droplet diameters from 0.1 µm - 200 µm
Per PAX cough mass is extremely low and reduced further with a mask

Fraction of cough mass (%) in breathing zone

- **0.13%** without mask
- **0.02%** with mask
Clean air. Disinfection procedures. Face masks. Safe flight.
THANK YOU

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