

1

Tunnel ventilation should:

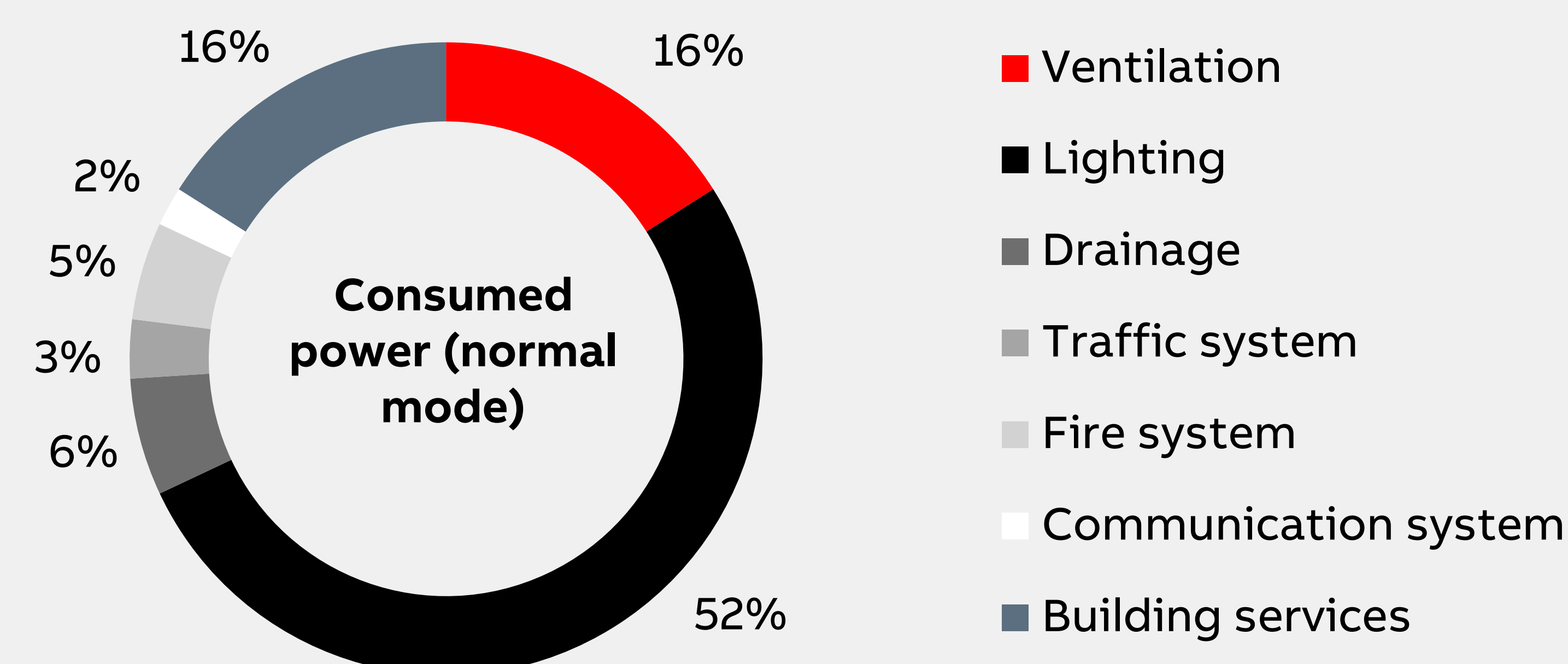
- 1 Ensure air quality in normal situation
- 2 Protect people/minimize infrastructural damage in case of emergency

Important aspects include:

Sustainability Reliability Safety
Energy efficiency Effectiveness

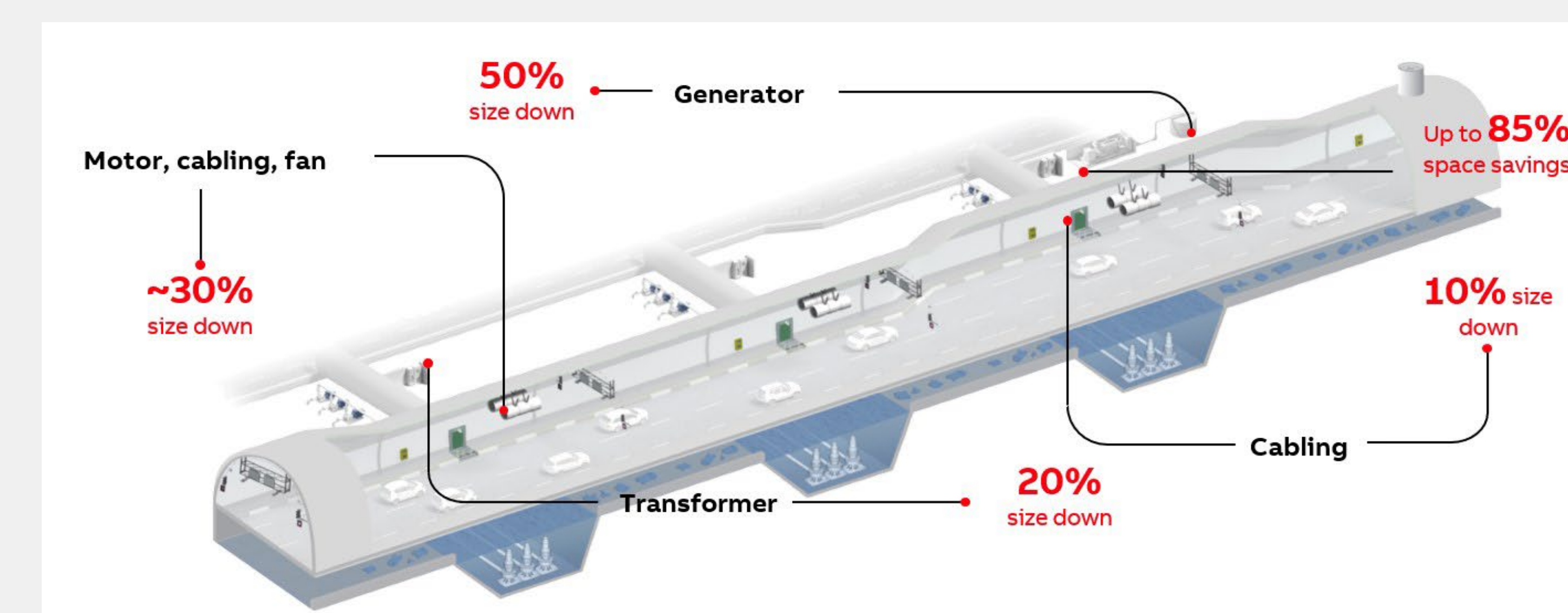
2

Ventilation accounts for over 15% of power consumption in tunnels



3

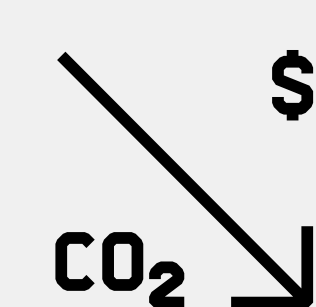
VSD technology effect on the tunnel design – practical example



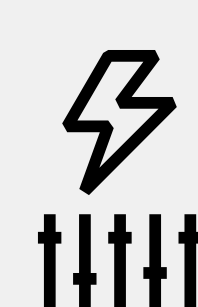
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ABB's ACH580 and ACS880:

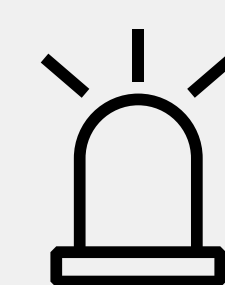
- Active front end ultra-low harmonic drives
- Ensure optimal power quality which brings reliability
- Active braking linked with override brings safety



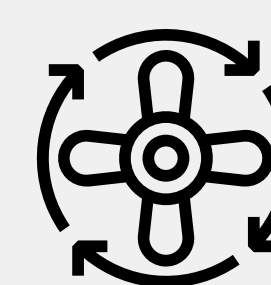
Drives optimize ventilation airflow and save energy controlling fan motors



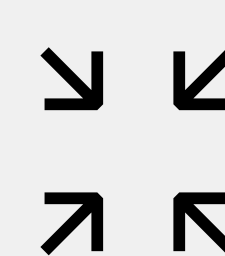
Clean, disturbance-free power network for stable ventilation. Smaller supply transformers and backup generators, means smaller control rooms



Improved tunnel safety in fire emergency thanks to fireman's override mode built into the drive



Effective active braking eliminates brake choppers, installation complexity and cost



Compactness with everything built-in, for tunnel electrical rooms with limited space

5

ABB drives ensuring the safety of drivers in the longest road tunnel in Poland

The over 2-kilometer-long tunnel under the Ursynów district is a critical point in Warsaw's southern ring road.

Ventilation systems controlled by ABB drives for HVAC applications help to efficiently remove vehicle exhaust fumes from the tunnel.

Importantly, the installed ventilation systems, including motors, drives, and fans are compliant with the standard EN 12101-3: 2015.



Role of variable speed drives in safe, reliable and sustainable tunnel ventilation