

26th IWG GTR EVS - April 2023
Thermal Propagation Phase 2 requirement

Vehicle sealness state of the art regarding vs
smoke requirement

Thermal Propagation Requirement vs vehicle design

Manufacturers' vehicle design:

By design, a vehicle is a large puzzle with thousands of assembled, welded or screwed parts that make possible to create a passenger compartment moving on our roads. This cabin must allow these passengers to live normally and safely during a trip.

That's the reason why Manufacturers design their passenger compartment regarding:

- **Passenger safety:** the cabin must guaranty a breathability atmosphere inside;
- **Passenger free ride:** the vehicle must be used everywhere and show altitude adaptability;
- **Passenger health:** the vehicle must take into account the air compressing when closing doors without ear disturbances;
- **Passenger comfort:** the cabin must regulate temperature and humidity regulation inside the cabin and avoid mold spreading inside the vehicle.



<https://steelemotive.world/passenger-experience-in-autonomous-vehicles/>



<https://www.toc.edu.my/automotiveandmotorsports-hub/understanding-the-different-levels-of-self-driving-cars>

For future, with autonomous vehicle coming, comfort will become a key design for manufacturers

Thermal Propagation Requirement vs vehicle design

Thermal Runaway simulation protocol:

- A test protocol has been written and shared between French Manufacturers and French Technical Service (UTAC);
- This test is based on a smoke machine to identify vehicle potential leaks regarding smoke entry;
- Tests have been performed on many different vehicles on the market;
- Different parameters have been testing regarding: cabin pressure, smoke location, smoke characteristics...

Results:

The majority of the vehicle tested shows a small amounts of smoke entrance in different location of the vehicle.



https://www.google.com/search?q=cobra+smoke+machine&rlz=1C1GCEV_enFR822FR824&biw=901&bih=911&tbm=vid&sxsrf=APwXEdf9FE-M-C1B_HkihX_fhhs_VOI-eA%3A1680501706518&ei=ymsqZPKpH-CkkdUPt6eNgAo&ved=0ahUKewjytovahl3-AhVgUqQEhbdTA6AQ4dUDCA0&uact=5&oeq=cobra+smoke+machine&gs_l=op=CgInd3Mtd2l6LXZpZGVVEAMYBggAEBYQHjoECCMQJzoFCCEQoAE6CwgAEIAEELEDEIMBOggiABCABBcxAzoFCAAQgAQ6CggAEIAEEBQqhwI6CAgAEIAEEMsBOggiABAWEB4QDzoKCAAQFhAeEA8QcJoiCAAQFhAeEBNq2gFY7DBg3zNoAXAAeACAAVgIAcwMkgECMzCYAQCgAQHAAQE&scient=gws-wiz-video#fpstate=ive&vld=cid:b0bded0f;vid:xnp7wrW6Dfw