



Application Notes: Transient Pressure Effects while Driving

Pressure comfort

When traveling at higher speeds, opening a window can change cabin pressures drastically. The change can be uncomfortable to occupants. Certain configurations of cabin size, window opening, and speed can introduce a special oscillation that can be uncomfortable or even damaging to hearing. Controlling these abrupt changes in cabin dynamics is important contribution to a comfortable ride.

“EZPressure can capture all transient pressure change effects at 2000Hz.”



Half open window on car.

Helmholtz Resonance

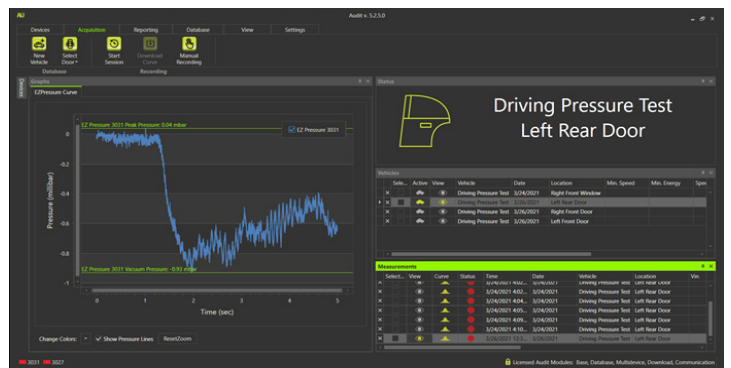
This special phenomenon happens when air pushes into a cavity. The pressure builds inside until it has enough force to push back out then leaves a lower pressure in the cavity again. More air rushes in and the oscillation continues at a frequency defined by the cavity size. This is the sound created when blowing across the top of a bottle, playing a flute, or the wind across a cave. Applied to the vehicle, the same effect occurs when driving with opening a window.



EZPressure gauge in the cabin.

EZPressure Gauge

EZPressure gauge is compact and can be placed in the cabin of the vehicle at any location. A hose connection can relocate the sensing point to a specific location in the cabin. The sensor has a high sensitivity and an acquisition rate of 2000Hz. The device is therefore capable of acquiring in wide frequency band; from near 0Hz (DC offset) all the way to 200Hz and capture transient pressure effects.



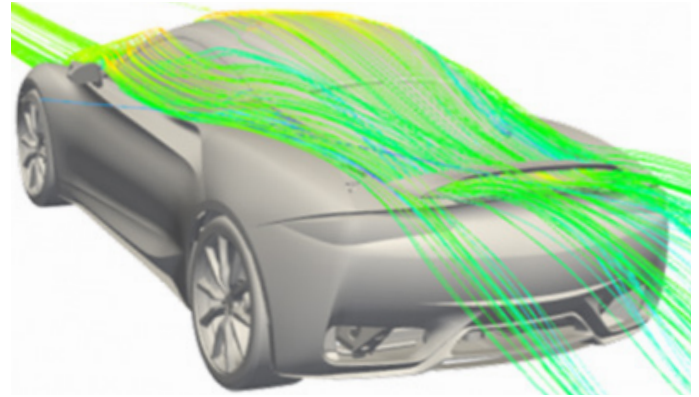
Audit Software with pressure tests.

Application Notes:

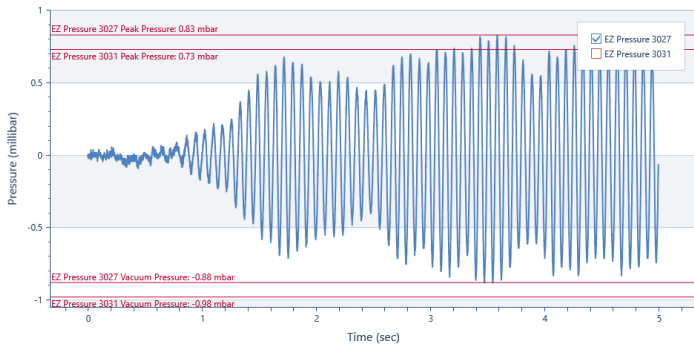
Transient Pressure Effects while Driving

A Simple Objective Test

The setup is straightforward, placing the EZPressure in the cabin, connecting over its wireless connection to the data management software. Record your pressure variations while performing your tests for example at different speeds, window positions, etc. All tests are recorded and stored in the database on the computer. The graphs or values can be viewed in real time.



Air dynamics on the car.



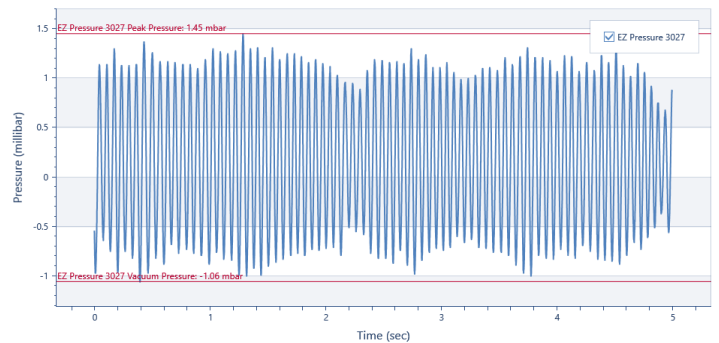
Door opening resonance affect captured by EZPressure and Audit Software.

Audit Software

EZPressure can connect and operated wirelessly to our Audit software with Bluetooth or WiFi. The internal database can be used to organize and test data, display graphs, and compare results. There are built in testing functions that look for a pressure peak. The software can also run manual mode allowing 5 seconds of recording time at 2kHz. The pressure curve captured during the test can be downloaded after completion and shown in the graph window or exported to csv or excel files.

EZPressure can be utilized in a variety of pressure propagation applications.

- Live Cabin Pressure Analysis
- Cabin Air Pressure Change
- Pressure Variation Studies
- Closing Effort Measurements
- Frunk Pressure Analysis (Electric Vehicles)
- Trunk Pressure Analysis



EZPressure live mode pressure recording.