

# Effect of Manufacturing Defects in the Form of Internal Leakages on the Acoustic Performance of Mufflers

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## Abstract

The presence of manufacturing defects in the form of incomplete welding and missing perforated holes leads to internal leakages in mufflers. This results into unintended acoustic impedance modifications as well as the Herschel-Quincke effect. The narrow region acoustics model of COMSOL Multiphysics® software is used to simulate the thermoviscous losses associated with the leakages. The transmission loss is compared with test results for both reactive and hybrid (made up of reactive and dissipative elements) configurations. It is observed that presence of leaks has a significant effect on the acoustic performance of mufflers.

## Figures used in the abstract

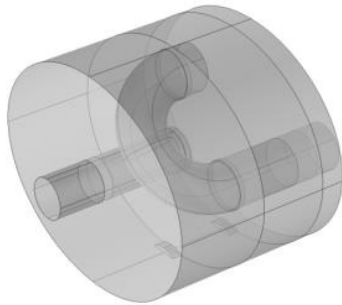


Figure 1: Muffler Model.

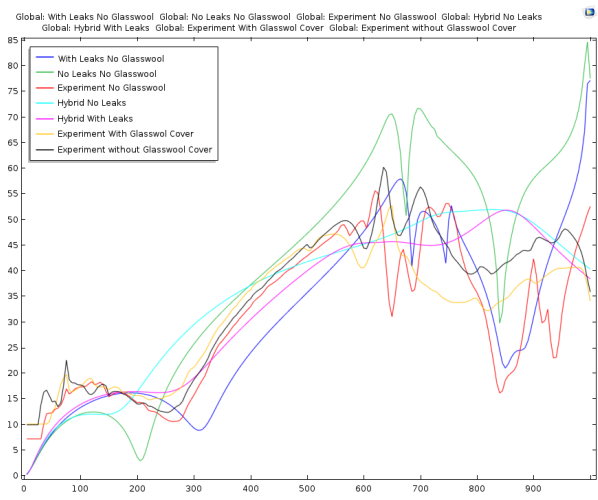


Figure 2: Transmission Losses.