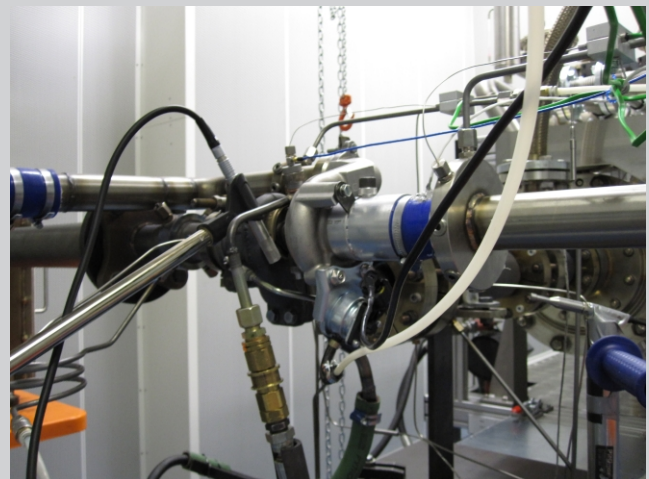


### Turbochargers: noise and vibration characterization

In the recent engines development and engineering the request of low fuel consumption and better pollution emissions requires car manufacturer to downsizing the engine volume and use a turbocharger to improve the performance. The turbochargers have general typical noise phenomena. The most important are related with the mass unbalance and number of blades (tonal high frequencies), fluído-dynamic effects creating in the hoses (generating typically broad band noise), and other phenomena related with rotation of ball bearing in the case. All these phenomena generates noise and vibrations that can propagate through the structure of the exhaust system or through the intake system (air noise propagation).

A complete characterization of these effects can be made by using the Microflown sensor. The sensor can measure pressure and particle velocity in the same spot. The vibration of the structure in the very near field can be measured and also the sound intensity from the intake or exhaust system. A complete solution is now available for the turbocharger noise and the most important sound sources related with the different phenomena.



### Application features

- ✓ Sound intensity mapping of the turbocharger noise and sub-system (intake, exhaust, intercooler)
- ✓ Measure vibration related with unbalance and number of blades in high frequency
- ✓ No need for anechoic room or anechoic conditions ( test room, engine bay)
- ✓ Both vibration and noise phenomena can be analysed with the same probe

