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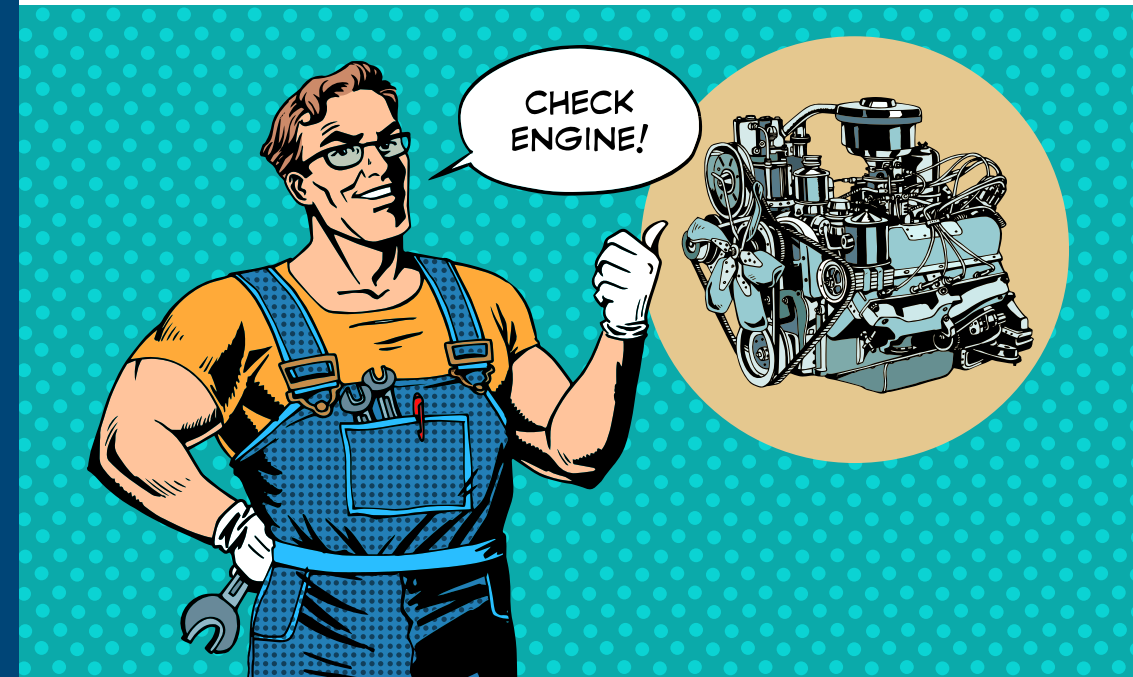
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/ The Harrislee Laboratory (HaL)



KBA-President Richard Damm

“Today’s vehicle technology is a highly complex system, the essence of which is regulated by legal standards that are as complex as they are demanding. At the same time, the current state of the art is subject to ever shorter innovation cycles, so that testing methods are also subject to a constant development process. Not only the increasingly stringent requirements in the area of exhaust and noise emissions as well as the developments in the field of highly automated and autonomous driving therefore require independent, reliable and efficient governmental monitoring. In our laboratory, the engineers and technicians employed here have access to the necessary testing infrastructure with state-of-the-art measurement technology as well as climate and IT equipment to carry out a wide range of measurements for vehicle safety and environmental protection.”

/ Laboratory of the KBA goes into operation

After a construction period of just under two years, the Harrisleer Labor (HaL) started operations in the third quarter of 2021. At its core are two modern roller dynamometers for driving simulations and exhaust gas measurements, which are used not only for pure vehicle tests but also for calibrating the KBA’s own mobile exhaust gas measuring devices (PEMS). In addition, the laboratory is equipped with state-of-the-art measurement technology and air-conditioning and IT facilities. The modern functional building with its 1,400 m² of gross floor area also meets all the energy requirements of today’s new buildings.

/ Mobile exhaust measurements (with PEMS)



The KBA uses portable emission measurement systems for both gaseous and pollutants (GasPEMS) and for particulate matter (PN-PEMS). Currently the KBA has six portable (ten from Q3 of 2022) gas and PN measurement systems. The mobile measurement systems are used, among other things, in Real Driving Emissions (RDE) tests in real road traffic. This involves both measurements under the conditions of EU Regulations 715/2007 and 2017/1154 and supplementary, case-specific tests. The KBA is thus in a position to randomly examine vehicles in the field with the mobile exhaust gas measuring devices and to detect any inadmissibility.

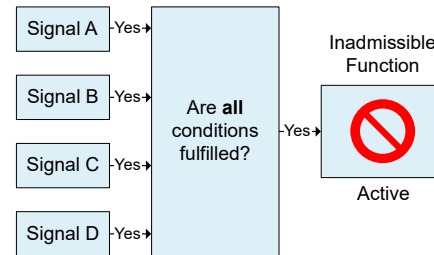
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/ Measurements on the chassis dynamometer – Tests under different environmental conditions



On the two biaxial chassis dynamometer tests are carried out to ensure compliance with statutory requirements under defined ambient conditions (air temperature/humidity) including generation of driving resistances by powerful generators/e-motors. Here, the legally prescribed driving cycles such as the NEDC (new European driving cycle) and WLTC (Worldwide harmonized Light Duty Test Cycle), whereby the ambient temperature varies between 20 °C and 30 °C and, in the case of the climatic test bench, even between -20 °C and +40 °C for the climatic test rig. The KBA tests also cover test cycles whose driving profile may deviate from the legal requirements. In this way, the KBA is in a position to analyse the emission behavior compared to real driving conditions and tests under laboratory conditions.

/ Software analysis – Unique in Europe



With the help of comprehensive IT equipment and the corresponding personnel competence the KBA is able to analyze the software of the control unit (e.g. with regard to exhaust gas emissions, noise emissions or automated driving systems) in detail. Nowadays it is no longer possible to investigate the technical applications by inspecting the components installed in the vehicle, instead, the algorithms of the manufacturers must be examined. The

software of the vehicles recognizes the driving situation and possible test scenarios of the vehicle on the basis of signals and acts accordingly. If this action is not in accordance with the regulations or poses a danger, the KBA takes action. With success: Based on a look into the software, the KBA can usually assess directly whether the applications are permissible, which is a unique selling point of the KBA’s regulatory market surveillance.

/ Safety inspections

The KBA tests safety systems and vehicle components relevant to safety in order to protect vehicle drivers and other road users. Even minor formal deviations can have serious consequences in an emergency. Compliance with the legal requirements and the identification of possible hazards despite their dangers, represents the principle of market surveillance.