

Kiwa tests cylinders with compressed natural gas

Bonfire test CNG automotive cylinder (R110)

Natural gas is one of the most widely used sources of energy. Due to relative clean combustion products it is also a very environment-friendly alternative to the traditional fuels for the automotive industry. Since the available amount of energy per litre natural gas is low compared to the traditional fuels, it is compressed to a pressure of 200 bar. Therefore, special attention is paid to the safety aspects that are related to Compressed Natural Gas (CNG) cylinders. Regulation 110 (R110) contains the specific requirements with respect to the equipment to be used.

Regulation R110 (R110)

The Economic Commission for Europe (ECE) has introduced Regulation 110 to provide uniform provisions concerning:

- 1 the approval of specific components of motor vehicles using CNG in their propulsion system;
- 2 the approval of vehicles with regard to the installation of specific components of an approved type for the use of CNG in their propulsion system.

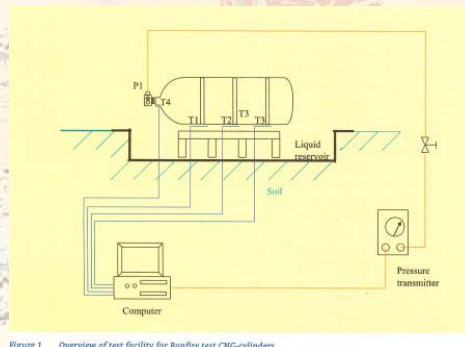


Figure 1 Overview of test facility for Bonfire test CNG-cylinders.

To prevent your CNG cylinder from bursting during accidents involving fires, a CNG cylinder has to be equipped with a Pressure Relief Device (PRD). The effectiveness of this specified fire protection system has to be tested in a Bonfire.

The Bonfire test

During a Bonfire test we expose a CNG cylinder to a fire source through which the CNG cylinder is completely engulfed by the flames. As a result of the fire, not only the temperature of the cylinder will increase but the pressure inside the cylinder as well. During this test the functioning of the PRD, as installed on the cylinder is studied. The cylinder and the PRD successfully pass the test if no leakage other than the PRD or burst in the cylinder do occur.



We are commissioned by the RDW, the Dutch Authority for homologation of CNG cylinders configurations, as a Notified Body for the performance of Bonfire tests on CNG cylinders.

Test location / test facility

For the performance of a Bonfire test we use a test site in the vicinity of Apeldoorn. The great advantage of this site is that there are no limitations with respect to other nearby activities and that the entrance to the site is restricted.



Test data

During the Bonfire test we measure the pressure and temperature of the CNG cylinder. The test is also digitally recorded.



Are you interested in testing and improving the safety of your CNG cylinders, please do contact us for any questions or enquiries and let us help and surprise you!

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