

WP4B - Ancillary Components and EFV - Continental

Background

WP4b was created as part of the Hy4Heat Programme, to supply hydrogen suitable ancillary components to support with the safe installation of hydrogen appliances in any future potential demonstration and community trials. Following successful tender, Continental delivered a variety of components (from the ECV (Emergency Control Valve) to the inlet of the gas meter) deemed suitable for use with hydrogen.

Organisation

Continental are a gas equipment specialist and the largest supplier of Natural Gas and LPG Low and Medium Pressure assemblies in the UK, holding contracts with all the major blue-chip utility companies. They are part of the broader Wolseley Group, the UK's largest plumbing, heating, and cooling trade specialist merchant.

Products and Testing as part of Hy4Heat

Continental tested the following products for suitability with hydrogen: A6 Mesura Loose Regulator; ECV – CPE & Cerro EMS; Full Low-Pressure Regulator Assembly; Loose Semi Rigid Connector; Compression Fitting; Brazed Copper Outlet Assembly; and, Excess Flow Valve – Mertik Maxitrol GmbH.

These are shown below:

1 - A6 Mesura Loose Regulator



2 - ECV – CPE & Cerro EMS



3 - Full Low-Pressure Regulator Assembly



4 - Loose Semi Rigid Connector



Additional Non-contractual Components

5 - Compression Fitting



6 - Brazed Copper Outlet Assembly



7 - Excess Flow Valve – Mertik Maxitrol GmbH

Model : GS20HH6LCZ



A number of these were tested in addition to the items Continental initially tendered for to support Continental's internal R&D work. The project involved testing the suitability of existing approved methane products, without modifications, for use with hydrogen. In the absence of Hydrogen gas industry standards, the existing Natural gas industry standards were used for testing. All products submitted for hydrogen testing were existing Natural Gas approved products. All materials used, within these products, had previously been confirmed as compatible for use with hydrogen.

The tests that were conducted on the various products included tests on gas tightness, performance, leak tightness, material suitability, pressure tests and temperature tests, among others. Testing selection was based upon only aspects from each standard that were identified as relevant for the comparison of methane to hydrogen. Given their knowledge and experience, the testing criteria were dictated by the Kiwa NL BV laboratories.

Outcome

None of the tests carried out identified a product or assembly, that performed in methane, that did not also perform in hydrogen. None of the tests carried out identified a product or assembly, that passed leak testing in methane, that did not also pass leak testing in hydrogen.

Overall, the results of the testing in hydrogen indicate that all existing products are suitable for use with 100% Hydrogen.

Implications

Based on these results Continental conclude that all products tested have been found to be suitable for the dual-fuel purposes of Hydrogen and Natural Gas. The cost implications therefore are considered negligible, with the prices for hydrogen components expected to be comparable to those for natural gas. The leak depletion testing, by both the regulator manufacturer and the kit manufacturer, had to be lengthened to allow a longer period for diaphragm stabilisation to adhere to the lower permissible leak rate of 5cc/hr.

This additional time would add some costs; however, these costs should have minimal effect on the entire installation.

There should be no disruption to the supply of hydrogen ready equipment and no ramp up period required to facilitate any proposed future roll-out. Current costs for equipment should not be affected from any switch from Natural gas to Hydrogen.