European Sealing Association e.V.

Hydrogen Working Group Teams Meeting Minutes

10.01.2023, 15.00 h (CET)

Participants:
Jane Abi Aad, Eynard Robin
Dr. Anna Berger, Frenzelit
Daniel Bissett, WL Gore
Thomas Böhm, EagleBurgmann
Peter Bowden, ESA
William Braule, DuPont
Sandy Van den Broeck, Burgmann Packings
Alessandro Cavalli, Flexitallic
Baris Caylak, Kastas
Eric Chaduiron, Technetics
Oyan Devlen, Kastas
Kees Disco, Flowserve
David Edwin-Scott, ESA
Gib Fitzgibbon, John Crane
Ron Frisard, FSA
Maria Garcia, Montero
Gosc, Spetech
Stephane Guignard, Technetics
Frank Herkert, AMTEC
Velin Kolev, Avko
Mark Kootwijk, James Walker
Ralf Kulessa, Garlock
Hubert Lejeine, Cetim
Rene Leven, John Crane
Jean-Luc Matoux, DuPont
Johannes Mueller, Teadit
Kai Krüger, John Crane
Kamesh Narayaraswamy, John Crane
Mark Neal, ESA
Ronald van Noesel, Flowserve
Benoit Omnes, Cetim
Lex Pelsma, Teadit
Mark Savage, John Crane
Emmanuel Sauger, Cetim
Holger Stolpmann, WL Gore
Francesca Torriani, General Packing
Peter Uebelmesser, Donit
Ralf Vogel, ESA
Randy Wacker, Inertech
Rainer Zeuss, SGL

1. Apologies:

Apologies of absence were received from John Morton and Dick Pronk.

2. Introduction

Ralf welcomed the participants from all Divisions. He explained that we wanted to record the meeting so that people who could not make it can listen to it. Everybody agreed that they were happy with the recording. The link to listen to the recording is Hydrogen Applications Working Group-20230110_140211-Meeting Recording.mp4.

This group should be a forum to discuss and work on topics like testing, standards and other information related to new hydrogen applications.

3. Discussion about possible work items or projects

We started the discussion with information from Frank Herkert about the test experience with hydrogen at Amtec up to now. They already performed 50 to 60 tests on gaskets. A mobile hydrogen test unit for packing and valve tests should be ready in February. Gasket tests were performed according to EN 13555 test procedure at RT and elevated temperatures. Valve tests are planned according to ISO 15848 test procedure. Low temperature testing is not available yet. If there is interest it can be evaluated but will be much more expensive compared to standard RT or higher temperature tests.

Ralf Kulessa mentioned that API have started work on a new API 6Z Standard for Valves with hydrogen gas at normal temperature. In Germany DVGW (German Technical and Scientific Association for Gas and Water) has a certification program for compatibility and permeation properties of elastomer seals for hydrogen gas service ZP5101. Also, in Germany BAM (Federal Institute for Materials Research and Testing) performs material tests with liquid hydrogen. The test specification is saved in the members area. Also a DIN presentation in German about hydrogen technologies can be found there.

Benoit Omnes and Emmanuel Sauger reported about the hydrogen activities at Cetim. Different tests have been performed and there is a collaboration with other institutes. A PhD thesis is done about mixed helium and methane. Beside fugitive emissions also aging, and compression tests are performed for elastomers. At higher pressures rapid h=gas decompression will be investigated.

Peter Uebelmesser informed about gasket tests by Donit according to VDI 2200/ 2440 where helium and hydrogen results were compared for DN40/PN40. An article about the tests will be saved in the members area.

Holger Stolpmann asked what the end user needs are. Should ESA perform a member's survey? Ralf Kulessa mentioned that Garlock did this already by talking to customers at exhibitions or directly. Some of the results are confidential but he shared that five user groups were identified:

1. Carbon capture
2. E-fuels &H2 production
3. Fuel cell design
4. Low carbon hydrogen production
5. System integration and infrastructure.

Ozan Devlen mentioned that Kastas did work according DVGW ZP5101. Functional testing was not covered. Fraunhofer Institute in Germany does also component tests with hydrogen.

Regarding emission testing Daniel Bissett stated that hydrogen is just another test gas. Compared to emission testing with helium the hydrogen leakage is lower. But there is still a case for hydrogen at low temperature.

Mark suggested to work on an ESA position paper regarding hydrogen applications. Ralf Vogel stated that magazine articles comparing helium and hydrogen testing would help to inform end users.

The following action points were agreed:

1. Ralf to save documents from Garlock and Donit in the Hydrogen Working Group folder
2. Work on a draft ESA hydrogen position paper – Ralf/Daniel?
3. Create magazine articles about emission testing for different seal types based on Position Paper?

4. Any other Business

No other business was raised.

Date, time, and venue of the next meeting

TBA

Ralf Vogel 17.01.2023