ISO/TC 197
Hydrogen technologies

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**Pre-NWIP 100% Hyrdogen Domestic and Commerical Appliances**

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| Background: | Please find attached the presentation made by SA during the plenary meeting - item 10 - on standards for 100% H2 appliances. |
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# Pre-NWIP

## HYDROGEN GAS APPLIANCES FOR DOMESTIC AND COMMERCIAL APPLICATIONS

*The purpose of this presentation is to share a potential NWIP being considered by ME-093 for 100% hydrogen and domestic and commercial appliances and seek feedback from TC197 members*

# Background

- National standards for domestic and commercial catering gas appliances are developed and maintained by respective national committees.
- Standards include requirements and test methodologies for gas appliances using natural gas with up to a % of hydrogen e.g. 23% hydrogen in Europe (G222); 12% in Australia (Nb)
- These national committees will continue to develop and maintain existing national standards to account for the future blending of hydrogen into natural gas networks. This proposal does not endeavour to duplicate the work of existing national committees.
- There is a case in some regions/hubs to facilitate the transition to 100% hydrogen in the short term for regional townships where the aim is to convert from natural gas or LP gas to 100% hydrogen as part pilot projects.
- Development of appliances that can use 100% hydrogen will assist in demand for the fuel source and the creation of 100% hydrogen hubs.
- Currently no utilisation standards for 100% hydrogen
- Opportunity to globally standardise operating conditions  e.g. max operating pressure currently 20mbar  Europe, 10mbar Australia for domestic and commercial catering appliances

# Proposed Scope

Development of suite of appliance specific standards for domestic and commercial catering appliances for operation with 100% hydrogen gas beginning with the development of a standard covering general requirements for domestic gas appliances

# Draft Table of Contents

| | | |
|---|---|---|
| Section 1: Scope and General | • Scope and Application<br>• Referenced Documents | • Definitions<br>• Test Methods |
| Section 2: Design and Construction | • General Design Requirements<br>• Materials<br>• Design for Assembly and Installation<br>• Design for Maintenance<br>• Design for Operation<br>• Controls and Safety Devices<br>• Gas Train | • Combustion Air and Flue Systems<br>• Fan Assisted Combustion Systems<br>• Burners and Ignition Systems<br>• Components<br>• Markings<br>• Instructions |
| Section 3: Preliminary Tests – Line Gases | • Preparation for Testing<br>• Gas Leakage<br>• Gas Consumption | • Gas Pressure Regulators<br>• Ignition and Safety Shut Off Systems<br>• Ignition of Draped Fabric |
| Section 4: Tests Under Limiting Conditions | • Flame Characteristics at Maximum and Minimum Limiting Conditions<br>• Burner Ignition at Maximum and Minimum Limiting Conditions<br>• Delayed Ignition at Maximum and Minimum Limiting Conditions<br>• Reignition at Turndown Under Draught Conditions<br>• Pilot Ignition and Stability at Maximum and Minimum Limiting Conditions | • Burner Stability When Changing Setting<br>• Unburnt Gas Release from Burner System<br>• Blocked Flueway Terminal<br>• Case Pressure Test<br>• Effect of Opening and Closing Doors at Turndown Condition<br>• Burner Interference at Ignition or During Combustion |
| Section 5: Performance Specifications | • Flue Operation<br>• Condensate<br>• Temperature Hazards<br>• Heat Resistance of Appliance<br>• Durability<br>• Electrical Supply Variation or Failure | • Appliance Operation Under Linting Conditions<br>• Rain Test For Outdoor And Room Sealed Appliances<br>• Operation Under Windy Conditions<br>• Strength and Stability<br>• Thermal Efficiency<br>• Vitiation and Emissions |
| Appendices | • Meter Volume Correction Factors<br>• Diagrammatic Representation of An Operating System For Automatic Burners<br>• Flue Gas Sampling and Temperature Measurement<br>• Flue Sampling Method for Small Flues<br>• Pressure and Gas Volume Test Equipment | • Diagrammatical Representations of Outdoor Areas<br>• Guidelines on Providing Written Appliance Specification<br>• Preliminary Test Methods<br>• Limiting Conditions Test Methods<br>• Performance Test Methods<br>• Leak Detection Methods |

# Interactions:

- ISO TC 291 is undertaking work on domestic cooking appliances for use with natural gas and LP Gas that may have relevance.
- This proposal focuses on general requirements for domestic appliances operating on 100% hydrogen.
- ISO TC 197 would need to liaise with ISO TC

Relevant standards:

- ISO/CD 21364-1, ISO/ AWI 21364-21 and ISO/ AWI 21364-22 for domestic cooking appliances,
- European gas appliance standards under directive 2009/142/EC for appliances burning gaseous fuels,
- Australia/New Zealand gas appliance standards AS/NZS5263 series,
- North American ANSI Z21 series of gas appliance standards