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Emerson Pressure Management, Automation Solutions
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McKinney, TX 75070, USA (PRM Global Headquarters)

Subject: *Emerson Regulator Products' Compatibility Statement for Natural Gas/Hydrogen Blending in Natural Gas Transmission and Distribution Infrastructures*

Sustainability and Decarbonization have become an integral part of discussions around energy security and securing long term sustainable economic growth. With the aim of net zero emissions by 2050, many countries have introduced legislation and subsidies, along with public and private investment to encourage the use of renewable energy in place of traditional fossil fuels. For natural gas utilities, the injection of Hydrogen in their natural gas distribution network is accelerating the transition to a carbon neutral energy supply.

Even before recent discussions and regulations, Emerson pressure regulating products have been tried and tested in a variety of hydrogen applications over the last 60+ years. We are committed to supporting our customers' needs during this energy transition, ensuring the safe and reliable delivery of energy and continued progression of their most critical infrastructure upgrading projects.

With reference to the subject, we state that in the current design and based on available knowledge and Emerson's vast experience with hydrogen, (see references below), Emerson legacy products for gas infrastructures listed below are suitable for **Hydrogen/Natural gas blends up to 10% Hydrogen by volume and total pressure up to 232 psi**. The product's inlet and pressure ratings have not changed, and they should not be used above those ratings. This list is the beginning and will be expanded as further testing and verification is completed with possibly increased pressure ratings for certain models.

EZH/EZHSO	EZHOSX
FL	OSE
HSR Series	CSB400/CSB600/CSB700

This statement is based on current technical information and knowledge; possible extension of the products' suitability to total pressure range and/or hydrogen blending percentage by volumes shall be evaluated after results of further tests and investigations that are still in progress. Extensive studies are also being performed on the following product families, and customers are encouraged to reach out to your Emerson representatives to determine their suitability for any Hydrogen application.

CS200	CS400
CS800	289H
299H	

A full review of equipment and materials in natural gas infrastructure is still in-progress at Global, North American, and European Technical Committee level; key technical issues to be addressed concerning regulator products in Hydrogen/NG blended applications are:

- Requirements for external leakage rates and breather/vent openings/internal relief valves (IRVs) (ref.: explosion risk assessment)
- Requirements for internal leakage (ref.: functional performances)

- Legacy material suitability (metallic and non-metallic) including permeation of gaskets, diaphragms, and o-rings
- Alternate options need to be considered for grey cast iron in wetted parts and music wire & SS302/SS303 springs

Consideration should also be given to pressure (total and partial pressure), temperature, and Hydrogen/NG blends composition in the referenced application. All Emerson pressure regulators and relief valves are tested for bubble tight shut off meeting ANSI/FCI 70-3 Class VIII or better before leaving the factory.

Certificate/Declaration of Suitability and updated product data-sheets will be issued as soon as official standard and/or reliable reference is available for equipment to be used with Hydrogen/NG blends in gas distribution networks.

In addition to our industry leading natural gas portfolio, Emerson also provides a full line of regulators and other equipment which have been used in industrial hydrogen and NACE applications for decades. These regulators are designed to be used up to **100%** hydrogen, meeting NACE MR0175 and to the currently published pressure ratings in our technical literature. When ordering, be sure to ask for NACE MR0175 constructions.

MR95/98	67CF/67CFS
627	1098-EGR
1301	310A
T205	Y692/Y693

Technical Support

Our technical support team (Business Development Managers, Regional Managers, Application Engineers, Product Managers, and Product Engineering) is committed to supporting customers through this transition. Besides our years of hydrogen industry experience, we have invested in expert engineering talent, upgraded our lab facilities with state-of-the-art test equipment, and developed 3D printing capabilities to support rapid prototyping, all to be able to provide customers with accurate, timely, and thoroughly tested recommendations. If there are questions concerning other products, please contact your local Emerson Impact Partner for more information.

Resources

In addition, we want to remind you of some resources readily available to address frequently asked maintenance questions and product training. Please visit the links below for more information.

[Application Guide – Solutions for Natural Gas \(download\)](#)
[Product maintenance videos are available on the Regulators YouTube Page](#)
[Product Brochures, Instruction Manuals, Data Sheets and Product Bulletins Online](#)

Best Regards,



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Ali Babakr, PhD.
 Metallurgist
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Reference:

1. MARCOGAZ document 01-10-2019 - TF_H2-427 "*OVERVIEW OF AVAILABLE TEST RESULTS AND REGULATORY LIMITS FOR HYDROGEN ADMISSION INTO EXISTING NATURAL GAS INFRASTRUCTURE AND END USE*" and
2. **CEN/TC 234 [WI 00234080]** "**CEN/ TC 234/TR** - Gas infrastructure — Consequences of hydrogen in the gas infrastructure and identification of related standardization need in the scope of CEN/TC 234" [last revision on 17th August 2020]