



Market Consultation

Zero-emission control valves for the benefit of N.V. Nederlandse Gasunie

Contact:

Version 1.0

N.V. Nederlandse Gasunie
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TABLE OF CONTENTS

Contents

1	GENERAL INFORMATION.....	3
1.1	N.V. Nederlandse Gasunie	3
1.2	Emission-free control valves	3
1.3	Scope.....	3
2	PROCEDURE.....	4
2.1	Schedule	4
2.2	Exchange of information	4
2.3	Conditions.....	4

1 GENERAL INFORMATION

1.1 N.V. Nederlandse Gasunie

The N.V. Nederlandse Gasunie (hereafter Gasunie) manages and maintains the infrastructure for large-scale transport and storage of gas in the Netherlands and the northern part of Germany. The Gasunie network is one of the largest high-pressure pipeline networks in Europe and consists of more than 15.000 km of pipelines in The Netherlands and Northern Germany, dozens of installations, and approximately 960 custody transfer stations. The annual throughput of gas is approximately 80 billion cubic meters.

Gasunie was founded in 1963, four years after the discovery of natural gas in the northern Dutch province Groningen. Gasunie is a public limited company under Dutch law and fully owned by the State of the Netherlands. Gasunie has two subsidiaries that manage the gas transport network: Gasunie Deutschland in Germany and Gasunie Transport Services (GTS) in the Netherlands.

Gasunie is a leading European energy infrastructure company whose core activities are gas transport and gas storage. We serve the public interest and facilitate the energy transition by providing integrated infrastructure services. Safety, reliability, sustainability and cost-effectiveness play a central role in everything we do. We focus on value creation for our shareholder(s) and other stakeholders and apply the highest safety and business standards used in the sector.

For the distant future, natural gas will remain a key component of the energy transition. However, for a sustainable future and part of a changing energy market a balanced energy mix and a lasting role for diversified gas will be required. So, in the run-up to 2050, other carbon-neutral gases need to be added to the mix. The focus of Gasunie will increasingly shift to green gas, hydrogen, district heating grids and carbon capture and storage. Gasunie will also work towards collaborative energy, i.e. closer collaboration between gas and electricity networks.

More information about Gasunie can be found on <https://www.gasunie.nl/en>.

1.2 Emission-free control valves

As part of a sustainable future, it is Gasunie's policy to reduce its methane emissions to zero as far as possible in terms of safety and technical feasibility. This in accordance with the UN Green Deal 9. One of the measures to reach this target is to replace gas driven actuators on (control) valves by electric actuators. Also (small) spindle leakages, are at odds regarding to the emission reduction policy.

Therefore, Gasunie is exploring the market for the availability of zero emission control valves. Zero emission control valves could be an alternative to the conventional gas operated control valves. With this market-consultation we are consulting the market for more information in order to make a buy-decision.

1.3 Scope

Below are listed the currently identified scope and requirements as a reference for answering the questions in annex 1 and the indication of compliance with the scope in annex 2.

SCOPE

Requirement	Specification
Type	Axial control valve
Nominal size	6"-24" (DN150-DN600)
Pressure rating	ANSI 150 - 600
Application	• Suitable for natural gas, natural gas hydrogen mixture up to 100% hydrogen and nitrogen. • Suitable for underground (including cathodic protection) and above ground application. • Suitable for hazardous area (zone 1). The minimum required protection type is II 2G T3. • Bi-directional flow.

Connection type	Flanged, ASME B16.5 RF
Seat leakage	EN 60534-4 class VI or equivalent
Stem emission	NEN-EN-ISO 15848-1 class AH for CC1
Pressure balancing	Full pressure balanced
Fire safety	In accordance with EN ISO 10497 or equivalent.
Actuator	Electrical actuated - Control signal 4-20mA - Feedback signal 4-20mA; - Electrical supply 1ph / 220V-240V / 50 Hz
Operating speed	Minimum 5 seconds per inch (body size)
Control accuracy	Max 1% dead band and 1% hysteresis
Degree of protection	IP68
Guidelines	PED (2014/68/EU) ATEX 114 directive (2014/34/EU) EMC (2014/30/EU)
Noise level	Max 80 dBA

* If other specifications/ specific information is available, please share the information with us.

2 PROCEDURE

2.1 Schedule

Activity	Date / Period
Publication of the consultation via Tendered	7 June 2023
Deadline submission of response via Tendered	17 July 2023

2.2 Exchange of information

The exchange of information for this market consultation is carried out electronically via Tendered, www.tendered.nl. The use of Tendered is free of charge.

If you want to participate in this consultation, please answer the Questions in Annex 1 via provided the Q&A Form (Excel). Also fill in the price sheet provide with Question 22 in Annex 1. You can send the Question Form and prices to Arjan Kleine via a.kleine@gasunie.nl. For questions about this consultation please contact Mr. Arjan Kleine.

2.3 Conditions

By taking part in this market consultation you agree with the following conditions:

1. Communication is in the English language;
2. All communication is exclusively with the contact person mentioned in paragraph 2.2;
3. Your answers are confidential and shall only be shared within Gasunie;
4. The provided information will only be used for further studies and advice;
5. The scope and requirements may change based on the provided information;
6. Gasunie is not bound by the results of the market consultation;
7. Participants cannot derive any rights based on this market consultation;
8. If needed, Gasunie reserves the right to change the planning.

Annex 1 Question Form

Design and maintenance

1. Does your zero-emission axial control valves comply with the scope described in section 1.3? If not, please specify in Annex 2 which requirements cannot be met.
2. Which standards are applicable to the scope?
3. Please explain how zero-emission (zero spindle leakage) is realized?
4. Please explain how fully pressure balanced operation is realized.
5. Specify the sizing and pressure range of the zero-emission control valve.
6. Which brand and model actuator is or can be applied? Please give a description of how the actuator is built-up and how it works. Is it possible to build in the actuator underground?
7. Specify the control accuracy of the valve, what is the maximum feasible dead band and hysteresis?
8. Specify the maximum operating speed (open and closing time from 0%-100%) of the control valve.
9. Specify the required power supply and consumption of the actuator.
10. Specify the options for the electrical supply in the event of a power failure from the public network.
11. Is there an inspection method to verify the integrity of your zero-emission control valve? Is it possible to detect degradations during operation? When available please also specify the λ_{du} (unsafe undetected failure rate) as defined in IEC 61511-1 section 3.2.15.
12. Specify the MTBF and MTTR of the critical parts of the control assembly.

Application

13. Are the zero emission control valves suitable/ designed for a 100% hydrogen gas application? If yes, please specify why?
 - a. What materials are used?
 - b. What medium has been used for seat leakage tests and fugitive emission tests?
 - c. Have the valves been tested or already applied in a hydrogen network?
 - d. Other.
14. If not suitable for hydrogen, what is needed to make the control valves suitable? Regarding materials, design, testing etc.
15. Describe your experience in supplying the zero-emission control valves for both natural gas network applications as well as hydrogen:
 - a. Which diameter, pressure ratings and quantities?
 - b. What delivery times?
 - c. Can you provide a reference list of the last 3 years for the delivered valves which comply with our scope?
 - d. Specify the TRL
16. What other kind of mediums can the zero-emission control valve handle? E.g., nitrogen, CO₂, LNG, biogas?

17. Are the zero emission control valves suitable for an underground application? Is a stem extension required? If yes, what is the maximum possible stem extension you can deliver? Please provide a drawing of the valve + stem extension.
18. Are the zero emission control valves suitable for an underground application in which cathodic protection is applicable? Is for example the valve body electrically / electromagnetically insulated from the above ground components (control box or actuator)?

Delivery and services

19. Please specify which part of the scope is supplied in house and which part is purchased from other parties. Mention all third parties (name and country). For example, only delivering of control valves or also design, production, testing, coating etc. More specific:
- Where are the casting produced?
 - Where are the actuators produced?
 - In which country are the valves assembled?
 - How is the quality of the sub-suppliers controlled? Please describe your quality control of the sub-suppliers, if any;
 - Which tests are conducted in-house? For example, NDT, pressure test or function tests. If done by a sub-supplier, how is this organized?
 - If applicable, are welding activities also done by yourself? If not, please specify how the welding activities are organized.
 - Is the coating applied by yourself? If no, how is this organized?
20. Is it also possible to apply customer-specific coating described in the GTS_MSW-11-E?
- Aboveground application coating code B or B1;
 - Underground applications coating U or Z;
21. Do you have any additional information you would like to share?
22. Please fill in the price indication table below for the aboveground application. Please also provide the extra cost for the underground application (w.r.t. coating and stem extension).

Price indication zero-emission control valve			
Size	ANSI 150	ANSI 300	ANSI 600
6"			
8"			
10"			
12"			
16"			
20"			
24"			
Extra cost underground application:			

Annex 2 Compliance to scope

Requirement	Specification	Comply (yes/no)
Type	Axial control valve	
Nominal size	6"-24" (DN150-DN600)	
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