



Market Consultation

Recompression units (natural gas and/or hydrogen)

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Version 1.0

N.V. Nederlandse Gasunie
Groningen, 12 May 2023

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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, installations and approximately 1.300 gas receiving stations. The annual throughput of gas is approximately 125 billion cubic meters.

Safety, reliability, sustainability and cost-effectiveness are central in everything we do. Our company was founded in 1963, four years after the discovery of natural gas in the northern Dutch province Groningen. We are 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. We focus on value creation for our shareholder(s) and other stakeholders and apply the highest safety and business standards used in the sector. We believe in a sustainable future with a balanced energy mix and a lasting role for diversified gas. We believe that we serve our customers best with innovative gas and related infrastructure solutions. For the time being, natural gas will remain a key component of the energy transition. Other carbon-neutral gases need to be added to the mix, so in the run-up to 2050, Gasunie will be concentrating on green gas, hydrogen, district heating grids and carbon capture and storage. We will also be working towards collaborative energy, i.e. closer collaboration between gas and electricity networks.

To contribute to efforts to combat climate change, we aspire to be carbon-neutral by 2050. One way in which we wish to do this is by reducing the footprint of our business activities. We are fully committed to reducing any greenhouse gases such as CO₂ and methane that we emit while carrying out our activities. Our goal for 2030 is: 50% fewer methane emissions and 82.5% fewer CO₂ emissions in comparison to 1990. We are well on our way: in 2018, our CO₂ emissions were 60% lower than the 1990 level. Our ambitions are in line with government targets for the reduction of emissions.

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

1.2 Market consultation

One of the departments within Gasunie is the department special assignments. This department is responsible for maintenance on the pipelines and at all times ready to respond on calamities or incidents. For projects and scheduled maintenance on pipelines, Gasunie uses pipeline evacuation equipment, recompression units, to evacuate the gas from the pipelines. These units recompress natural gas and transfers it to another pipeline, in order to avoid venting this gas which contributes to greenhouse gas levels and global warming. A short movie about our current recompression units can be found on <https://youtu.be/MF4FHfIN0I4>.

Gasunie expects a growth in pipeline projects in the near future and has the ambition to expand their fleet of recompression units for large and small volumes of natural gas evacuation. The gas transport infrastructure contains multiple installations and equipment for gas transport, treatment and storage. With respect to emission reduction on the existing installations and equipment, Gasunie wants to install small skid mounted (fixed) recompression units.

One of the goals of the Dutch climate agreement is to build a carbon free energy system. For this goal, Gasunie is developing a hydrogen backbone (pipeline) which connects the industrial clusters to the new hydrogen grid. For future hydrogen projects Gasunie expects a need for recompression of hydrogen pipelines.

We want to get a good impression of the current available possibilities and solutions regarding the above mentioned recompression units. Therefore, we set up several questions. In ANNEX 1 QUESTION FORM you can find our questions which form the basis of this consultation. Please share your response and answers with us. Your answers will be used for further studies, internal advice and for a possible European tender(s). If needed, we can contact you for further information.

2 PROCEDURE

2.1 Schedule

Activity	Date / Period
Publication of the consultation by Gasunie	Friday 12 May 2023
Submission of answers from the suppliers to Gasunie	Thursday 15 June 2023

2.2 Exchange of information

The exchange of information for this market consultation is carried out electronically via the Dutch government's online tendering system Tendered (<https://www.tendered.nl/cms/nl/english>). The use of Tendered is free of charge.

If you want to participate in this consultation, then please share your answers and response on our scope by filling in ANNEX 1 QUESTION FORM. You can send the form to Miss. D.L. Spangenberg via e-mail: d.l.spangenberg@gasunie.nl. For questions about this consultation you can also contact Miss. D.L. Spangenberg.

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 be used for further studies, internal advice and for a possible European tender(s). If needed, we can contact you for further information;
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.

3 SCOPE

Recompression units are required for:

- Natural gas evacuation of large pipeline volumes;
- Natural gas evacuation of small pipeline volumes;
- Natural gas evacuation of installed based equipment:
 - Compressor Seal Systems;
 - Compressor Manifolds;
- Hydrogen evacuation of large pipelines (H2 backbone);
- Hydrogen evacuation of installed based equipment:
 - Compressor Seal Systems;
 - Compressor Manifolds.

3.1 *Natural gas evacuation of large pipeline volumes*

For this application, Gasunie has the intention to invest in trailer-based recompression units transportable by a truck. These trailers will be transported on the Dutch road and therefore shall comply to the Dutch regulation of road transport without exceptional transport.

This general specification describes the basic principles of the required recompression units.

Application

Pipeline evacuation volume: 100.000 – 1.000.000 m³(n)

Design criteria

- Compressor capacity (m³(n)/h): as high as possible
- Evacuation time (hrs.): as short as possible
- Suction pressure (end evacuation pressure): as low as possible
- Suction temperature: 20 deg C
- Discharge pressure: 67,2 and 81 bara
- Discharge temperature (outlet temperature after cooler): 50 deg C max.
- Ambient temperature: -15 to + 35 deg C
- Medium: natural gas
- Noise: as low as possible
- Efficiency: as high as possible

Scope of supply

The delivery of a complete mobile recompression unit with the following minimum requirements:

- Regulatory Compliance: EU directives, Dutch Law, RDW¹ (road transport)
- Compressor: hermetically sealed reciprocating compressor
- Driver: E-motor is preferred (gas engine optional)
- Weight: 50.000kg max.
- Dimensions (L x B x H): 13,6m x 2,55m x 4m max.
- Noise enclosure: compressor room and control room, separated by a gastight wall
- Control system: fully automatic unmanned operation

3.2 *Natural gas evacuation of small pipeline volumes*

For this application, Gasunie has the intention to invest in trailer-based recompression units transportable by a van. These trailers will be transported on the Dutch road and shall comply to the Dutch regulation of road transport without exceptional transport.

This general specification describes the basic principles of the required recompression units.

Application

Pipeline evacuation volume: 1.000 to 20.000 m³(n)

Design criteria

- Capacity (m³(n)/h): as high as possible
- Evacuation time (hrs.): as short as possible
- Suction pressure (end evacuation pressure): as low as possible
- Suction temperature: 20 deg C
- Discharge pressure: 67,2 and 81 bara
- Discharge temperature (outlet temperature after cooler): 50 deg C max.

¹ For more information, please visit <https://www.rdw.nl/en/about-us/rdw-is-the-netherlands-vehicle-authority>

- Ambient temperature: -15 to + 35 deg C
- Medium: natural gas
- Noise: as low as possible
- Efficiency: as high as possible

Scope of supply

The delivery of a complete mobile recompression unit with the following minimum requirements:

- Regulatory Compliance: EU directives, Dutch Law, RDW (road transport)
- Compressor: hermetically sealed reciprocating compressor
- Driver: E-motor is preferred (gas engine optional)
- Weight: 2.500kg max.
- Dimensions (L x B x H): 12m x 2,55m x 4m max.
- Noise enclosure: compressor room and control room, separated by a gastight wall
- Control system: fully automatic unmanned operation

3.3 Emission reduction of natural gas for installed based equipment

For this application, Gasunie has the intention to invest in skid-based recompression units for installation on installed based equipment in existing buildings or in the field in containerized units. This general specification describes the basic principles of two required recompression unit applications.

3.3.1 Compressor Seal Systems

Design criteria

- Compressor capacity: 30 – 300 m3(n)/h
- Capacity control: suction pressure based
- Suction pressure: 1,2 - 4,0 bara
- Suction temperature: 20 deg C
- Discharge pressure: 67,2 bara
- Discharge temperature (outlet temperature after cooler): 50 deg C max.
- Ambient temperature: -15 to + 35 deg C
- Medium: natural gas
- Noise: as low as possible
- Efficiency: as high as possible

Scope of supply

The delivery of a complete skid-based recompression unit with the following minimum requirements:

- Regulatory Compliance: EU directives, Dutch Law
- Compressor: hermetically sealed reciprocating compressor
- Driver: variable speed controlled E-motor
- Noise enclosure: compressor room and control room, separated by a gastight wall
- Control system: fully automatic unmanned operation

3.3.2. Compressor Manifold

Design criteria

- volumes: 600 – 4.000 m3(n)
- Evacuation time (hrs.): as fast as possible
- Suction pressure (end evacuation pressure): as low as possible
- Suction temperature: 20 deg C
- Discharge pressure: 67,2 bara
- Discharge temperature (outlet temperature after cooler): 50 deg C max.
- Ambient temperature: -15 to + 35 deg C
- Medium: natural gas
- Noise: as low as possible
- Efficiency: as high as possible

Scope of supply

The delivery of a complete skid-based recompression unit with the following minimum requirements:

- Regulatory Compliance: EU directives, Dutch Law
- Compressor: hermetically sealed reciprocating compressor
- Driver: variable speed controlled E-motor
- Noise enclosure: compressor room and control room, separated by a gastight wall

- Control system: fully automatic unmanned operation

3.4 Hydrogen evacuation of large pipelines (H2 backbone)

For this application, Gasunie has the intention to invest in trailer- or container-based recompression units transported by a truck. These trailers will be transported on the Dutch road and therefore must comply to the Dutch regulation with respect to road transport. Exceptional transport for this application is not preferred but optional.

This general specification describes the basic principles of the required recompression-units.

Application

Pipeline evacuation volumes: 1.000.000 – 3.500.000 m³(n)

Design criteria

- Compressor capacity (m³(n)/h): as high as possible
- Evacuation time (hrs.): as short as possible
- Suction pressure (end evacuation pressure): as low as possible
- Suction temperature: 20 deg C
- Discharge pressure: 67,2 bara
- Discharge temperature (outlet temperature after cooler): 50 deg C- max.
- Ambient temperature: -15 to + 35 deg C
- Medium: hydrogen
- Noise: as low as possible
- Compression: non lube
- Efficiency: as high as possible

Scope of supply

The delivery of a complete mobile recompression-unit with the following minimum requirements:

- Regulatory Compliance: EU directives, Dutch Law, RDW (road transport)
- Compressor: hermetically sealed reciprocating compressor
- Driver: E-motor is preferred (gas engine optional)
- Weight: 50.000kg max.
- Dimensions (L x B x H) : 13,6m x 2,55m x 4m max.
- Noise enclosure: compressor room and control room, separated by a gastight wall
- Control system: fully automatic unmanned operation

3.5 Emission reduction of hydrogen for installed based equipment

For this application, Gasunie has the intention to invest in skid-based recompression-units for installation on installed based equipment in existing buildings or in the field in containerized-units.

This general specification describes the basic principles of two required recompression-unit applications.

3.5.1 Compressor Seal Systems

Design criteria

- Compressor capacity: 30 – 300 m³(n)/h
- Capacity control: suction pressure based
- Suction pressure: 1,2 - 4,0 bara
- Suction temperature: 20 deg C
- Discharge pressure: 67,2 bara
- Discharge temperature (outlet temperature after cooler): 50 deg C max.
- Ambient temperature: -15 to + 35 deg C
- Medium: hydrogen
- Noise: as low as possible
- Compression: non lube
- Efficiency: as high as possible

Scope of supply

The delivery of a complete skid-based recompression-unit with the following minimum requirements:

- Regulatory Compliance: EU directives, Dutch Law
- Compressor: hermetically sealed reciprocating compressor
- Driver: variable speed controlled E-motor
- Noise enclosure: compressor room and control room, separated by a gastight wall

- Control system: fully automatic unmanned operation

3.5.2 Compressor Manifold

Design criteria

- volumes: 600 – 4.000 m³(n)
- Evacuation time (hrs.): as fast as possible
- Suction pressure: as low as possible
- Suction temperature: 20 deg C
- Discharge pressure: 67,2 bara
- Discharge temperature (outlet temperature after cooler): 50 deg C max.
- Ambient temperature: -15 to + 35 deg C
- Medium: hydrogen
- Noise: as low as possible
- Compression: non lube
- Efficiency: as high as possible

Scope of supply

The delivery of a complete recompression unit with the following minimum requirements:

- Regulatory Compliance: EU directives, Dutch Law
- Compressor: hermetically sealed reciprocating compressor
- Driver: variable speed controlled E-motor
- Noise enclosure: compressor room and control room, separated by a gastight wall
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