

Market consultation braking energy recovery systems

Options for braking energy recovery in the Amsterdam Metro system

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Changes are marked yellow

Confidentiality level: Public

Colofon

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1 Reader's guide

This is the market consultation document for braking energy recovery systems in metro systems.

This document contains the following chapters:

Chapter 1: Provides an overview of the contents of this document.

Chapter 2: Contains general information about GVB, about this market consultation and the timetable.

Chapter 3: Contains the administrative conditions that apply to this market consultation.

Chapter 4: Contains a brief description of the current situation and a vision for the future.

Attachments:

1. Appendix 1 Form for submission of questions.
2. Appendix 2 Answering form questions market consultation braking energy recovery systems.
3. Appendix 3 A schematic overview of the external energy supply (10 kV connections) and the rectifier stations.
4. Appendix 4 A schematic overview of the timetable of the metro network that provides information about the frequency of transport movements.
5. Appendix 5 Concept technical specifications for braking energy recovery systems.

Definitions

- **Interested party** the participant in the market consultation
- **GVB** GVB Infra B.V. (managemet & operation rail infrastructure Amsterdam)
- **MET** City of Amsterdam Metro and Tram Department (owner of Amsterdam rail infrastructure)

2 Introduction

GVB and the City of Amsterdam, Metro and Tram (MET) are working on measures that are necessary for a new line model, a new timetable and the commissioning of new metro cars. These adjustments to the metro network are a logical moment to also implement sustainability measures. This leads to cost savings during the preparation and realization phase.

Research has shown that one of the greatest sustainability gains can be achieved by greening or reducing electricity consumption. GVB and MET have investigated various measures. Measures such as applying a third rail with a lower resistance or switching off transformers do not appear to be cost-effective at the moment.

Reducing energy consumption by using released braking energy seems more promising. Now that GVB and MET are faced with major adjustments and investments in the energy supply of the Amsterdam metro network, a logical moment has arisen to integrate braking energy recovery systems into the energy supply.

At this moment, technical designs are being made for adapting the energy supply of the metro and design choices have to be made with regard to the integration of systems for recovering braking energy.

In anticipation of this, GVB wishes to conduct a consultation round with market parties to explore the technical possibilities that the market can offer and to work out the further substantiation of the business case.

This document has been drawn up for this consultation round.

2.1 Publication

This market consultation is published through TenderNed, the Dutch procurement platform and also automatically published on Tenders Electronic Daily (TED). All provisions set forth in this publication remain applicable and can be requested from <http://ted.europa.eu> and www.tenderned.nl.

If you wish to remain informed about further publications regarding this market consultation, such as any Summaries of Additional Information and Changes, then you must register on TenderNed and add this market consultation to 'my tenders'. See also the manual for entrepreneurs on Tenderned.nl. You can also email the contact person for this market consultation. The market consultation document will be sent to you by email on request.

2.2 Definition of a market consultation

A market consultation is used to improve, assess and/or further detail the quality of the contract documents or programme of requirements and the procurement process.

By using the knowledge and skills of parties, a public organisation can assess a proposed project and the accompanying preconditions for accuracy, completeness and feasibility. This allows the feasibility of the project to be determined and the preconditions under which the project should be carried out to be established.

The market consultation is a separate process that is carried out prior to a formal tender process. The market consultation is not a call for participation and is not part of a pre-qualification procedure. The information from the market consultation can be used to create a good procurement process. By having a good procurement process the probability of a suitable offer for GVB is greater.

2.3 Client

This market consultation is carried out by GVB.

GVB provides public transport by tram, bus, metro and ferry in and around Amsterdam. The organisation employs around 3,750 people. GVB transports passengers with 56 bus lines (of which 12 are night lines), 16 tramlines, 4 metro lines and 8 ferry connections.

On average GVB carries out 740,000 passenger journeys daily. Passengers want to reach their destination on time, be informed and feel safe. The passengers are the key component in GVB's actions.

In addition to the operation, the management and maintenance of the equipment and the rail infrastructure in the city is in GVB's hands. Its own departments Railmaterieel and Rail Services take care of this.

GVB wants to see that its passengers and employees feel at home: in the means of transport, but also before and after the journey. That is why personal safety and up to date travel information are important, particularly in a busy metropolis such as Amsterdam. In addition to the means of transport, it is important that the environment is safe, clean and inviting.

For more information about GVB please visit our website: www.gvb.nl.

2.4 Aim of market consultation

The aim of this market consultation is:

- A. to involve interested parties in the set-up of the above tender and/or agreement at an early stage;
- B. to consult the market with regard to the investigation of the possibilities of tendering systems for recovering braking energy in the Amsterdam metro system;
- C. to consult the market with regard to additional innovative possibilities to reduce energy consumption and / or innovative possibilities to link generation installations to the metro system;
- D. in addition to answering the questions raised, interested parties are also given the opportunity to submit suggestions and ideas.

GVB hopes by doing so that any tender organised and agreement entered into will be optimally tailored to the market.

2.5 Staging

The market consultation is divided into 3 stages:

- A. An opportunity for Interested Parties to ask questions about the market consultation documents and answer these questions by GVB;
- B. A written response to the questions raised;

- C. An oral explanation to the questions raised with the corresponding answers; this will be done by holding individual talks. See also article 2.7; this stage is optional and depends entirely on the outcome or conclusion based on the answers given to the questions raised.

2.6 Reserve

GVB proposes the following conditions that are automatically accepted by the interested party on participation in this consultation:

- A. GVB will not reimburse costs associated with this market consultation in any way;
- B. GVB reserves the right not to follow up on this market consultation;
- C. GVB reserves the right, independent on this consultation, to choose a procurement strategy that is right and appropriate for it.
- D. The information provided can be freely used by GVB.

2.7 Process market consultation

The announcement of this market consultation "Braking energy recovery systems " with the corresponding documents was published in accordance with the timetable in section 2.8 through TenderNed and also automatically published on Tenders Electronic Daily (TED). This means all interested parties have the opportunity to take part in this market consultation.

GVB has chosen to clarify its intentions for the proposed contract through a presentation of the intended contract and the prepared questions. A market consultation information day has been organised for this purpose. It is up to you whether you attend or not but GVB points out that for proper answers to your questions it is most recommendable that you attend this information day. (optioneel)

Up until the time indicated in the timetable there is still a possibility to ask questions in writing to clarify the market consultation, of which a Summary of Additional Information and Changes will be drawn up.

GVB would then like to receive a written response to the questions, which are in the annex 2 "Form answering questions market consultation braking energy recovery systems". The answers to the questions can be submitted until the time as indicated in the timetable. Submissions should preferably be made via the messaging module in TenderNed or else by email to the contact person mentioned in section 3.1.

Following these written questions and/or comments, GVB can proceed to requesting further information. This can take place by written questions or consist of further meetings, but this is not a requirement.

Consultation with parties will focus on mutual exchange of information. The parties concerned can put forward their ideas on the matter of the market consultation.

A confidential report will be drawn up of each meeting and submitted to the party in question for approval. GVB is not obliged to give detailed feedback to the participating parties.

The following persons will be present on behalf of GVB:

- Jos Meester *project manager traction strengthening metro (GVB)*
- Will de Jager *technical manager energy supply metro (MeT)*
- Bart Bakker *advisor sustainability and innovation (MeT)*
- Mariska van Bakkum *project management officer (GVB)*
- Leo Snel *senior purchaser infrastructure and real estate (GVB)*

In conclusion to the market consultation GVB will draw up an anonymised report outlining the findings. This report will also be published on TenderNed.nl. The findings ensue from the answers to questions raised and from the meetings held.

2.8 Market consultation timetable

The timetable for the market consultation procedure is shown here below. GVB has posted an announcement for this market consultation on TenderNed. This is the formal commencement of the market consultation.

GVB reserves the right to make changes to the timetable and/or to depart from it; in such cases, communication with all interested parties will take place via TenderNed or, if necessary, by email.

Stage	Milestone	Date
1	Publication of announcement	19 January, 2021
2	Submit questions to clarify market consultation document	5 February, 2021
3	Draw up and send Summary of Additional Information and Changes	12 February, 2021
4	Submit answers, ideas and comments	26 February, 2021
5	Consultation rounds	3 & 4 March, 2021
6	Discuss completion	5 March, 2021
7	Complete market consultation	8 March, 2021
8	Prepare, send and publish final report.	17 March, 2021

- 1) Stage 5 depends on the outcome and/or conclusion based on the answers to the questions raised.
- 2) Stages 6 to 7 depend on whether stage 5 goes ahead or not.

3 Administrative conditions

3.1 Correspondence

The communication on this market consultation should always be in writing and take place via the messaging module in TenderNed or else by email to the contact person stating **Market consultation braking energy recovery systems**.

The following contact person from GVB has been appointed for this tender:

Purchasing Department

Attn.: Leo Snel Senior Buyer
Postal address: Postbus 2131, 1000 CC Amsterdam
Physical address: Arlandaweg 106, 1043 HP Amsterdam
E-mail address: leo.snel@gvb.nl
Mobile: +31 (0)6 130 98 289

3.2 Summary of Additional Information and Changes

Any questions for clarification of this document can be submitted up until the time limit referred to in the timetable. For the submission of questions, you should use the document in Annex 1 Standard Form for submission of questions.

These questions will be anonymised and answered in a Summary of Additional Information and Changes. GVB will post the Summary of Additional Information and Changes on TenderNed or send it by email if necessary to interested parties and it will be an integral part of the final report.

3.3 Same information

All parties have access to the same information. The publication of this market consultation and the accompanying documentation – market consultation document, Summary of Additional Information and Changes and the final report - are posted on TenderNed. In case of a call for tender the above documents will be shared with all the candidates.

3.4 Language

The language used in this market consultation will be English or Dutch.

3.5 Rights

No rights can be derived from the information provided in the context of this market consultation. All oral and written communication should be seen as general possibilities for the procurement procedure and the approach by GVB.

3.6 Information provided

As indicated, GVB can use the information obtained from this market consultation to put the tender for braking energy recovery systems on the market. Therefore, all answers sent in by market parties in the context of this market consultation become property of GVB. GVB may freely share this information. GVB would greatly appreciate it if all questions are answered.

3.7 Status information

The status of the information is indicative.

3.8 Reporting irregularities

If a participating market party believes that information and/or a provision in this market consultation document and/or other documents is incorrect, unlawful or otherwise irregular, then the participating market party must notify GVB in writing of the alleged inaccuracy, unlawfulness or irregularity within fifteen days after receipt of the relevant market consultation document.

If a participating market party fails to notify GVB in the required manner on time then this participating market party forfeits any right vis-à-vis GVB insofar as related to the alleged inaccuracy, unlawfulness or irregularity.

3.9 Priority of documents

This market consultation document will prevail in the event of conflict between the announcement of the market consultation and this market consultation document.

4 Subject of market consultation

4.1 Current situation

The Amsterdam metro system currently has an energy supply with 23 rectifier stations. Almost all these rectifier stations have their own external 10 kV connection from the public grid. A schematic overview of the external energy supply (10 kV connections) and the metro network of traction power installations that feeds the Amsterdam metro system is attached as Appendix 3 to this document. A schematic overview of the timetable of the metro network that provides insight into the frequency of transport movements is enclosed as Appendix 4 to this document. A draft version of the technical specifications for a braking energy recovery system is attached as Annex 5 to this document.

4.2 Scope determination

On the basis of research by Arcadis and Ecorys, it has become clear that there is a positive business case for installing (at several locations) recovery systems for braking energy based on inverter technology.

The study assumes that a system with a capacity of 1 megawatt will only be installed at one rectifier station. If we consider installing a system at several rectifier stations, there must be at least two rectifier stations without recovery system in between.

If there are less than two rectifier stations in between, the electricity savings will have to be redetermined.

The analysis is structured in such a way that it always calculates the cost-benefits for a specific location of the recovery unit, and not for the total of installed systems. The analysis shows that the investment has a positive outcome for all locations separately. The benefits are therefore greater than the costs. Even if the CO₂ benefits are not taken into account, there is a positive (social) business case for GVB / MET, that is, they will pay for themselves (well) within their lifespan. This applies to all locations.

At locations with relatively large electricity savings, a system with a capacity of 2 instead of 1 megawatt is also cost-effective.

5 Annexes

Appendix 1 Submit questions form

See enclosed MS Word document on TenderNed

Appendix 2 Answering form questions market consultation braking energy recovery systems

See enclosed MS Word document on TenderNed

Appendix 3 A schematic overview of the external energy supply (10Kv connections) and the metro network of traction energy installations that make up the Amsterdam metro system

See enclosed PDF document on TenderNed

Appendix 4 A schematic overview of the timetable of the metro network that provides insight into the frequency of transport movements

See enclosed PDF document on TenderNed

Appendix 5 Concept technical specifications for a braking energy recovery system

See enclosed PDF document on TenderNed