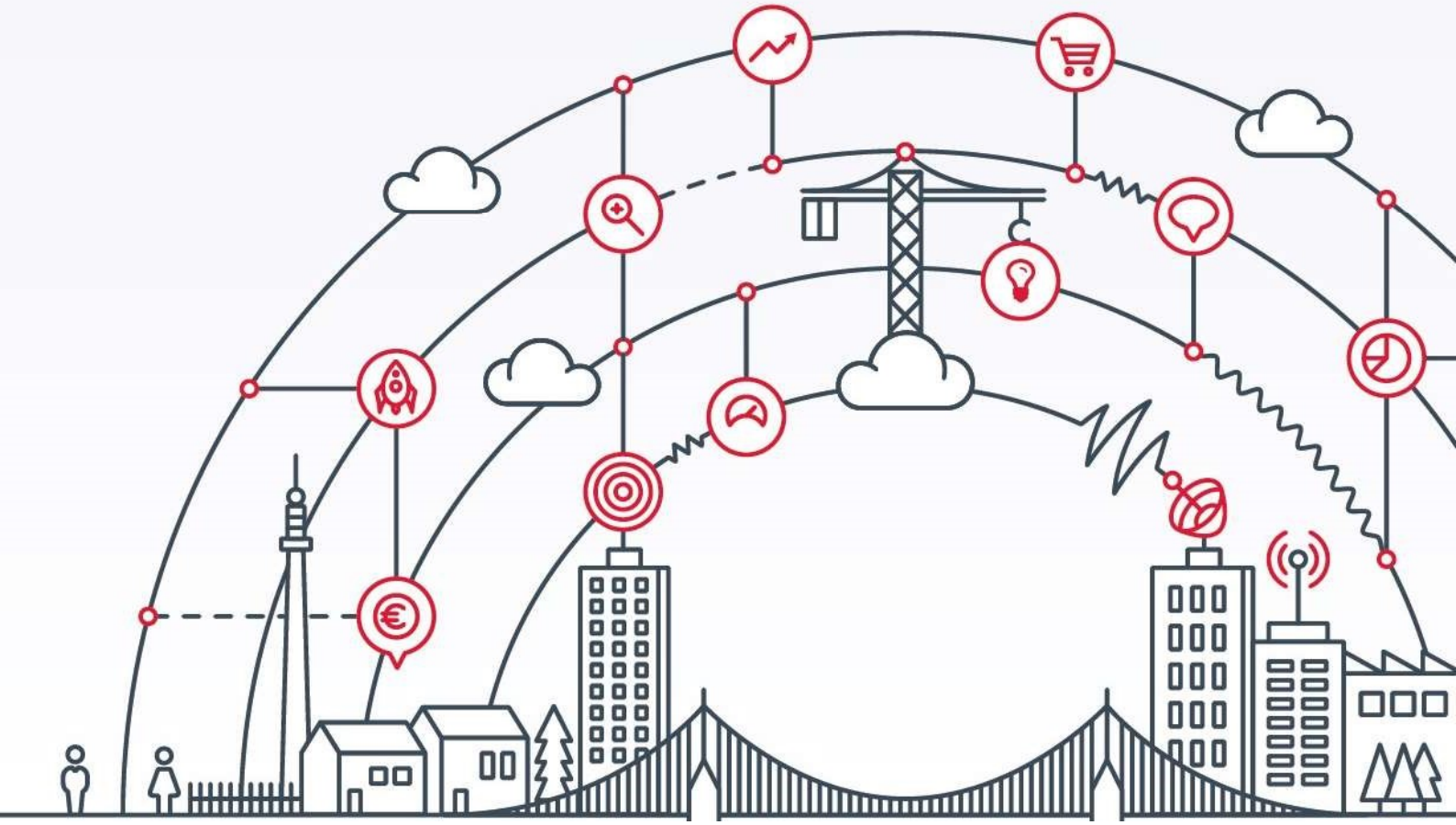
Public Procurement
Promoting Innovation

Energy Storage Challenge

This is a translation – for the original challenge description, contacts and submission go to:
Energiespeicher für Rastanlagen - IÖB Innovationsplattform (ioeb-innovationsplattform.at)



An initiative of

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Climate Action, Environment,
Energy, Mobility,
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In cooperation with

BBG BUNDES BESCHAFFUNG

Challenge Sponsors

ASFINAG – Autobahn und Schnellstraßen Finanzierungs-Aktiengesellschaft (Austria)

and Autobahn GmbH des Bundes (Germany)

ASFINAG

GUTE FAHRT, ÖSTERREICH!

Die Autobahn

Point of Departure

The rapidly growing e-mobility and the increasing demand for renewable energy are extremely positive developments for our society as a whole. For ASFINAG and Autobahn GmbH, these changes mean both great opportunities and great challenges.

More e-cars and e-trucks on the roads make it necessary to have a solid charging infrastructure throughout the entire motorway network in Austria and Germany. The charging Infrastructure must be able to withstand large crowds at peak times to enable fast and convenient charging for users. It can be assumed that the number of charging points as well as the density of charging stations will increase massively in order to meet the emerging demand. In addition, an ever higher capacity of charging points will be needed to enable fast charging technology for cars and to serve electric trucks in the future.

The planned fast-charging infrastructure along the motorway in Austria and Germany requires very cost-intensive grid connections, which entail major and lengthy construction measures.

ASFINAG and Autobahn GmbH are looking for solutions to temporarily store electricity so that users can charge their e-cars and e-trucks at peak times. The aim is to enable more continuous power consumption, which will avoid load peaks as far as possible and thus enable fast charging even at rest areas where grid connection is currently too weak. The maximum power of the charging points should be retrievable over a longer period of time, so that the connections can be dimensioned according to demand. This is particularly important for certain areas which, due to their exposed location, cannot be developed and operated in any other way.

In addition to regular grid electricity, ASFINAG and Autobahn GmbH are increasingly relying on electrical self-sufficiency through photovoltaic, hydroelectric and wind power plants and are constantly expanding these technologies. In the future, it should also be possible to store self-generated energy in order to fully operate rest areas and service stations, real estate (e.g. motorway maintenance depots) and structures (e.g. tunnels and bridges) and to supply the company's own vehicle fleet.

Main Question

Which **energy storage solutions** can be used at rest areas and service stations to avoid electricity load peaks from e-charging infrastructures?

Desired situation

The primary goal of this challenge is to find energy storage solutions that can be used as buffer storage in order to cushion peak loads during fast charging processes and to enable lower grid connection power.

In terms of storage technology, the challenge is open and can range from the use of classic accumulator solutions to experimental applications of mechanical, electrical and electrochemical storage solutions. It is important that there is electricity both at the beginning and at the end of the charging chain. Hydrogen and other chemical storage options can be used but must be available again in the form of electrical energy at the end of the storage process. The same applies to thermal energy. It is explicitly not desired to provide energy in the form of heat. However, the use of waste heat can be cited as a positive side effect of electricity storage.

The main application for the sought-after energy storage solution is to store electricity from existing grid connections during periods of low charging activity in order to be able to retrieve it at peak times. As a secondary application, it should also be possible to feed in self-generated energy (photovoltaic and wind power, which is generated at rest areas and service stations). This additional energy serves to relieve the public electricity grid, thus making it possible to charge one's own e-mobility fleet or for users in the sense of circular economy and self-sufficiency.

The submitted solutions should already be so developed in terms of their market maturity that they can be used immediately or only with little time until completion, as there is a short-term need on the part of ASFINAG and Autobahn GmbH. Potential solutions should be tested and implemented as quickly as possible.

Load management is seen as an integral part of the overall solution sought by ASFINAG and Autobahn GmbH and contributes to the efficient use of storage solutions.

Charging infrastructure or combined solutions are not sought, as this is provided by the concessionaire. The focus of this challenge is explicitly on energy storage solutions.

The challenge is also specifically looking for concepts for the reuse and further utilisation of used storage technologies. Extending the service life of the technology used increases the sustainability of the solution sought and contributes to a positive evaluation in the course of this Challenge.

Equally important are the topics of dimensioning and storage/construction of the storage solutions (e.g. containers, underground, etc.), since service areas and service stations can only offer limited space for this purpose, as well as the possibility of operating innovative storage solutions flexibly at different locations. In this respect, safety-relevant requirements must also be taken into account, as users and their vehicles will also be in the vicinity during regular operation.

The following values can be regarded as desired and ideal for the storage solution sought by ASFINAG and Autobahn GmbH:

- The storage unit should be available at full capacity within 1¼ hours.
- Charging capacity / minimum outgoing power: 800 kW
- Minimum capacity: 1000 kWh

If these values cannot be achieved, please briefly elaborate and outline alternative solutions.

Other energy-related parameters such as efficiency, max. charging cycles, etc. should be specified if possible. These will be evaluated under the criterion "energy efficiency".

Call for proposals

With this challenge, those responsible at ASFINAG and Autobahn GmbH (see jury) are addressing companies or consortia that offer ideas for the technical and organisational implementation of an electricity storage solution for the internal and external charging infrastructure. ASFINAG and Autobahn GmbH are not only looking for overall approaches; specifically usable, innovative building blocks for an overall concept are also welcome.

Submissions can either be based on these preliminary considerations, or can be made in other ways while adhering to the functional cornerstones. Innovative and better ideas are desired and will be treated confidentially.

So that the jury has a basis for selecting discussion partners at the Innovation Dialogue, please submit companies online:

- Description of your approach or your own services and those of cooperation partners, including a first rough estimate of the costs for construction, operation and (service) maintenance for the next 5 years.
- Summary of innovation aspects (which new developments or new technologies are included, which new findings are incorporated?)
- Presentation of reference projects that show meaningful analogies

Important: The public part of the submission must at least consist of a company profile (with reference projects) and a summary; the concrete approach can also be provided confidentially as a pdf to protect against imitation. The jury commits itself to confidentiality and protects genuine ideas of the submitters with a unique selling proposition from exploitation by third parties.

Submission Deadline: June 21st, 2023

Benefits of the Challenge and further course of the project

This challenge gives the sponsor an overview of possible solutions and potential partners. The jury of internal experts then invites those companies to an innovation dialogue whose solutions stand out particularly positively in the evaluation criteria.

For companies this means: By participating in the Challenge, you get on the radar of the public contracting authority. Your submission remains visible as your business card for other interested parties even after the Challenge is over. You put yourself in position for further public sector purchasing projects. If you are among the winners and are invited to the final innovation dialogue, you can present your solution at a market meeting. You exchange ideas directly with those responsible for the project.

This creates sensitivity and understanding for suitable innovations on the part of the public client. This is important so that the public contracting authority can take innovative approaches into account in any purchasing project under the Federal Procurement Act after the market exploration.

As a submitting company, please keep 27th July 2023 free for the Innovation Dialogue in Vienna.

If the innovation dialogue suggests that implementation makes sense, the immediate goal is to commission a test pilot in 2023/24.

Your Questions

Contact the moderator or post your question about the Challenge. Our moderators will check, research and publish your question together with the answer. This way, all potential participants are certain to receive the same information.

How to submit a solution/idea

Check the submission deadline (phase “Aufruf und Einreichungen”); click on the button "Lösung einreichen" on the top right side of the page.

- Beschreibung
  Post a meaningful description (make references to the description of the challenge and evaluation criteria on the right side of the challenge page)

- Mehrwert
  Highlight the benefits of your solution.

- Titelbild
  Upload a picture to be displayed on the landing page of the challenge.

- Kooperationspartner
  If you are handing in a joint contribution with other companies, this is where you make sure they are represented with logos and names.

- Dateien & Infos
  If necessary in addition to the descriptions above: add pdf-files (e.g. existing product brochures). But: Keep your contribution manageable for the jury.

- Vertrauliche Infos
  If necessary, place a confidential information for the jury, the sponsor and moderator (e.g. indication of approximate price range). All other parts of the contribution will be public.

Please be aware of the fact, that a challenge is market research / market engagement prior to a possible procurement. The challenge will not decide upon a contract award nor will it lead to any unfair advantage in a tender. Please balance your time and effort.

Contact Information

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