

ATELIER student

## COMPETITION



(Photo: Astrid Marie Rasmussen)

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#### BACKGROUND

## Imaginative use of city space

### Boost the green energy transition with inspired multi-functional technical buildings

The buildings and infrastructure of our cities define our options for sustainable living. The ongoing green transformation of our energy systems means that some of the energy production must take place in the urban areas and no longer just at the outskirts of the city. Bratislava and Copenhagen are therefore looking for inspiration on how to create multi-functional technical buildings that also contribute to a liveable city for all citizens.

CopenHill is an example of how a large technical building can be designed for additional functions making the combined package more attractive and useful for the city – At CopenHill, a building housing a heat-and-power plant has been combined with a ski slope on the roof creating unique visual interest as well as space for outdoor activities and an exciting view over the city.

With this competition Bratislava and Copenhagen invites students of architecture, urban design or similar to explore how technical buildings for heat pumps can be integrated in urban city-scapes in a creative and innovative manner, lending identity and additional benefits to the city.

The concepts developed by the competition participants will be combined to form a catalogue that can inspire and guide the design of energy positive districts in any city.

The three best concepts will be awarded a cash prize and the opportunity to participate in the 'World Congress of Architects' which will take place 02-06 July this summer in Copenhagen.

Registration deadline for the competition is 13 February 2023 and concepts must be submitted by 01 May 2023.

## TASK

Space is a limited resource in our cities.

The aim of this competition is to gather inspirational ideas for combining technical buildings with other city functions and compile these into an inspiration catalogue. The concepts submitted should demonstrate how energy infrastructure can offer tangible, positive experiences in our daily city life, bridging the need for locally produced renewable energy with the need for other city elements. Ensuring a high aesthetic quality of the build and its surroundings, could even make the buildings proud landmarks – signalling district identity instead of simply trying to hide or camouflage the technical buildings.

At the same time, technical buildings present a special challenge for its integration into the surrounding urban environment.

The competition task is to create a solution for a building housing large heat pumps such as those used for producing local district heating. The choice of energy source influences how the building can be integrated in the city.

The four technologies that the contestants can choose from are a) Ground water heat pumps, b) Ambient air heat pumps, c) Sea/river water heat pumps, and d) Geothermal heat pumps. The choice of energy source influences how the building can be integrated in the city.

A building for a ground water driven heat pump system could be placed on an 'in-fill' plot for example, amongst existing buildings in a historical area of the city with only minor demands on the surrounding areas.

However, when the energy source is ambient air, it is important to ensure plenty of air flow around the intake area. The intake will result in a certain amount of noise that must be considered in the design. The noise could perhaps be camouflaged by noise from other sources, for example a motorway.

Heat pumps using sea water or river water as an energy source need to be placed within the vicinity of the water. This location requirement provides opportunities for certain types of multi-functionality but at the same time, a certain area of the water must be kept clear for use with the heat pump.

Heat pumps relying on geothermal energy as energy source may require that an area next to the building is kept free of permanent buildings thus allowing new bore holes to be added later, if necessary.

A concept should first be developed for a specific site in Bratislava or Copenhagen but then developed further to become a conceptual prototype that can inspire numerous cities although the task work takes its conceptual starting point in specific sites in Bratislava or Copenhagen.

Solutions that demonstrate a more radical break with traditional city design are encouraged.

More details on the specific case sites and building constraints will be provided after registration and via an online information and Q&A session that will take place a week after the registration deadline.

## Required deliverable

The submission must consist of the following:

- One A3 with illustrations of the concept applied to the chosen specific case site in Bratislava or Copenhagen.
- One A3 showing the concept as a clear abstract model suitable for the summary catalogue of concepts.
- A written description in English of the concept – maximum ½ page A4.
- A 5-10 minute video explaining the concept and its application on the specific site chosen.

The first three elements must be submitted as one combined pdf-document.

Upon registration to participate each team is given a registration number. The team registration number must be clearly specified on the submitted material without mentioning the names of the students nor the affiliated educational institute.

## RULES

### Who can participate?

Any student within the disciplines of architecture, urban design or similar can participate.

Participants can join the competition either individually or as a team of up to three students.

### Judgement criteria

Bratislava and Copenhagen are looking for solutions that achieve multi-functionality in a creative and innovative fashion regarding the integration of technical buildings in the city-scape. Additional energy production such as photovoltaic units may also be added to the building's exterior but not at complete exclusion of other non-energy city functions.

The solutions must display a high level of architectural creativity with regard to addressing sustainability, which in this competition is defined as follows:

- The building contributes to a stimulating variability of city-scapes,
- The building shows an ability to foster casual meetings stimulating social interaction and social sustainability all-year round,
- The building contributes to minimising the risk of urban heat islands and contributes to increased biodiversity.

The sustainability of building materials should also be considered.

The proposed concepts must be realistically possible to implement (construction and economy).

Only correct and timely submissions in pdf-format will be considered.

The competition jury will select three winners.

### Prizes

The three winners will be ranked 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup>.

The winning concepts will be shared with the ATELIER partners and other EU smart cities notified of the competition work.

#### The prizes consist of:

- €2,000 EUR, €1,500, and €1,000 cash prize for the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place among the winning teams
- Tickets to 'UIA World Congress of Architects' 02-06 July, taking place in Copenhagen as part of the 'World Capital of Architecture 2023'
- An opportunity to present and discuss the winning concepts during the visit in Copenhagen

Furthermore, all received submissions will be published on the ATELIER website [www.smartcity-atelier.eu](http://www.smartcity-atelier.eu).

### Intellectual property rights

All participants give the organisers of the competition permission to use the submitted materials including videos in relation to the ATELIER project activities with due mentioning of the individual students and to upload the catalogue of concepts and other materials to the ATELIER website and the [PED Learning Platform](#).

The intellectual property rights reside with the individual teams.

Bratislava City and Copenhagen City are not obligated to apply the winning concepts in their planning of specific technical buildings.

## HOW TO JOIN?

### Registration

Interested students must sign up for the competition no later than 12:00 (central European time) **Monday 13 February 2023** by registering their name, email, and place of study on the ATELIER website using the application form <https://forms.gle/Rrj5avpSFh86Xwf56>. After registration, the participants will receive an email with a registration number and information on what information and materials will be distributed to all participants.

### Online city introduction and Q&A session

**Monday 20 February 2023** an online session will provide participants the opportunity to learn more about the cities and the technical buildings, and to clarify any questions related to the competition. Participants are invited to send any questions to [info@smarcity-ATELIER.eu](mailto:info@smarcity-ATELIER.eu) at least two days prior to the online session.

The online session will include a brief presentation of some of the city qualities that Bratislava and Copenhagen strive to achieve, respectively, plus an introduction to the specific case sites and the constraints that technical buildings pose on the building design.

All registered participants of the competition will automatically receive a link to the online session.

### Solution submission

The solution must be submitted no later than 17:00 (central European time) **Monday 01 May 2023**. All registered participants will after the online session 20 February 2023 receive instructions on how to submit their concepts. Once the submission is successfully uploaded, participants will receive a confirmation of receipt.

### Preparation for public presentation

The teams should be prepared to give a presentation of their solution should it be selected as one of the three winners. More detail will be provided after the submission deadline. Sharing work and findings with other cities is a cornerstone of the ATELIER philosophy.

## TIMELINE

### Wednesday 01 February

Announcement of competition

### Monday 13 February

Deadline for on-line registration

### Monday 20 February

Online Q&A session and introduction to Bratislava and Copenhagen

### Monday 01 May

Deadline for submission of concept

### Wednesday 17 May

Announcement of the winners + ceremony

### May

Publication of all catalogues on the ATELIER website and the winning catalogues on the PED Learning Platform

### 02-06 July

Winners attend the UIA World Congress of Architects in Copenhagen

## BACKGROUND

The European Union is intent on combatting the threat of climate change and to contribute to achieving the UN Sustainable Development Goals. Consequently, the European Union aspires to become the first climate-neutral continent and the [European Green Deal](#) outlines how to achieve this.

The development of [positive energy districts \(PEDs\)](#) is a vital component of the transition towards climate-neutral European cities. The aim of the EU is to reach 100 'Positive Energy Districts' by 2025, embedded in integrated urban strategies providing liveable, sustainable, and inclusive urban neighbourhoods.

Positive energy districts are urban districts with annual net zero energy import and net zero carbon emissions.

Positive energy districts are in other words working towards a surplus production of renewable energy, integrated in an urban and regional energy system. Energy efficiency and active management of consumption allows for balancing and optimisation.

A positive energy district couples the built environment, sustainable production and consumption, and in some cases also mobility to reduce energy use and carbon emissions.

Typically, [available space](#) is limited in cities and the amount of needed for public functions is almost endless. Space is needed for transport, waste management, leisure activities, public institutions, green areas, sewage treatment, climate adaptation measures and more. Previously, energy production primarily took place on the outskirts of a city or further afield.

As a result of the PED ambition to exploit local potential for renewable energy production, another claim for space within the city perimeter has arisen. The scarcity of space calls for combining functions within the same space. Cities therefore need to explore the possibilities for combining technical buildings with other city functions. This is the motivation for initiating this competition on inspired ideas for the integration of medium sized energy infrastructure buildings in the city-scape.

Just like the first railway stations and power plants that stood proudly in the city, we hope that these new technical buildings can be creatively integrated with city life so that the buildings not only become new infrastructure but also new, multi-functional [architectural landmarks](#).

### Competition partners

The competition is hosted/organised by Bratislava City and Copenhagen City under the umbrella of the ATELIER project.

The [ATELIER project](#) is an EU-funded Smart City project (grant agreement 864374) demonstrating how integrated smart urban solutions can support the deployment of positive energy districts. The cities involved are Amsterdam, Bilbao, Bratislava, Budapest, Copenhagen, Krakow, Matosinhos, and Riga.

The organisers wish to thank the jury and all persons who have contributed by sharing time, materials, and resources to make the competition a success.



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