

# Urban Food from Residual Heat Competition Manual



## Urban Food from Residual Heat

### Low temperature residual heat utilised as an energy source for small scale urban biological production

There are huge amounts of low temperature residual heat that is currently wasted by being released into the environment and ultimately cooled away, instead of being utilised. This heat comes from a diverse range of sources, from single refrigerators to industrial processes and is obviously difficult to capture and utilise.

Using this residual heat in an urban setting, to provide the energy needed for biological production, is an idea that has been proposed on multiple occasions – such as in the innovation competition on urban use of low temperature residual heat arranged by SSE-C in 2015 (<http://sse-c.se/restvarmekonferens>). Innovators most commonly think of growing of fish, vegetables and other biological products for the purposes of consumption but there are also other possibilities such as the production of ornamental flowers and biological raw material for other purposes.

We invite innovators from all over the world to contribute to the development of a solution which will enable the use of low temperature residual heat in biological production located in urban areas. The urban context means that the proposed plant *cannot* have huge area requirements, be located substantial distances away from housing, nor rely significantly on heavy transportation etc. However, the plant must qualify for all necessary environmental and other permits.

The financing and organising partners of the competition (hereafter called *organising partners*) are AtrinoVA/Municipality of Oskarshamn, Municipality of Bjur, Climate-KIC ApS, E.ON Sverige, Ica Estates, Kraftringen, Municipality of Lund, The County Administration of Skåne, City of Malmö, Region Skåne, Sustainable Business Hub, Veolia Nordic and the Swedish University of Agricultural Sciences through Swedish Surplus Energy Constellation. Some of the prize money and grants for running the competition are financed by Vinnova, Sweden's innovation agency.

Several of the organising partners are ready to build a plant if the correct and utilisable system solutions are presented.

- In **Malmö**, there are huge amounts of residual heat in the harbour area and its vicinity. There are plans for large scale urban development over the coming years and the production unit should contribute to the area's attractiveness for the inhabitants and people working in the area.
- In **Lund**, there are enormous amounts of residual heat from the cooling of the research plants ESS and MAX4. The residential and commercial area of **Brunnshög** is under construction close to the research plants and there is great interest in developing sustainable solutions that will benefit the residents and those working in the area. One possibility is to connect a production plant to the big Ica grocery store that will be opened in the area.
- In **Bjuv** there are plans to build the Bjuv Food Valley as a large-scale plant for production of fish, vegetables and other biological products using residual heat. Here there is a need for a model plant and information centre with connections to the city centre.
- In **Oskarshamn** there are plans for an extremely large plant mainly for the production of fish – and to a lesser extent vegetables and other biological products – using residual heat from the giant power plant located there. In Oskarshamn there is also a desire to have a demonstration site and information centre located in the central part of the city.

### Competition questions

The contestants can either:

- How can biological production units using low temperature residual heat – and possibly other residual flows for biological production – be organised so that they can be located in dense urban areas whilst also having the potential for side functions such as an in-house shop, food processing area, opportunities for employment and spaces for community events and social meeting?
- How can the production process be organised to be space efficient whilst maintaining profitability?
- How can the technical challenges such as heat storage, heat distribution and cycles of residuals be solved alongside the project's ambition to create social value in the local community through the creation of employment, social meeting places and local distribution, sales and processing?

- 1) Contribute with a complete system solution that combines all of the components required for a complete and operational plant. For complete system solutions, it is acceptable that some, or all, of the components of the proposed system may require further development to be made fully applicable to the context of this competition. It is likely that aspects of a proposed system have been developed elsewhere for different purposes and thus, 100% applicability is unlikely without further development.
- 2) Contribute with a partial solution that solves one of the main innovation problems required for the development of a complete plant.

**Please note!** Although we have provided you with further information concerning the potential locations in which a production facility may be built (please see the competition homepage), in the early stages of the competition, it is **not necessary** for solutions submitted to be tailored to meet the specifics of a proposed site. As you will see in the section below, the competition is designed to leave ample time for adapting, improving and co-developing full and partial solutions to make the final proposal suitable for one or more of the site locations. At this preliminary stage “ready to roll-out” solutions are not required or expected.

### The Competition format: The three stages

The competition will be divided into three clear stages:

- 1) The first stage is an open submission process in which all submissions will be reviewed and the most interesting will be given the opportunity to pitch to a panel made up of representatives from the organising partners. A number of these presented solutions will be invited to progress to the competition’s second stage and they will receive economic compensation.
- 2) The second stage is interactive and will be run in close cooperation with the organising partners and other stakeholders that will be involved in the eventual construction of the units once the requirements and demands are fulfilled. After stage two there will be a second selection round, and those with

successful proposals will be invited to continue to the third stage, with further economic compensation awarded to further develop their solution.

- 3) Interaction between the participants and the organising partners will be intensified in stage three and a winning solution will be chosen at the end of the process. Throughout all three stages we will strive, in close cooperation with the partners responsible for the construction of the plants, to develop proposals to make them suitable for implementation.

Innovators of partial proposals that are invited to the second stage, will either be integrated into teams that have presented interesting complete systems solutions or will form teams together with other innovators that have presented partial solutions. This is in order to ensure that assembled teams are able to develop a complete system solution. If innovators presenting partial solutions are not interested in being put together with other teams or other innovators they cannot take part after the first stage of the competition and will therefore not be entitled to any economic compensation.

The entire competition process is a pre-qualification in several stages with successive selection corresponding to competitive dialogue according to Swedish law LOU chapter 6, §§ 20-29 (SFS 2016:1145).

Stage	Anticipated finishing date
1a) Open for submissions	4 April 2017
1b) Deadline for submission of solutions	2 June 2017
1c) Pitching event	2 – 3 October 2017
1d) Announcement of the innovators selected for stage 2	Late October 2017
2a) Interaction with the selected innovators in stage 2	February 2018
2b) Announcement of the innovators selected for stage 3	March 2018

3a) Interaction with the selected innovators in stage 3	August 2018
3b) Presentation of the winner	September 2018

*Preliminary time schedule for the competition process. The schedule may be revised during the process.*

### Economic compensation

The total amount of economic compensation for the work through all stages of the competition and the final prize is 2 million SEK which will be paid out excluding VAT. This sum will be distributed between the three stages by the organising partners after the evaluation of the proposals in each stage. A minimum of 200 000 SEK will be distributed to the teams in stage 2 and a minimum of 300 000 SEK to the teams in stage 3. The final prize of the competition will be a minimum of 200 000 SEK.

All contestants that continue to stage 2 will have to be a legal units with a F-tax card (corporation tax) or similar. The economic compensation will be paid on presentation of an invoice. The organising partners will not cover any costs for tax at source, employer's contribution (for national social security purposes) or other legal or other fees, only VAT.

### IPR

The immaterial property rights (IPR) for the proposals are owned by the contestants. The IPR can be transferred to any of the organising partners or any other partner involved in the implementation and construction of the plants in return for economic compensation which is agreed between the contestant and the partner willing to take over the IPR. For all teams invited to stage 2, where the different partners are not already are working in the same organisation (with the same company registration number), an agreement about the IPR must drawn up and signed. The organising partners will not take any responsibility for the agreements that are made or for their content. This responsibility is entirely one for the teams. A copy of the agreement

must however, be sent to the competition secretariat before work within the second stage can begin.

### **Implementation**

The goal of the competition is to develop a system solution that fulfils the demands of the partners looking to construct the proposed production plants. These demands concern the technique, production, economy, aesthetics, long-term sustainability, social engagement, possibilities for local employment etc. of the project. The organising partners however, do not take responsibility for the eventual implementation of the project. This responsibility rests solely on the competition participants and the partners in charge of the implementation and construction of the plants. The responsibility of the organising partners ends when the third stage of the competition is finalised with the prize ceremony. The organising partners will however, actively support the project's implementation for a few years after the third stage of the competition is complete.

### **Publishing**

All – or at least some – of the proposals submitted to the competition will be published on the competition's website, in written documentation associated with the competition, on the websites of the organising partners or under other circumstances in which the organising partners may want to inform others about the competition and its results. Contestants accept by taking part in the first stage of the competition, that their proposals can be published. If this is not acceptable, notice must be submitted when the proposal is registered for the first stage. Publishing of proposals from stage 2 and 3 will be agreed jointly between the contestants and the organising partners.

### **Competition documents**

This competition document contains the programme for the competition. Facts and other information about the four potential implementation sites in Malmo harbour, Lund/Brunnshög, Bjuv and Oskarshamn are available at the competition platform



<http://www.climate-kic.org/events/open-innovation-urban-food-from-residual-heat/>. These documents are only to give participants a greater and more tangible idea of the objective associated with this competition. Full or partial solutions submitted to the competition by no means need to be “ready to roll-out” according to the site description documents. This is neither required nor expected at this early stage.

The first stage of the competition will run without interaction between the contestants and the organising partners or the competition secretariat. If contestants have questions about the competition they should e-mail the competition secretariat: [bengt.persson@slu.se](mailto:bengt.persson@slu.se) no later than 10 May 2017. Answers to such competition questions will be published on the competition website in batches. The last batch no later than 15 May 2017.

### Proposals

Proposals to the first stage of the competition must be submitted through [this form facilitated by Climate-KIC](#). Proposals must be in English, and they must be entered digitally by 16:00 CET on 2 June 2017 at the latest. All uploaded documentation must be marked with the name of the proposal.

The scope and content of proposal presentations for stage two and three will be decided by the organising partners and attached to the invitation to contestants progressing to stage two and three respectively.

### Judging

Judging of the proposals will be carried out by a group of representatives from the organising partners AtrinoVA/Municipality of Oskarshamn, Municipality of Bjuv, Climate-KIC ApS, E.ON Sverige, Ica Estates, Kraftringen, Municipality of Lund, The County Administration of Skåne, City of Malmö, Region Skåne, Sustainable Business Hub, Veolia Nordic and the Swedish University of Agricultural Sciences. The group may ask other experts to take part in the judging or to give their opinion on different aspects of the proposals.



The group will select contestants to be invited to a pitching event in Alnarp on 2-3 October 2017. Invitations will be sent out by 21 August 2017 at latest and a virtual boot camp will be arranged during September 2017 to prepare the invited contestants for the pitching event.

At the pitching event contestants will present their proposals to a panel of representatives from the organising partners and from partners which will be involved in the implementation and construction of the plants. The selection of contestants to be invited to participate in stage 2 of the competition will be made after the presentations at the pitching event.

### **Criteria**

The proposals will be judged according to the following criteria. Economic and technical feasibility are absolute demands for a winning proposal.

#### *Feasibility*

Technical feasibility  
Economic feasibility  
Replicability

#### *Innovation and genius*

Level of creativeness  
Level of innovativeness

#### *Use and function*

Functionality and attractiveness  
Form and design

#### *Social sustainability*

Creating social cohesion

Creating job possibilities