

TECHNOLOGY COMPETITION OF INTEGRATED SYSTEMS FOR HEATING AND VENTILATION IN SINGLE-FAMILY DETACHED HOUSES WITH ELECTRIC RESISTANCE HEATING

**Tender documents - Draft presented in connection with RFI
2025-10-13 before the technology competition**

UTKAST inför RFI

Contents

1.	BACKGROUND	4
2.	OBJECTIVE	4
3.	SCOPE.....	4
4.	WHO CAN SUBMIT A BID	4
5.	REQUIREMENT	4
6.	reference group	4
6.1	Active Reference Group Members	5
6.2	Project management and experts	5
7.	THE MISSION	5
8.	WHY PARTICIPATE?.....	5
9.	FORMAT AND CONTENT OF THE TENDER.....	6
10.	SUBMISSION OF TENDER	6
10.1	Formal submission requirements	7
10.2	Formal requirements for presentation.....	7
10.3	Questions regarding the tender	7
11.	OWNERSHIP, INTELLECTUAL PROPERTY RIGHTS, USER RIGHTS, CONFIDENTIALITY AND PATENT PROTECTION	7
12.	EVALUATION OF TENDER	8
12.1	Jury	8
12.2	Assessment criteria	8
12.3	Tender evaluation	8
13.	PrototypE AND TESTING.....	9
14.	ADDRESSES AND CONTACT PERSONS.....	9
15.	TIMELINE	9
16.	QUESTIONS.....	9

Appendix A: Specification of Requirements (final draft to be submitted)

Appendix B: Description of Demonstration House (draft to be submitted)

Appendix C: Profitability and Cost Calculation (to be submitted in connection with the implementation of the technology competition)

Appendix D: Checklist for presentation of tender (to be submitted in connection with the implementation of the technology competition)

Appendix E: Measurement Program for Evaluation (to be submitted in connection with the implementation of the technology competition)

Appendix F: Tender Form (to be submitted in connection with the implementation of the technology competition)

Appendix G: Life Cycle Analysis (to be submitted in connection with the implementation of the technology competition)

UTKAST inför RFP

1. BACKGROUND

The Swedish Energy Agency's contractor network for energy- and resource-efficient buildings, LÅGAN, together with the agency's stakeholder network for energy-efficient single-family houses, BeSmå, has identified a need for integrated systems for heating and ventilation in single-family detached houses with electric resistance heating and natural ventilation. This project aims to address that development need.

2. OBJECTIVE

The objective of a technology competition is to stimulate market-driven development. The current competition aims to accelerate the development of integrated solutions for heating and ventilation, with the goal of improving energy efficiency and indoor climate in single-family detached houses that use electric resistance heating and natural ventilation. The goal of the competition is to demonstrate new cost- and energy-efficient integrated systems for heating and ventilation in such houses.

These new systems should be able to be produced and assembled in a rational manner, be cost-effective, and have a low environmental impact from a life cycle perspective. Additionally, the systems should be robust, meaning they require minimal maintenance and have a low risk of damage.

3. SCOPE

This technology competition covers new cost- and energy-efficient integrated systems for heating and ventilation in single-family detached houses with electric resistance heating and natural ventilation.

The tender shall include the development of a prototype ready for full-scale production. The competition proposal shall thus include the design, planning, manufacturing and installation of the system.

4. WHO CAN SUBMIT A BID

This technology competition is an open international procurement. All interested parties are welcome to participate. We welcome bids from consortiums between several parties.

5. REQUIREMENT

The reference group for the technology competition has jointly formulated the functional requirements and other requirements that form the basis for this technology competition. The requirements are specified in their entirety in the attached Specification of Requirements, Appendix A. The requirements are divided into "mandatory" and "desired". The "mandatory requirements" must be met. The "desired requirements" are not necessary to be met, but fulfilling them has a positive effect on the assessment of the tenders.

A prerequisite for a tender to be accepted is that the tenderer has the qualifications to meet all stages of the technology competition, referring to the division of stages in chapter 12.3. This means that in addition to submitting a written tender, the tenderer must also have the capacity to carry out the design, manufacture and installation of the prototype in the demonstration building(s) to which the tender refers, and later be able to produce, deliver and install the system on an industrial scale in buildings with similar conditions.

Capacity means that the tenderer has good financial status and solvency, sufficient size and turnover to be able to take on a project of this size, experience from similar development projects and that the company has worked or works in accordance with a quality management system and/or environmental management system with associated procedures. It is also required that the tenderer has a suitable organization with access to the required key personnel.

6. REFERENCE GROUP

A reference group with representatives from the Swedish Energy Agency, the industry organizations Swedish Ventilation, SKVP (Swedish Cooling and Heat Pump Association) and Swedish Installation

Federation (Installatörsföretagen), the Swedish Homeowners Association (Villaägarna) as well as experts from RISE, Anthesis and CIT Renergy have produced the tender documents including the Specification of Requirements (Appendix A) and documentation on the demonstration houses (Appendix B).

The reference group members and the Swedish Energy Agency commit to promoting the new system being developed so that it receives a sufficiently large volume of orders, making it likely and credible for the manufacturers that the new product could achieve a market share of commercially interesting size.

6.1 Active Reference Group Members

The active members of the reference group have participated in the ongoing work of developing the specification of requirements and the tender documents. Provided that the winning product meets all the mandatory requirements, including an attractive price, they commit to ensuring that at least one test installation of the new product is carried out.

- Carl-Magnus Palmblad, Swedish Energy Agency
- Nils Johnson, Swedish Energy Agency
- Andreas Martinsson, Swedish Ventilation
- Malte Rungård, Swedish Homeowners Association (Villaägarna)
- Mattias Järvinen, SKVP (Swedish Cooling and Heat Pump Association)
- Björn Wettervik, Swedish Installation Federation

6.2 Project management and experts

The following people have participated as project managers and experts in development of the specification of requirements and the tender documents:

- Maria Jangsten, CIT Renergy (Project manager and expert)
- Åsa Wahlström, CIT Renergy (Project manager and expert)
- Charlotta Winkler, CIT Renergy (Project manager and expert)
- Kristina Landfors, Anthesis (Project manager and expert)
- Agneta Persson, Anthesis (Project manager and expert)
- Agnes Isaksson, Anthesis (Project manager and expert)
- Svein Ruud, RISE (expert)

7. THE MISSION

The tenderer shall develop, manufacture and present an integrated heating and ventilation system for single-family detached houses with electric resistance heating and natural ventilation. The new systems shall improve energy efficiency and the indoor environment in these houses.

The technology competition includes one or more different demonstration buildings. The system shall meet the requirements presented in the Specification of Requirements (Appendix A) and be adapted to the special conditions prevailing in the demonstration buildings. Tenders may be submitted for one or more of the demonstration buildings.

8. WHY PARTICIPATE?

There is no financial compensation offered for submitting a bid in the competition. However, participation offers other advantages such as:

- Finalists in stage 1 will be able to install their system in one or more demonstration houses.
- The winning company in stage 2 will be a pioneer in their industry and be recognized for its work with sustainable solutions.
- Through the stakeholder networks for energy-efficient single-family houses (BeSmå), a large portion of the country's small homeowners can be reached, and through the contractor network for energy- and resource-efficient buildings (LÅGAN), a large portion of the country's contractors and installation companies focused on energy-efficient housing can be reached.
- The members of the reference group will work to promote the use and wider dissemination of the winning system(s).
- Both the reference group and the Swedish Energy Agency will share information about the winning system(s) via articles in the trade press, social media etc.

The Swedish Energy Agency collaborates with several international organizations in the field of energy efficiency. The results from the technology competition will thus also be disseminated internationally, which may provide the opportunity to reach foreign markets.

9. FORMAT AND CONTENT OF THE TENDER

The tender concerns a designed, manufactured, and installed integrated system for heating and ventilation of single-family detached houses that meets the requirements specified in the Specification of Requirements (Appendix A) and is adapted to the specific conditions of each demonstration building (Appendix B).

Tenders may be submitted for one or several of the demonstration buildings.

The tender submission must be in writing and drafted in Swedish or English. Technical solutions and design must be presented using drawings, calculations, descriptions, and necessary illustrations.

The tender submission must follow the attached Specification of Requirements point by point. Assumptions and conditions must be clearly stated in the documentation. It should include the requested and any other necessary descriptions.

The tender submission must be neutral to ensure that the evaluation is conducted on equal terms for all tenderers. This means that each tenderer selects a code name for their tender. This code name is submitted in a sealed envelope without names or logos in the tender form found in Appendix F, which must also include company information. All other submitted documents must be marked with the chosen code name and be free from company names and logos.

The tender must include:

- The completed specification of requirements with checkmarks for fulfilled criteria (Appendix A)
- Supporting documentation for cost calculation (filled in cost report, Appendix C)
- Completed checklist (Appendix D)
- Completed tender form (Appendix F)
- Documentation regarding life cycle analysis (LCA) (completed LCA report, Appendix G)
- Drawings, descriptions, and calculations as required in Appendix A
- Other relevant documents for the technology competition

10. SUBMISSION OF TENDER

Tenders should be sent/delivered in sealed neutral envelopes to:

Regular letter

Courier mail (delivery address)

c/o X	c/o X
X Sweden	X Sweden

The tender must be received by XXX no later than 2026-xx-xx at 16:00. The tender must be marked: Technology Competition for Integrated Systems for Heating and Ventilation in Single-Family Detached Homes with Electric Resistance Heating.

Tenderers are allowed to submit multiple tenders. If a tenderer wishes to submit more than one tender, each must be submitted in a separate envelope.

10.1 Formal submission requirements

The following requirements must be met for the tender to be considered:

- The tender must be received before the deadline stated above.
- The tender form and reporting templates, as mentioned above, must be completed, meaning all requested information must be provided and/or commented on.
- The tender must be presented and submitted in a way that ensures the anonymity of the tenderer.
- The tender must be signed by an authorized company signatory.
- The tender must be submitted in writing in two (2) identical copies—one original and one (1) copy—as well as electronically (USB).
- Tenders submitted via email will not be accepted.
- The tender must include the annual report of the submitting company.

10.2 Formal requirements for presentation

All documents must be marked with the tenderer's code name to enable anonymous evaluation of the tender. The code name, chosen by the tenderer, must consist of 6 letters/numbers and be indicated in the lower left corner of every page of each set of submitted documents. The tender must be in writing and composed in Swedish or English.

10.3 Questions regarding the tender

It is possible to submit written questions during the tender period. Questions will be answered in writing on three occasions. The final dates for submitting questions are: xxxx, xx xx, and xx xx. Answers will be published on the websites of BeSmå (www.besma.se) and LÅGAN (www.laganbygg.se) no later than one week after each respective question submission deadline. Answers will also be sent to all parties who have registered that they have downloaded the request documentation.

11. OWNERSHIP, INTELLECTUAL PROPERTY RIGHTS, USER RIGHTS, CONFIDENTIALITY AND PATENT PROTECTION

As a government agency, the Swedish Energy Agency is subject to the principle of public access to official documents. This principle means that the public has the right to access documents received by the agency. For information in such documents to be kept confidential, there must be legal support for this in the Swedish Public Access to Information and Secrecy Act. Once a procurement process has concluded, submitted tenders are generally considered public. However, according to Chapter 8, Section 10 of the Secrecy Act, confidentiality applies to information in a tender that concerns the tenderer's business or

operational conditions, if there is specific reason to believe that the tenderer would suffer harm if the information were disclosed. If you believe that certain information in your tender should be kept confidential, you must specify which information and provide justification for how disclosure would cause harm. It is important to note that it is the authority—in this case, the Swedish Energy Agency—that decides whether information should be kept confidential, in accordance with the Secrecy Act.

Any application for patents, design protection, or trademark protection must be submitted before the tender is submitted.

The tenderer retains the intellectual property rights to their technical solution included in the tender.

12. EVALUATION OF TENDER

12.1 Jury

The tenders received will be evaluated by a jury consisting of representatives of the reference group (see chapter 6.1 above). The jury's work also includes selecting one or more winners. The jury reserves the right to co-opt experts they deem necessary for the tender evaluation process.

All tenders received may be rejected by the jury. The jury's decision cannot be appealed.

12.2 Assessment criteria

The Specification of Requirements (Appendix A) forms the basis for the assessment of submitted tenders.

The following criteria are used for the evaluation of the tenders:

- All “mandatory requirements” must be met
- Stability of the tenderer
- Availability of the tenderer on the market and production capacity
- LCC cost for the product referred to in the submitted tender
- LCA for the product referred to in the submitted tender
- Number of “desired requirements” that are met

The jury reserves the right to request additional documentation. This may, for example, apply to verification of performance, evaluated by an independent certified testing institute.

12.3 Tender evaluation

The evaluation will be carried out in the two stages described below.

Stage 1: In Stage 1, all written tenders received on time will be evaluated by a jury consisting of the reference group and appointed experts. This stage involves an assessment of the submitted tender documents. The evaluation will be based on the specification of requirements (Appendix A), profitability and cost calculation (Appendix C), life cycle analysis (Appendix G), and documents according to the checklist for tender presentation (Appendix D). Participants nominated as finalists in Stage 1 will be given the opportunity to install their system in one or more demonstration houses in Stage 2 of the technology competition.

Stage 2: In Stage 2, one or more complete system solutions installed in the demonstration buildings (Appendix B) will be evaluated in the field. The evaluation will be based on measurements taken during one heating season according to the evaluation measurement program (Appendix E), as well as verification of “mandatory” and “desirable” requirements as outlined in Appendix A. The jury will then

select one or more winners. The results will be published for national dissemination. Based on the test results, the final winner(s) of the technology competition will be announced.

The evaluation in Stage 1 will be based on a scoring system according to the table below, for tenders that meet all mandatory requirements and where the tenderer demonstrates good solvency, stability, market availability, and production capacity.

Evaluation criteria	Maximum number of points
Life cycle cost (LCC)	XX
LCA CO ₂ -emissions	XX
Number of “desirable requirements” met	XX
By how much “desirable requirements” are exceeded	XX
Total	100

13. PROTOTYPE AND TESTING

Follow-up measurements will be carried out after completion. The measurements will be carried out within and paid for by the technology competition. The measurements in the demonstration houses will be carried out according to Appendix E.

14. ADDRESSES AND CONTACT PERSONS

- Maria Jangsten, CIT Renergy, maria.jangsten@chalmersindustriteknik.se, 0723780775
- Kristina Landfors Anthesis, kristina.landfors@anthesisgroup.com,

15. TIMELINE

- Procurement timeline - *to be completed later*
- Time for installation in demonstration houses - *to be completed later*
- To be completed following a decision on continued funding from the Swedish Energy Agency - *to be completed later*

16. QUESTIONS

Until 2026-xx-xx, tenderers have the opportunity to submit questions. Questions must be submitted in writing by letter or email to the project group, c/o NN (see address above), or via email to xx.xx@xx.xx with a copy to xx.xx@xx.xx.

Received questions will be collected and answered on at least three occasions (see section 10.3). All submitted questions and answers will be published on the BeSmå website (www.besma.se) and the LÅGAN website (www.laganbygg.se), and will also be sent by post or email to all tenderers who have requested the tender documents.