

How can we estimate actual energy performance of heat pump systems in buildings for better design?

A webinar organized by

IEA Technology Collaboration Programme on Energy in Buildings and Communities (IEA EBC TCP)

and

Annex 88 'Evaluation and Demonstration of Actual Energy efficiency of Heat Pump Systems in Buildings'



Why this webinar is important and useful?

Many experts and policy makers may agree that heat pump is one of the most promising technologies for decarbonizing buildings. However, it seems that those engaged in the design and relevant standards of the heat pump systems have not obtained enough information on actual behaviour of the systems in order that we can certainly succeed in reducing energy consumption. For example, do we know how much energy efficiency (EER and COP) of the systems may be reduced under low part load ratio and how low the partial load ratio can be for heat sources? This webinar is to share such existing technical problems and the way to solve by Annex 88, an international collaborative R&D project.

About IEA EBC Annex 88

Home page: https://iea-ebc.org/projects/project?AnnexID=88

Overview with its objectives:

It is a 5-year project, which deals with state-of-the-art (Subtask A), testing methods for heat pumps (Subtask B1), monitoring methods and database (Subtask B2), energy use calculation methods especially for regulations (Subtask C) and design guidelines for practitioners (Subtask D). The state-of-the-art report is to be published in September 2024 and it includes current status and research plan of Annex 88. By using this opportunity, we hope to share the contents of the report.

Duration:

July 2022 - June 2027

Member countries:

Australia, Brazil, Canada, China, Germany, Italy, Japan, The Netherlands, Philippines

Collaboration with other IEA TCP: IEA HPT TCP (<u>https://heatpumpingtechnologies.org/</u>):

How to join:

Please contact national representatives for IEA EBC TCP (https://iea-ebc.org/contacts)





Programme (UTC/GMT time)

Part 1 | Thursday 24th October 2024

'Testing methods in laboratories and actual energy performance of heat pumps in buildings'

Coordinator: Prof Alberto Hernandez Neto (Subtask A Leader, Annex 88, Univ. of São Paulo, Brazil)

- 12:00-12:05 | Welcome and short introduction of IEA EBC TCP by Mr Meli Stylianou (Chair, IEA EBC TCP, Natural Resources Canada)
- 12:05-12:10 Welcome and short introduction of IEA HPT TCP
 by Dr. Caroline Haglund Stignor (Heat Pump Center, Secretariat, IEA HPT TCP, RISE, Sweden)
- 12:10-12:15 | Short introduction of IEA EBC Annex 88
 by Dr Takao Sawachi (Operating Agent, Annex 88, Building Research Inst, Japan)
- 12:15-12:25 | Overview of the report 'State-of-the-Art' published in September 2024
 by Prof Alberto Hernandez Neto (Subtask A Leader, Annex 88, Univ. of São Paulo, Brazil)
- **↓** 12:25-12:30 | Q&A
- 12:30-12:55 | Current and future testing methods of heat pump, problems and solutions to approach actual energy performance
 by Prof Niccolo Giannetti (Subtask B1 Leader, Annex 88, The University of Electro-Communications, Japan)
- 🖊 12:55-13:00 | Q&A
- 13:00 13:25 | Monitoring methods and data on actual energy performance of heat pumps in buildings by Prof Baolong Wang (Subtask B2 Leader, Annex 88, Tsinghua University, China)
- 🖊 13:25- 13:30 | Q&A
- End of Part1

Part 2 | Friday 8th November 2024

'Building energy calculation methods for heat pumps and developing design guideline'

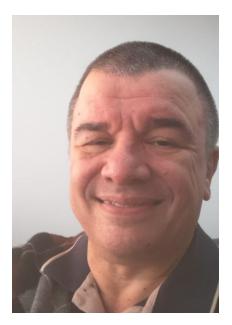
Coordinator: Prof Lu Aye (Subtask A Co-Leader, Annex 88, Univ. of Melbourne, Australia)

- 12:00-12:05 | Review of Part 1 on 24th October
 by Dr Takao Sawachi (Operating Agent, Annex 88, Building Research Inst, Japan)
- 12:05-12:30 | Current and future energy calculation standards for heat pumps by Mr Laurent Socal (Subtask C Leader, Annex 88, Consultant, Italy)
- 📥 12:30-12:40 | Q&A
- 12:40-13:05 | Current design guidelines of heat pumps in buildings and problems by Prof Lu Aye (Subtask D Leader, Annex 88, Univ. of Melbourne, Australia)
- 🖊 13:05-13:15 | Q&A
- 4 13:15-13:30 | Overall discussion
- ♣ End of Part 2 & Seminar





Speakers



Prof. Alberto Hernandez Neto Subtask A Leader, Annex 88, Professor at Univ. of São Paulo, Brazil



Mr. Meli Stylianou Chair, IEA EBC TCP, Natural Resources Canada



Dr. Caroline Haglund Stignor Heat Pump Centre, Secretariat, IEA HPT TCP, RISE, Sweden



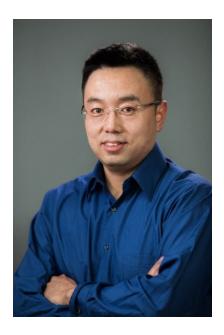
Dr. Takao Sawachi President, Building Research Institute, Japan







Prof. Niccolò Giannetti Subtask B1 Leader, Annex 88, Associate Professor at The University of Electro-Communications, Japan



Prof. Baolong Wang Subtask B2 Leader, Annex 88, Associate Professor at Tsinghua University, China





Prof. Lu Aye Subtask D Leader/Subtask A Co-leader, Annex 88, Professor at Univ. of Melbourne, Australia

Mr. Laurent Socal Subtask C Leader, Annex 88, Consultant, Italy





Cost and registration

Participation to the webinar is free but requires you to register for the event. The webinar will be limited to a maximum of 1000 persons. To register, please click on the "Register" button above.

What is a webinar?

A webinar is a conference broadcasted on internet. To follow a webinar you must have a computer with a sound card and speakers or headphones. Once logged in the "webinar room", you will be able to see the slides of the presentation and to hear the panelists' comments. You will also be able to ask written questions to the speakers, and to answer on-line surveys.

Hardware, software

Our webinars are powered by WebEx. The only thing you need is a computer with a sound card and speakers. Before you can log in the "webinar room", WebEx will install the required application. If you are not a WebEx user, please visit: <u>https://help.webex.com/en-us/article/8l0y08/Join-a-webinar</u> to check the system requirements and be informed on how to join a webinar. Please also join the event at least 10 minutes in advance.

About IEA EBC

In recognition of the significance of energy use in buildings, in 1977 the International Energy Agency (IEA) has established a Technology Collaboration Programme on Energy in Buildings and Communities (EBC). The function of EBC is to undertake research and provide an international focus for building energy efficiency. Tasks are undertaken through a series of 'Annexes', so called because they are legally established as annexes to the EBC 'Implementing Agreement'.

The largest benefits arising from participation in EBC are those gained by national programmes, such as leverage of R&D resources, technology transfer, training and capacity-building. Countries lacking knowledge can benefit from the experiences of those with more expertise, thereby avoiding duplicated research efforts. In particular, countries can most easily realise the benefits of participation if their own experts have taken part in projects and have assisted in producing deliverables taking into account their national requirements and priorities.

At an individual level, the EBC Programme allows researchers and experts funded by national programmes and industry to pool their collective expertise to produce high quality project outputs. By taking part in the projects, they create and reinforce their own technical networks, the benefits of which remain long after the particular project has formally ended. This does not happen quickly, but over the course of three to five years, these networks of expertise become established as excellent international channels of communication.

EBC has currently 26 member countries. All member countries have the right to propose new projects, and each country then decides whether or not to participate on a case by case basis. Most EBC projects are carried out on a 'task shared' basis, in which participating organisations arrange for their own experts to take part. Certain projects are 'cost shared' in which participants contribute funding to achieve common objectives.

The webinar is facilitated by INIVE (<u>www.inive.org</u>).