Bundesministerium
Klimaschutz, Umwelt,
Energie, Mobilität,
Innovation und Technologie

IEA Forschungskooperation
im Rahmen von open4innovation

FFG
Forschung wirkt.

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

Annex 51 Overview

Webinar IEA HPT Annex 51

30.11.2020, 14:00 – 15:30

Ch. Reichl for the IEA HPT Annex 51 team

Acoustic Signatures of Heat Pumps
IEA HPT Annex 51

IEA HPT

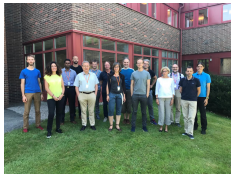
iea Energy Technology Network
Technology Collaboration Programmes

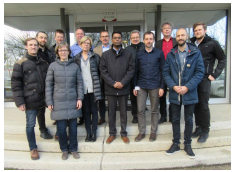
CONTENT

1 INTRODUCING THE IEA HPT ANNEX 51

Acoustic Signatures of Heat Pumps

THE IEA HPT ANNEX 51 TEAM





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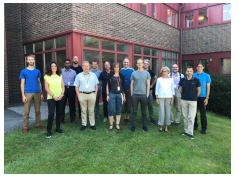

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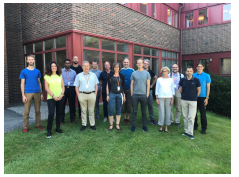

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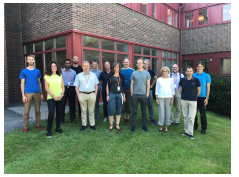

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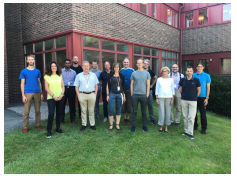

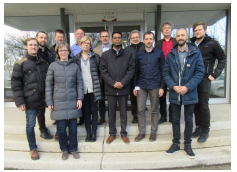

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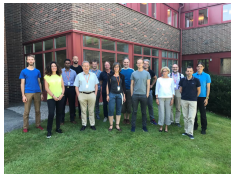


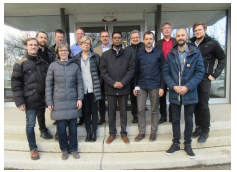


Image from 30 Jahre World Wide Web: Vom Weltverbinder zum Ungeheuer | ligital

BACKGROUND IN THE **LEGAL TEXT**

Reduction of acoustic emissions and the transient behaviour of acoustic signatures during different operating conditions (e.g. icing, de- frosting, capacity control, cooling mode) is important to further **increase the acceptance of heat pumps** as air-to-water, water-to-air and air-to-air units (referred to as "units" in the following text. Depending on the source used, noise is an indoor-only issue for the end user and/or an outdoor issue, for the neighbour … ive, both **new and retrofit markets** are important to be considered, a … ient and effective way to exploit the potential energy savings.

Increase the acceptance of heat pumps!

Acoustic emissions have to be accessed i … the **component level** (e.g. low noise components:fans and compressors), the **unit level** (combining the components, unit control, transient acoustic features), and the **application level** (building/neighbourhood, including smart grid, **psychoacoustic effects** & acoustic propagation). Furthermore, **Education & training** are very important aspects in heat pump acoustics (placement, noise reduction measures, modes of control & operation) so that bad installations will not go against good acoustic design and construction of the units. As the current legislation is globally very diverse (also serving the needs of the different locations & countries), the Annex is structured to contribute to **guidance and future standards** in this field.

PARTICIPATING COUNTRIES AND TASKS

Task 1: *Legislation and standards*

Task 2: *Definition of heat pump units to be covered by the study / testing*

Task 3: *Identification of noise at component and unit levels and noise control techniques*

Task 4: *Analysis of the effect of operating conditions of heat pumps on acoustic behaviour*

Task 5: *Heat pump installation and effects on surrounding environment*

Task 6: *Improved measuring and description of the acoustic performance*

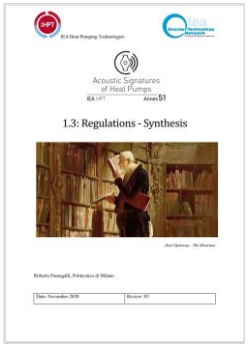
Task 7: *Diffusion & dissemination of information; Guidelines, Education material, Recommendations for different user groups*

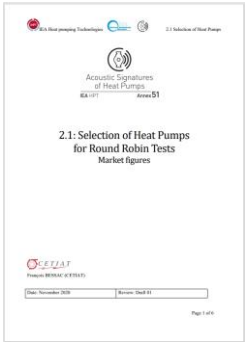
2 DOCUMENTS FOR FREE DOWNLOAD

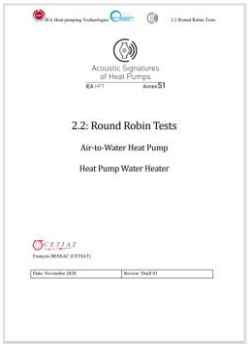
Content of the IEA HPT Annex 51 website

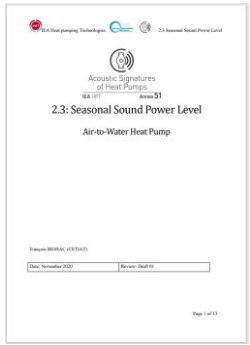
AVAILABLE DOCUMENTS

- **Deliverables**
  - Task 1.0 - **Introduction**
  - Task 1.1 - **Measurement Techniques**
  - Task 1.2 - **Regulations - Countries overview**
  - Task 1.3 - **Regulations - Synthesis**
  - Task 2.1 - **Selection of Heat Pumps for Round Robin Tests**
  - Task 2.2 - **Round Robin Tests - Air-to-Water Heat Pump**
  - Task 2.3 - **Seasonal Sound Power Level**



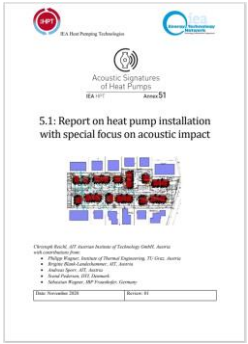


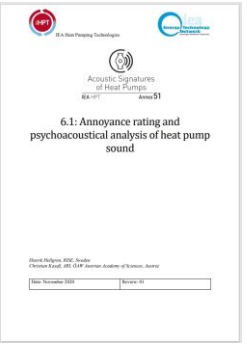




AVAILABLE DOCUMENTS

- **Deliverables continued**
  - Task 3 - **Overview on Heat Pump Component Noise and Noise Control Techniques**
  - Task 4 - **Analysis of the Effect of Operating Conditions of Heat Pumps on Acoustic Behaviour**
  - Task 5.1 - **Report on heat pump installation with special focus on acoustic impact**
  - Task 6.1 - **Annoyance rating and psychoacoustical analysis of heat pump sound**
- **Presentations at the ICR2019**
- **Some national documents**





3 TODAYS WEBINAR CONTENT

What will we focus on today?

TODAYS WEBINAR CONTENT

- **European Legislation and Standards**
  Roberto Fumagalli (Polimi, Italy)
- **Noise and seasonal variations based on interlaboratory results**
  Francois Bessac (CETIAT, France), Thomas Gindre (ISE, Germany)
- **Effect of different heat sinks and operation modes**
  Kamal Arumugam (DTI, Denmark)
- **Transient noise of heat pumps**
  Thore Oltersdorf, ISE Germany
- **Heat pump installation and effects on surrounding environment**
  Christoph Reichl (AIT, Austria)
- **Annoyance rating and psychoacoustical analysis of heat pump sound**
  Henrik Hellgren (RI.SE, Sweden)

Acoustic Signatures of Heat Pumps

IEA HPT Annex 51

LET‘S START!

Christoph Reichl for the Annex 51 team

30.11.2020