View on LCA by the Heat Pump sector
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Who is EHPA and what do we work on?

Our Vision: to put heat pumps at the centre of the energy system by communicating their benefits, providing relevant information and being a reference point and integrator to all stakeholders.

Our Mission: In a fully decarbonised Europe, heat-pump technologies contribute as a heating and cooling solution, being a core enabler for a renewable, sustainable and smart energy system. While integrating multiple energy sources, bridging the electric and thermal sector on a local and regional level (micro grids, DHC). Heat pumps are easy to install and widely used in all thermal applications (buildings, transport, white goods) and industrial processes. Refrigerants and other components are available in sufficient quantities.
Where are we now in terms of deployment?

By the end of 2019, a total of 13.27 million heat pump units have been installed in the 21 countries covered by this report. This is a plus of 17.7% or 1.49 million units over 2018. The leading markets continue to be France, Italy and Spain. Together they are responsible for more than half of the annual heat pump sales in Europe.

Most remarkable – France is now close to a 10-year growth path and continues to be the engine for further growth. The Netherlands has declared its aim to become “gas free” in residential heating, the UK has announced a ban of oil and gas boilers in new buildings, Ireland has put heat pumps at the corner of its efforts in decarbonizing the building stock. Even those countries that have no specific policy in place see a positive market development.
What we see as future deployment?

• Quadrupling the number of installed Heat Pump units per sector, particularly in renovation and industry (48 million HPs)

• A process that requires an in-depth analysis of the entire Heat Pump lifecycle (HP LCA). This means exploring new technologies, processes and approaches in the areas of: demand, design, manufacturing, installation, maintenance & operation, as well as replacement & upgrading.
## 1 Demand (user)

- **a) User perception (new buildings, renovation, industrial)**
- **b) Communication strategy (new buildings, renovation, industrial)**
- **c) Demo sites (new buildings, renovation, industrial)**
- **d) One Stop shops (new buildings, renovation, industrial)**
- **e) Innovative business models**
- **f) Sector coupling and flexibility**

### Affordability
- Flexible controls to fit to electricity grid needs
- Availability of trained installers at reasonable prices

### Training for installers
- They create demand too
- Persuasive communication on heat pump advantages
- Energy efficiency and financial analysis
- For commercial and industrial users, making the system design and selection easy

### Privacy
- Where heat pumps can be complemented with PV and other EES in designing systems for houses

### Remote Diagnostics
- In communication strategy, we need to think beyond residential — adapt our messaging for commercial/industrial users tool

### Reliability
- Industrial - vertical market communication strategy

### Use of new heat sources (e.g., sewage water)
- Low carbon, air quality, flexibility for storage support to the grid, and more

### Role of social housing corporations in encouraging existing buildings
2 Design

a) Modularity
b) Circularity
c) Ease of use
d) Hyper efficiency
e) Easily connected to other technologies & storage mediums
f) Health and ergonomics
3 Manufacturing

- Advanced computer modelling and simulations
- Mass production & 3D printing
- Integrated connectivity
- Standardization of components and connectors
- Supply chain resilience
- Upgrading the skills of manufacturing personnel

We need a lot more capacity for manufacture of heat pumps and related thermal storage. It’s not just R&D funding required but also funding on for more manufacturing.

Innovation on rapid manufacturing tools.
4 Installation

a) Skill certification and up-skilling of installers
b) Plug and play software and hardware
c) Ease of installation and adaptability to location/requirements

- Premade building parts including heat pumps or parts of the heating/cooling system
- Digital support tools - step by step aids, checklists etc
- How to install in multifamily buildings where one owner wants to start
- We need more installers to meet future targets on installations
- Commissioning tools ie apps for balancing of heating systems
- Installation Other?

- Easy to be installed HP systems = predefined, few components, pre-sized
- We need to make products that by just reading the manual a gas installer can install.
- How to validate that the installation is correct to avoid future problems including efficiency/comfort issues
- Ease of specification & commissioning
- Tools to help assess insulation & ventilation needs, esp. in retrofit
5 Maintenance

- Easy to use and understand UI
- IoT data gathering and cloud connectivity
- AI algorithms for optimization
- Software updates and remote diagnostics
- Easy to understand status reporting
Replacement & upgrading

a) Heating and cooling as a service
b) Integration with other technologies/energy resources (e.g. EVs, Thermal/electrical storage, Solar PV, Waste heat recovery, Geothermal etc)

Yes this will drive the Market
Advice / elect on when and why and how to replace / upgrade
Disposal and recycling strategy
What are the future steps?

• We need to look at the timelines needed, funds, other projects to collaborate with (that are already running) as well as setting up new ones that tackle the different areas identified

• EHPA R&I Committee

• All will go into the RHC HP TP SRIA
Thank you

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