

German-Japanese Expert Workshop on Waste Heat Utilization Summary of Results

For mastering the energy transition and reaching 'net zero', it is crucial to minimize the consumption of finite resources and to move away from the dependence on fossil fuels. In this regard a wide variety of measures are being developed and promoted. So far, however, little notice has been taken of the use of waste heat, which is a huge untapped energy source and offers enormous advantages for many different users. Even though waste heat is generated as a by-product in almost all technical processes, it is often lost without being utilized. This reduces the overall energy efficiency of technical processes, since a significant part of the thermal energy is wasted, leading to unsustainable processes. In order to exchange information on political instruments, innovative technologies as well as processes, and to identify cooperation projects, 34 experts from Japanese and German industry, research institutes and administration gathered at the Gas- und Waermeinstitut e.V. in Essen (Germany) on February 27, 2023 for a one-day workshop.

The workshop was divided into three sessions, with Q&A and discussion at the end of every session. The first session provided information on the status and outlook of waste heat utilization in Germany and Japan, focusing among others on the political framework of both countries. The implementation and utilization of waste heat sources in different sectors was discussed in the second session, while the necessary infrastructure for waste heat utilization was the topic in the last session. In the concluding panel discussion, the following take-aways were identified:

- One of the biggest challenges is that society is running out of time to achieve CO₂ neutrality. However, innovative waste heat concepts can help to accelerate the sustainable heating transition worldwide.
- The panelists are optimistic that heat pumps will be used more often soon and that they are a step in the right direction. For a fast roll-out and implementation, heat pumps must become more economically viable. Also process adjustments are necessary so that also the lowest waste heat temperatures can be handled.
- In general, it is crucial that supplied temperature levels are matched with the demand.
- Policies in both countries must become a driver of waste heat utilization as companies will not use solutions if it does not come with a benefit for them financially or in another way. Thus, frameworks and regulations must be built to make waste heat utilization economically worthwhile.

Further, to get a first-hand impression of innovative technologies and concepts for waste heat utilization in Germany, 15 representatives of Japanese industries, research and administrative bodies visited innovative waste heat utilization projects in the Rhine-Ruhr area and Lower Saxony in the steel production and food industry following the workshop.

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