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Institute for Energy Efficiency in Production EEP

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eat accumulator heat pumps exhaus ecarbonica hermal process optimisation Indu Thermal insulation

Bi-monthly Open Discussion Forum

Heating and Cooling Efficiency – Harnessing Untapped Potential for Resilience and Net-Zero Goals

> Dr. Stefan M. Buettner

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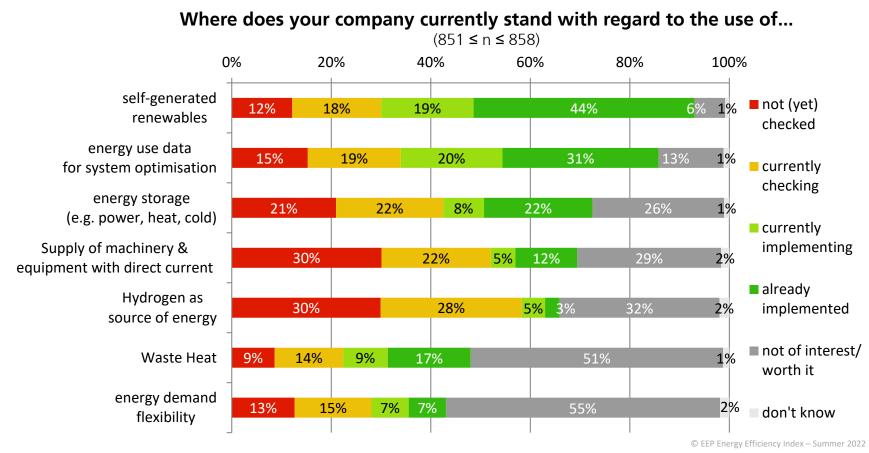
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Where do companies stand in the use of different approaches to systemic resilience?

Alleged lack of information leads to blatant misjudgement - problematic in view of gas emergency.



Source: EEP Energy Efficiency Index - Summer 2022

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Awareness level savings potentials of crosssectional technologies

100%

No

The majority of companies have no knowledge of their energy saving potentials in the cross-sectional technologies used

Do you know the percentage energy savings potential* in your company for these crosssectional technologies? (n=643, n'=3851)

50%

5%

17%

75%

50%

38%

0%

Lightning

Compressed

Air

25%

45%

45%

Do you know the percentage energy savings potential* in your company for these crosssectional technologies? (if technology available, n=643, n'=3077) 0% 25% 50% 75% 100% Lighting Compressed Air **Pump Systems** No Cooling Systems Yes

Pump 46% 21% 33% Systems Do not have Cooling technol 42% 32% 26% **Systems** ogy Yes Heat Supply Heat Supply 19% 35% 47% Ventilation Ventilation 52% 26% 22% Systems Systems © EEP Energy Efficiency Index – 2021/1 © EEP Energy Efficiency Index – 2021/1 Source: Energy Efficiency Index of German Industry: 2021/1, EEP(2021) *with the same output/utilisation ratio, i.e. efficiency increase

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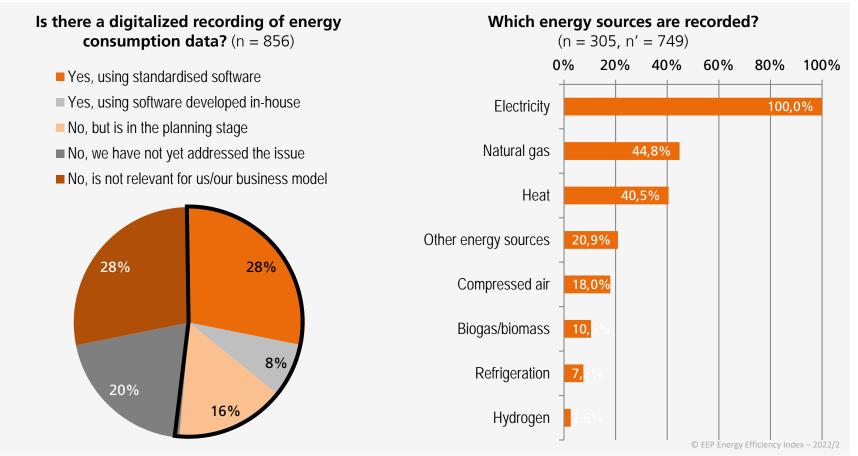
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Digitalization as an energy-saving measure

Digitized monitoring of energy consumption can offer efficiency potential – too few companies do this apart from than electricity



Source: EEP Energy-Efficiency-Index - EEI 2022/2

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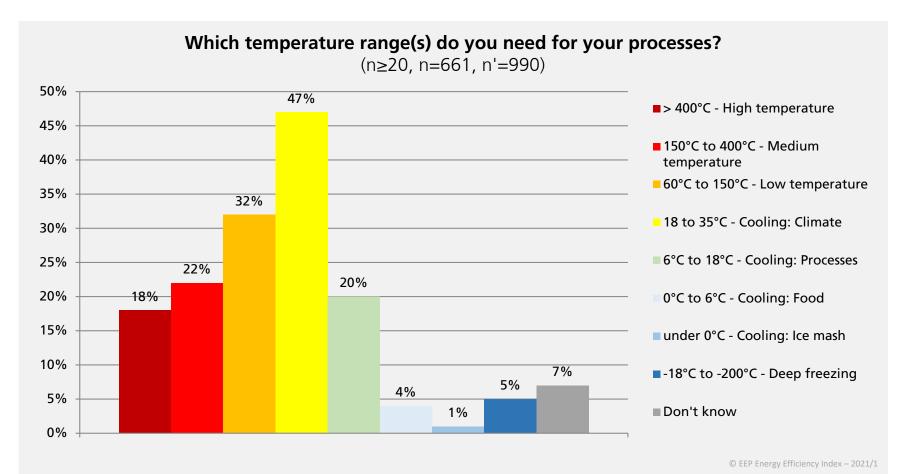


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The temperature ranges between 18°C and 35°C (climate cooling) are needed most often – will this increase with warming climate?



Source: Energy Efficiency Index of German Industry: 2021/1, EEP(2021)

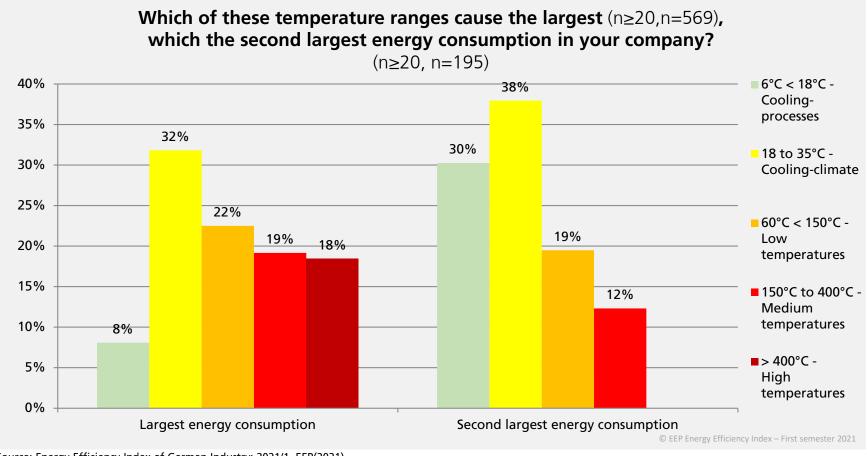
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Clmate cooling most often causes the highest energy consumption across companies – but....



Source: Energy Efficiency Index of German Industry: 2021/1, EEP(2021)

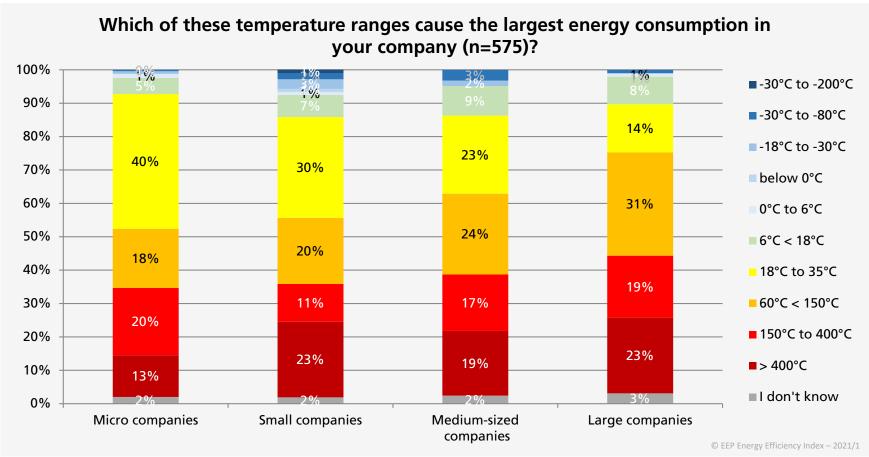
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The larger the company the more often low temperature processes (60-150°C) lead to the highest energy use



Source: Energy Efficiency Index of German Industry: 2021/1, EEP(2021)

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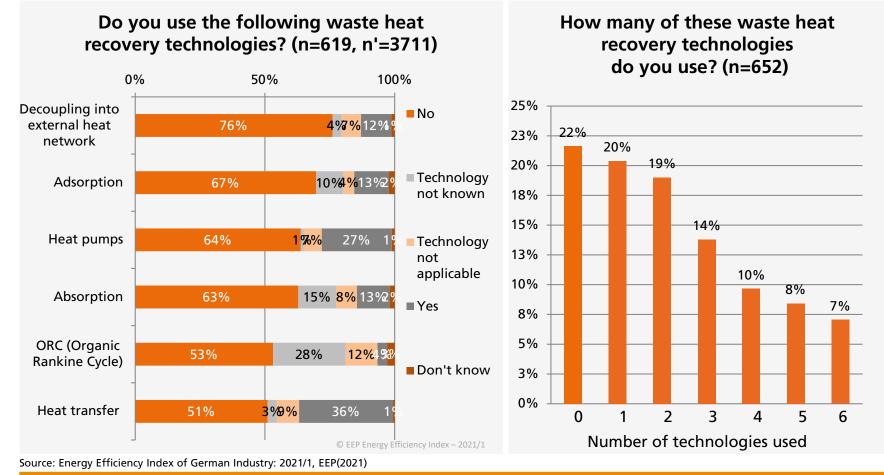
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Use of waste heat recovery technologies

22 % of companies do not yet use waste heat recovery technologies heat exchangers and heat pumps are currently the frontrunners



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The challenge of heating/cooling efficiency



The challenge of heat/cooling efficiency

Key challenges are the regulatory requirements as well as access to financing

What do you see as the challenges for higher heating/cooling efficiency? (n=625, n'=5622) 0% 20% 40% 60% 80% 100% Regulatory or planning requirements 25% 6%2% 15% 26% 26% No challenge Financeability or 27% 20% 21% 25% 5%3% access to finance Small Knowledge, complexity & 21% 19% 37% 16% 5%2% challenge availability of funding opportunities No capacity for 24% 21% 5%2% 31% 15% planning/implementation Medium challenge Internal organisation & prioritisation 24% 23% 34% 13% 4%2% Availability of market-ready Big 36% 17% 32% 12% 2% technical solutions challenge Knowledge of appropriate technical 34% 31% 11% 22% 20% solutions and their potential Very big challenge Availability of equipment for 9% 02% 36% 18% 29% measurement and performance... Availability of service providers ■ Don't know 8%1%% 48% 22% 18% with heating/cooling expertise © EEP Energy Efficiency Index – 2021/1

Source: Energieeffizienzindex der deutschen Industrie: 2021/1, EEP(2021)

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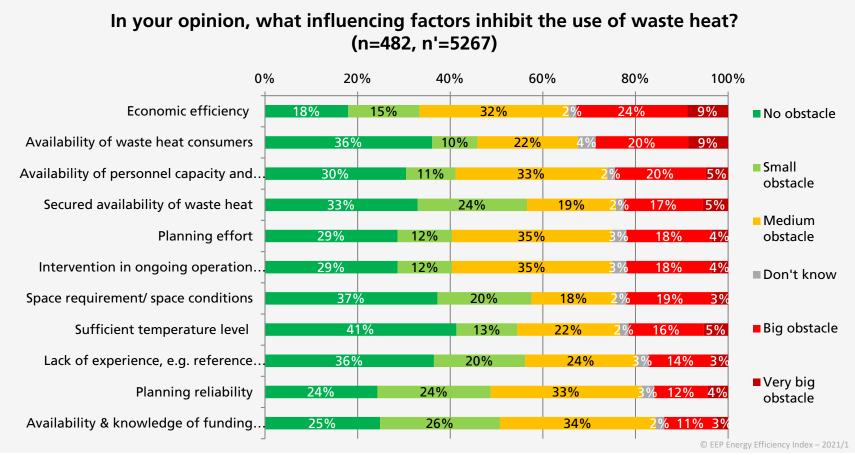


Which influencing factors inhibit the use of waste heat?



Barriers to waste heat utilization

The biggest barriers to waste heat recovery are the economics and availability of waste heat consumers



Source: Energy Efficiency Index of German Industry: 2021/1, EEP(2021)

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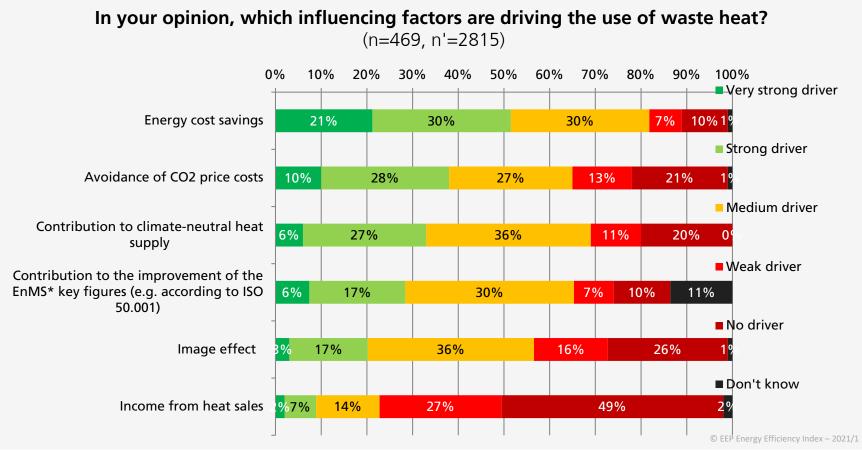
Which influencing factors drive the use of waste heat?



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Drivers of waste heat utilization

The use of waste heat is primarily driven by energy cost savings and the contribution to a climate-neutral heat supply



Source: Energy Efficiency Index of German Industry: 2021/1, EEP(2021)

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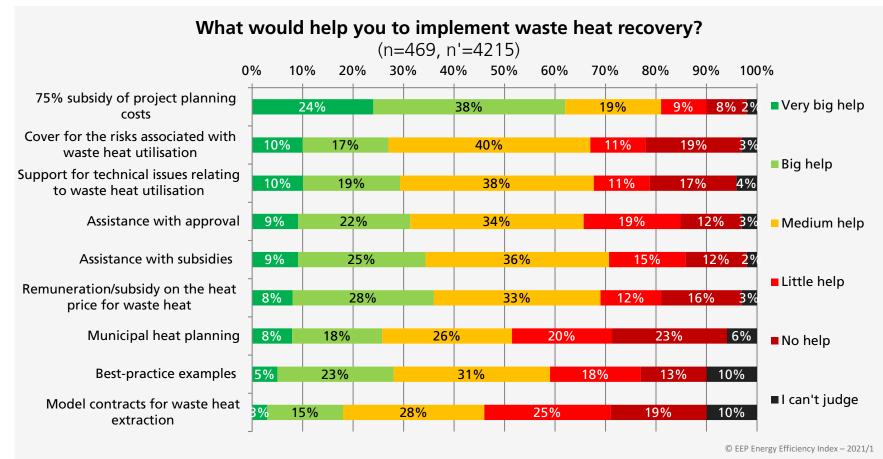
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What helps with the implementation of waste heat recovery?

For the utilisation of waste heat potentials, the participating companies see a subsidy for project planning costs as the greatest help



Source: Energy Efficiency Index of German Industry: 2021/1, EEP(2021)

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Thank You!



Dr.

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