

Lösungen nach Maß.  
Begeisterung inklusive.  
Österreichweit.

**kelag**  
Energie & Wärme

# District Heating by Heat recovery from the Brewing Process of the Brewery Puntigam

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Graz, October 4, 2018

## About US

Introduction  
„Brau-  
quartier“

Heat  
Source

Heat  
Supply

Conclusion

Facts and  
Figures  
Operating  
Locations

# Facts and Figures of KELAG Energie & Wärme

**20**

**Millions €**

investment in property

about

**900**

**Heating centers**

Operated in Austria  
and Slovenia.

about

**436.000 Tonns**

**CO<sub>2</sub>**

Are safed due to district heating

**220**

**Employees**

Distributed in Austria

1,8

**Billions**

**kWh**

Supplied to customers

**78**

**District heatings**

Operated in Austria  
and Slovenia.

**153**

**Millions €**

Revenues

about

**820**

**Kilometer**

of heat distribution pipes

more than

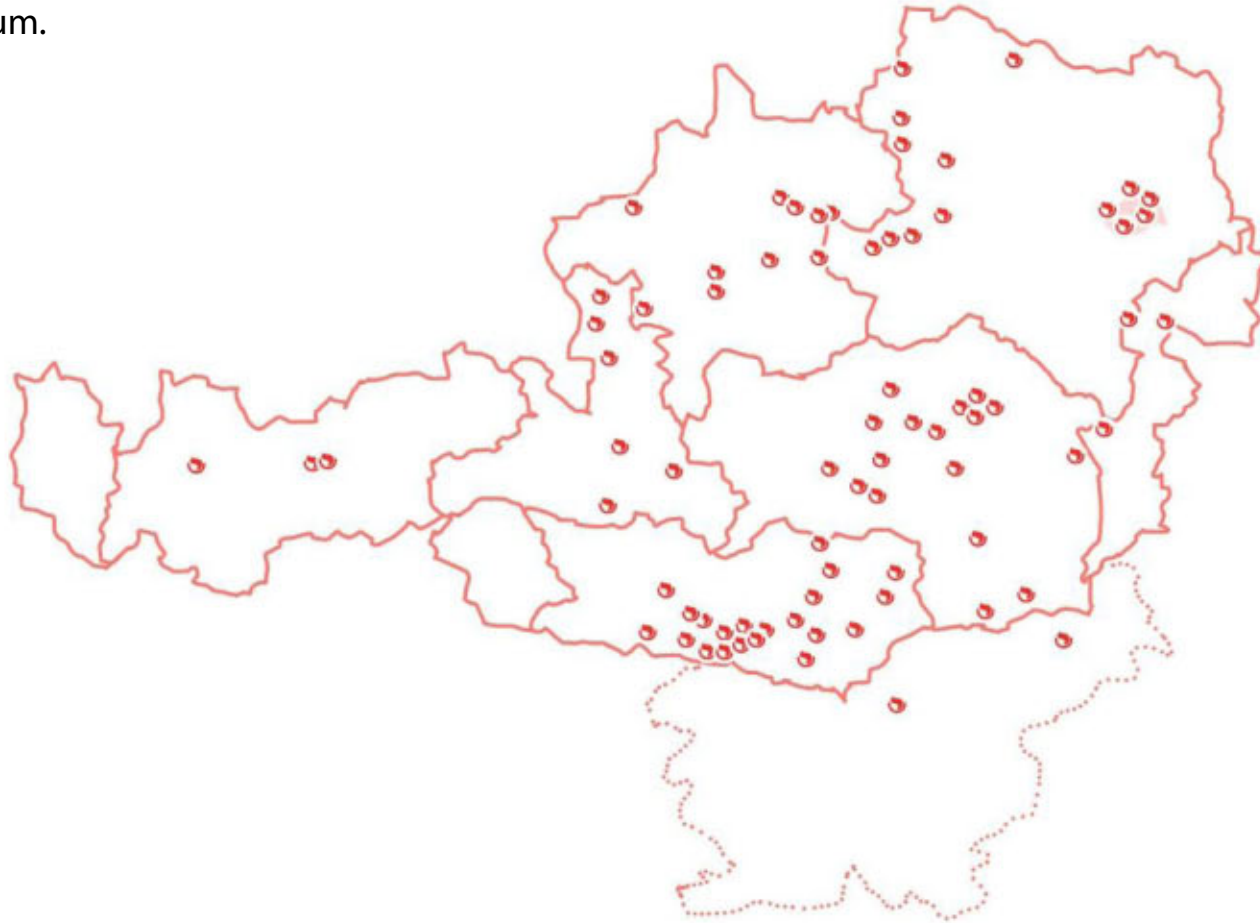
**50**

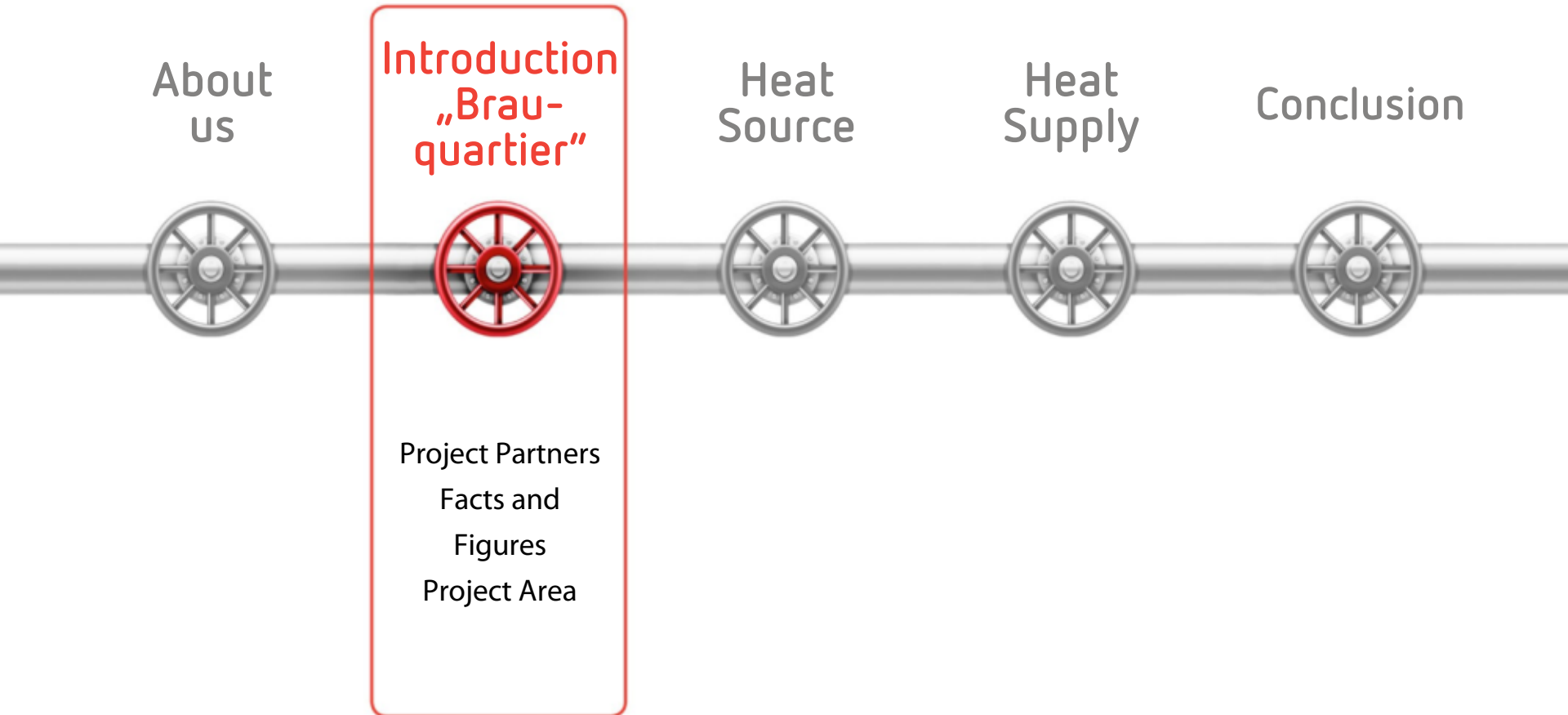
**years of  
experience**

and Kow-how.

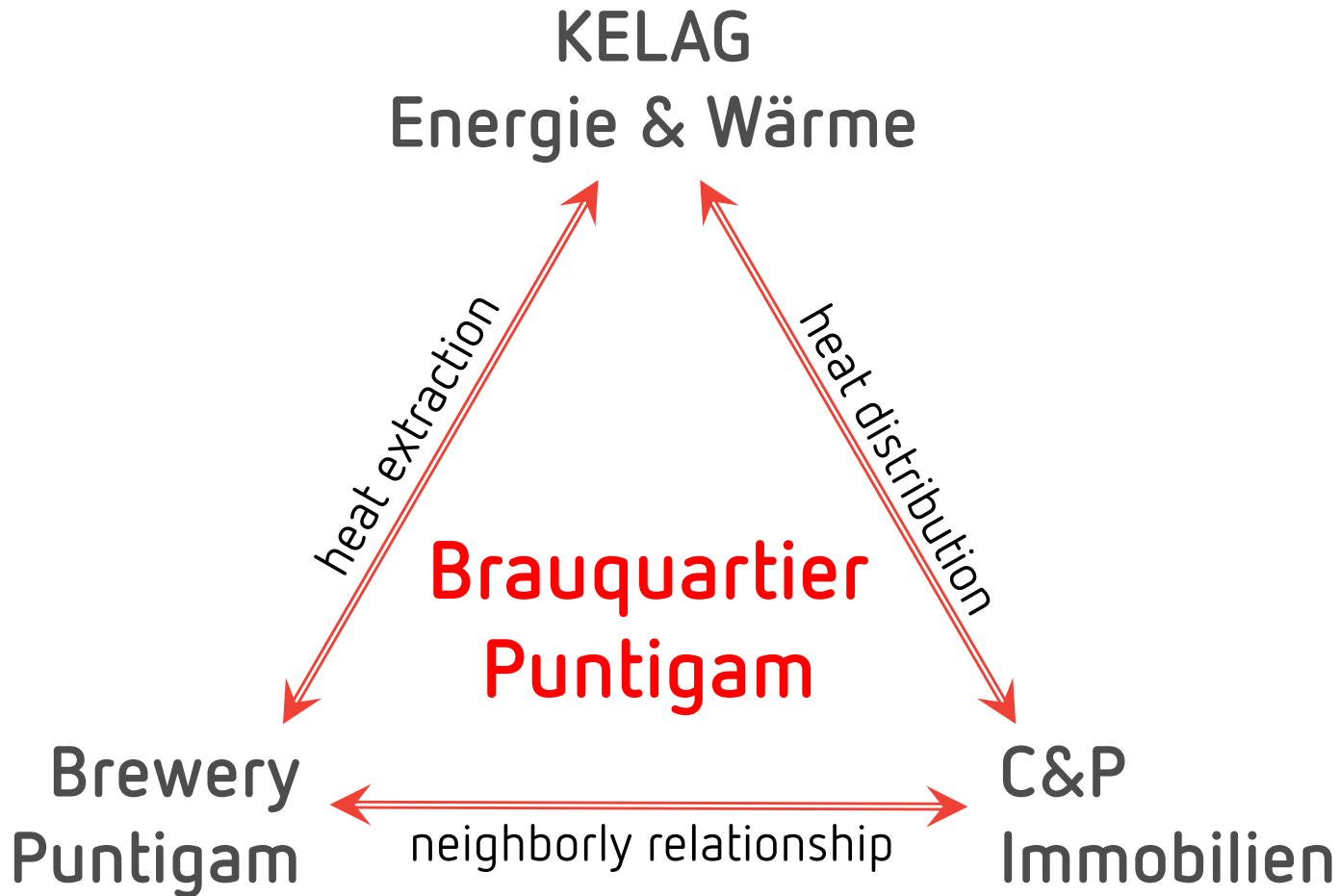
# District heating networks in our responsibility

Our operating locations are in Villach, Graz, Vienna, Linz, Grödig and Rum.





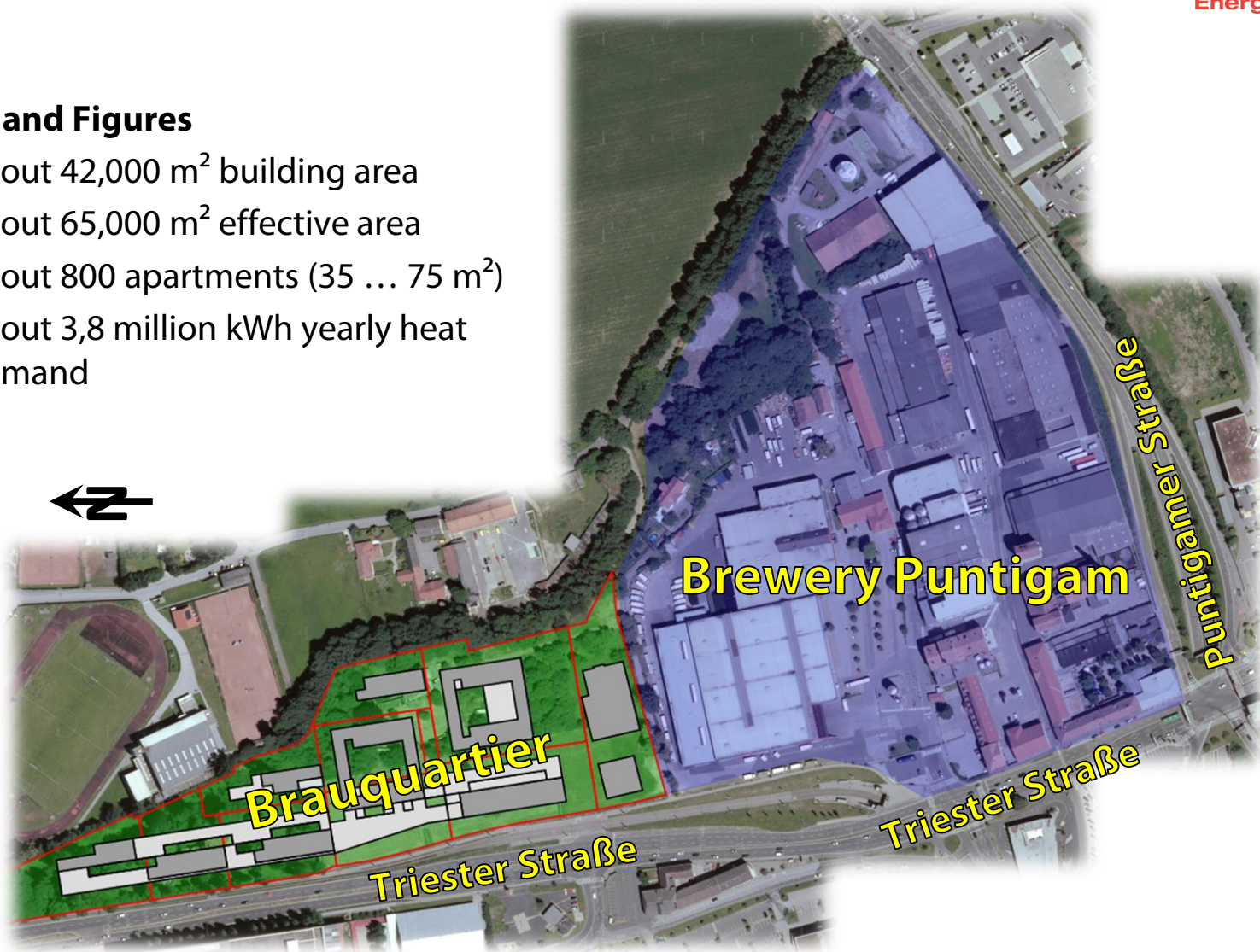
# The Project „Brauquartier Puntigam“



# The Project „Brauquartier Puntigam“

## Facts and Figures

- about 42,000 m<sup>2</sup> building area
- about 65,000 m<sup>2</sup> effective area
- about 800 apartments (35 ... 75 m<sup>2</sup>)
- about 3,8 million kWh yearly heat demand



# The Project „Brauquartier Puntigam“



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# Topic Overview

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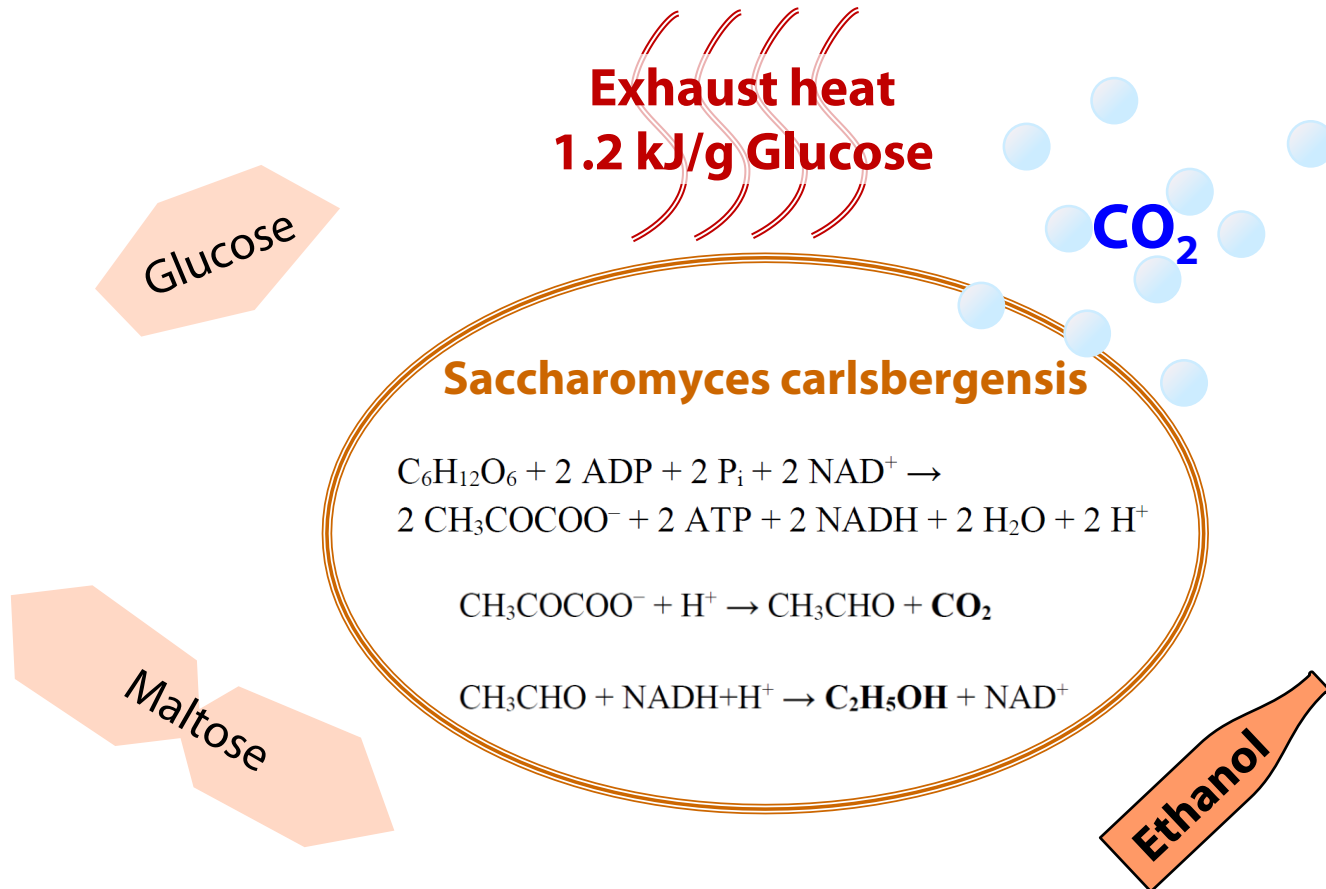
**Heat  
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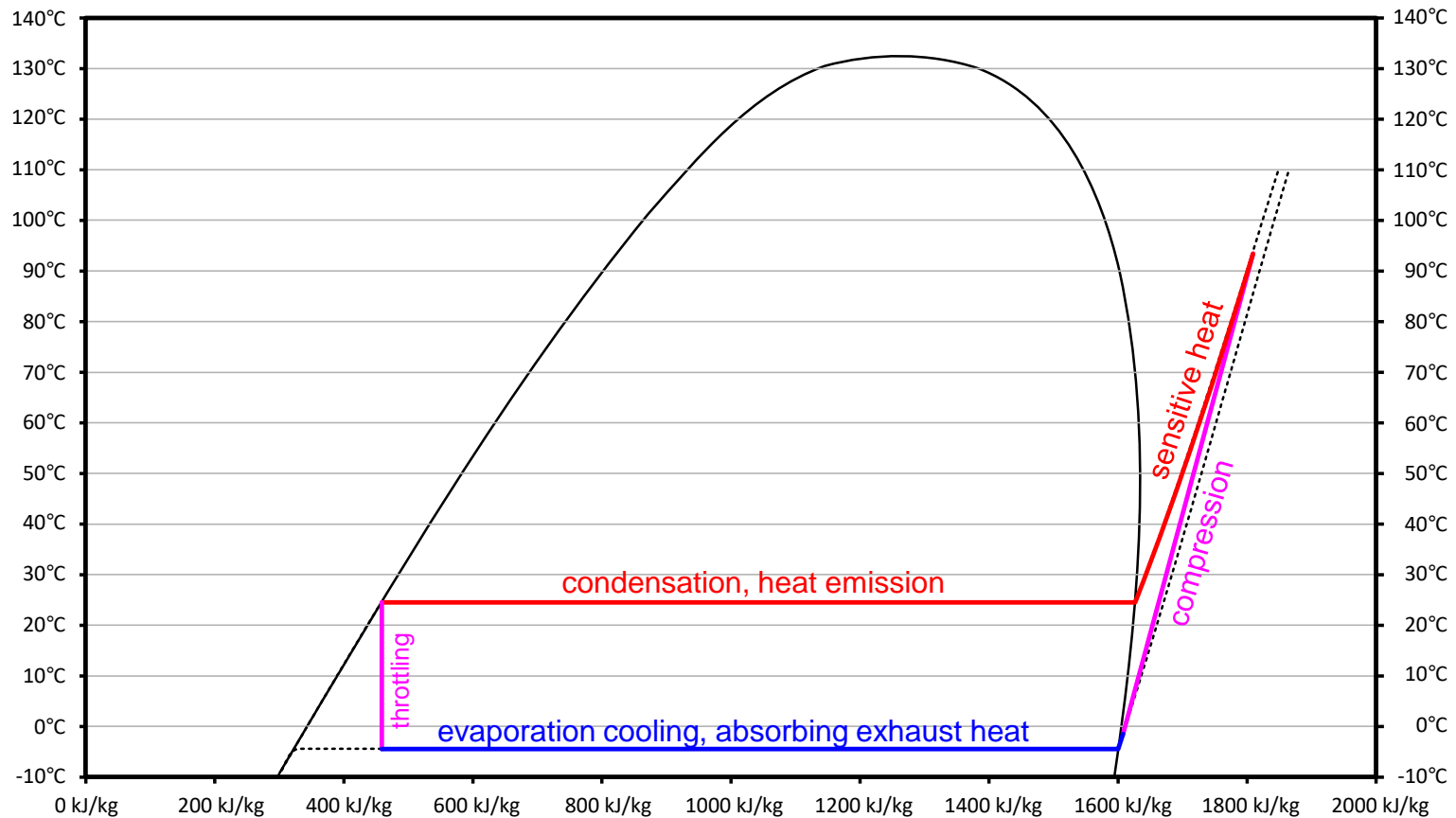
Fermentation of  
beer wort  
Byproduct heat  
NH<sub>3</sub>-Cycle

# The Puntigamer Brewery as a Heating Plant



# The Puntigamer Brewery as a Heating Plant

## T/h diagram of the NH<sub>3</sub>-Cycle of the brewery Puntigam



# The Puntigamer Brewery as a Heating Plant



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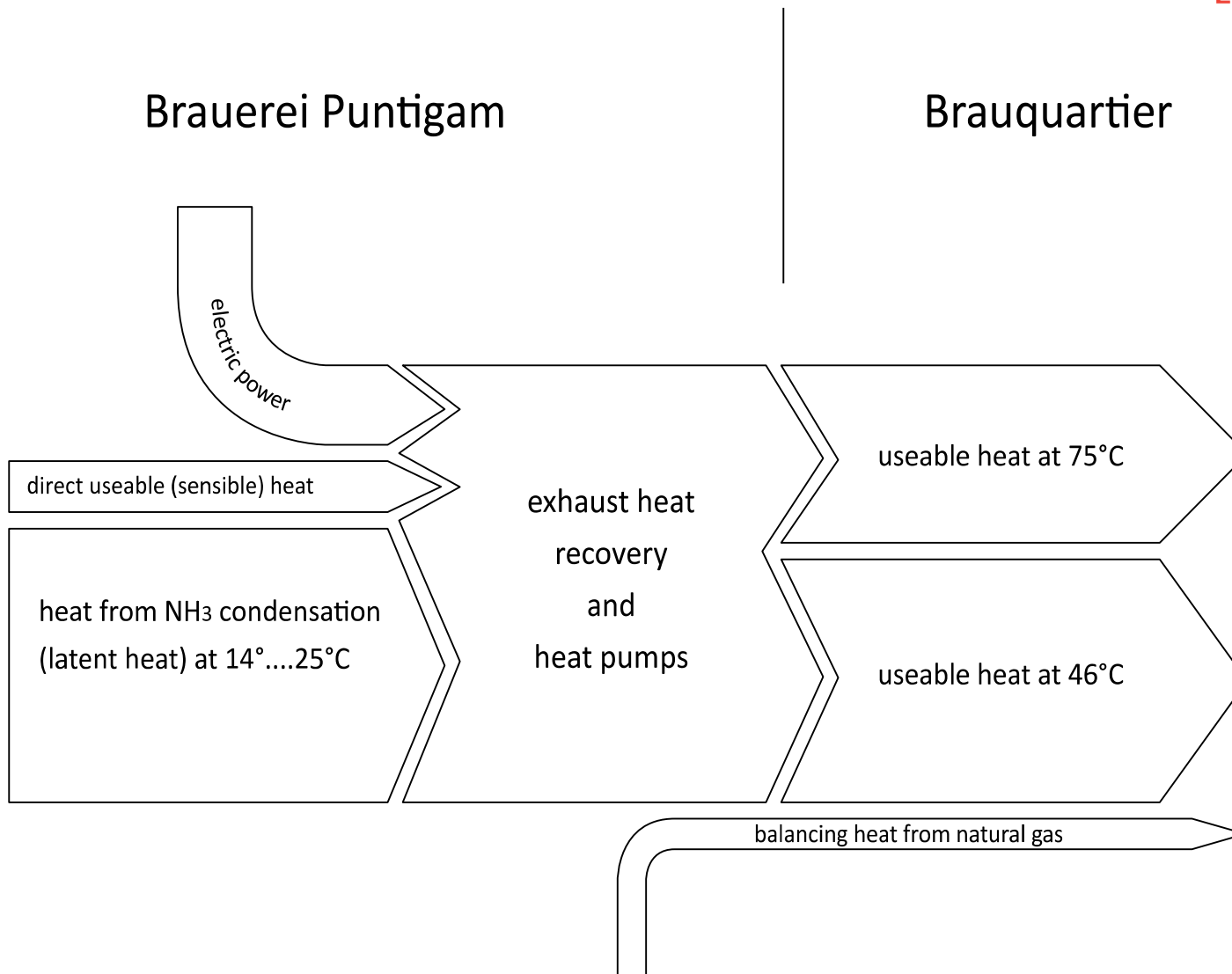
Heat  
Source

**Heat  
Supply**

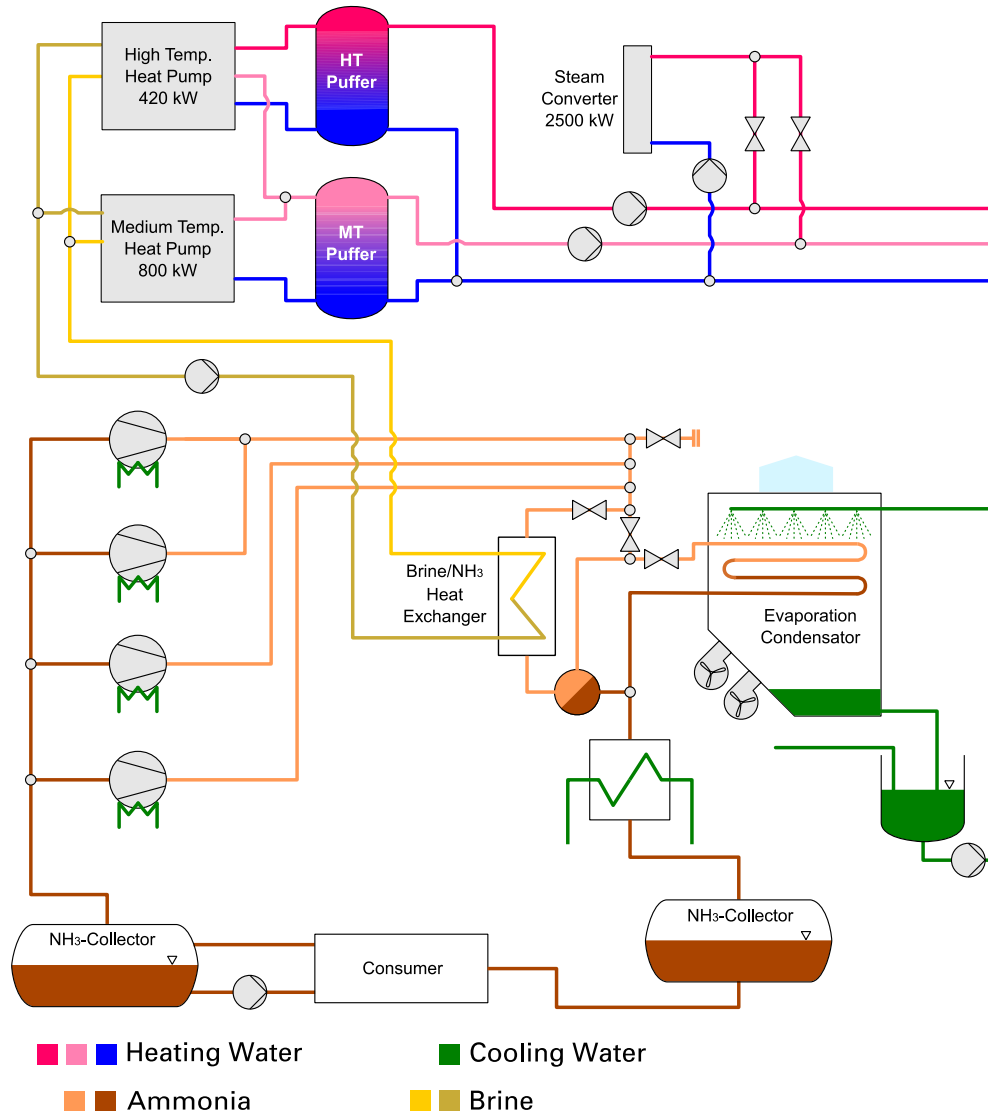
Conclusion

Heat Output  
Temperature  
rise  
Three-pipe-  
system

# Heat Supply of the Brauquartier Puntigam



# Heat Supply of the Brauquartier Puntigam



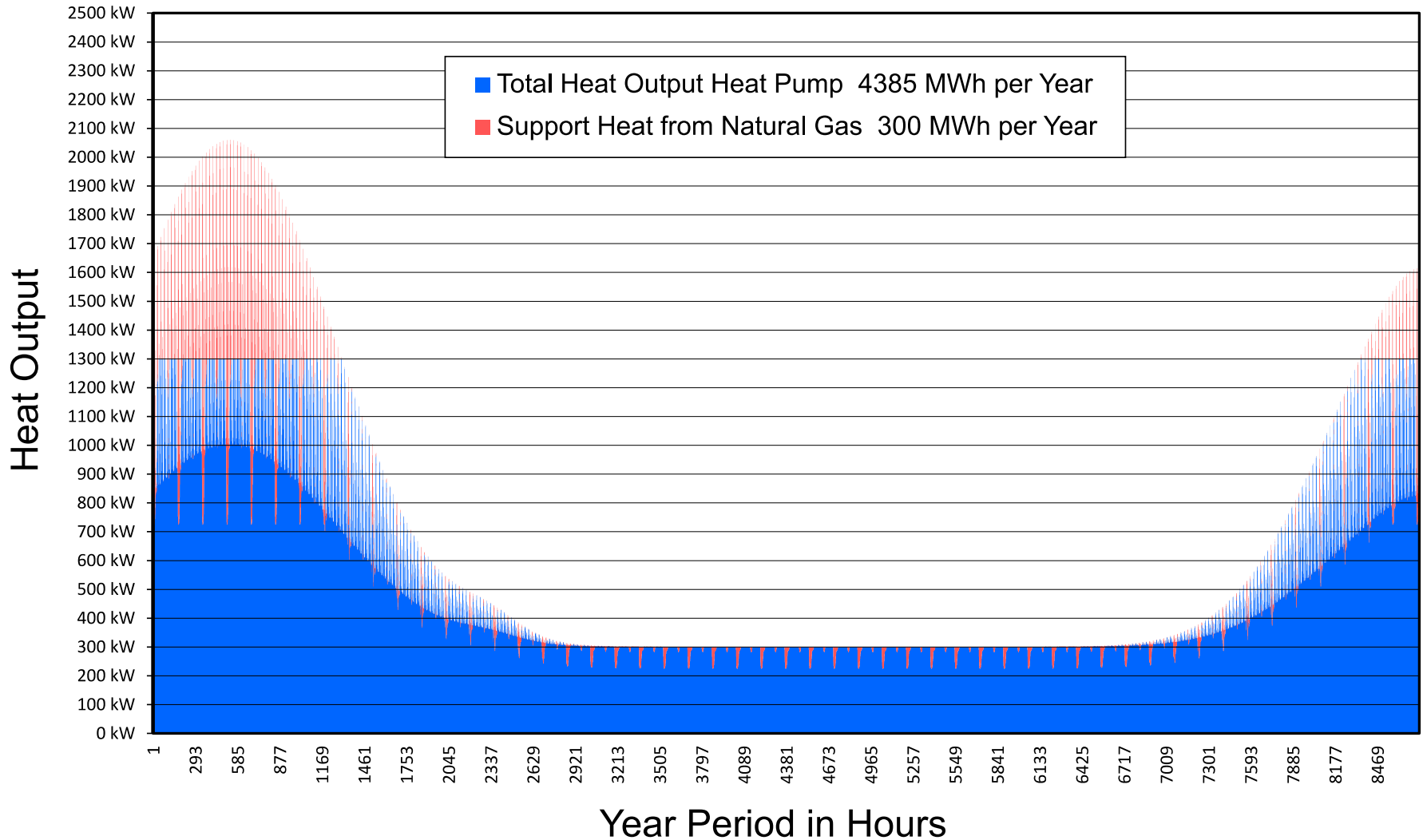
# Heat Supply of the Brauquartier Puntigam



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# Heat Supply of the Brauquartier Puntigam



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Projects of the  
past vs. projects  
of the future  
Project triality

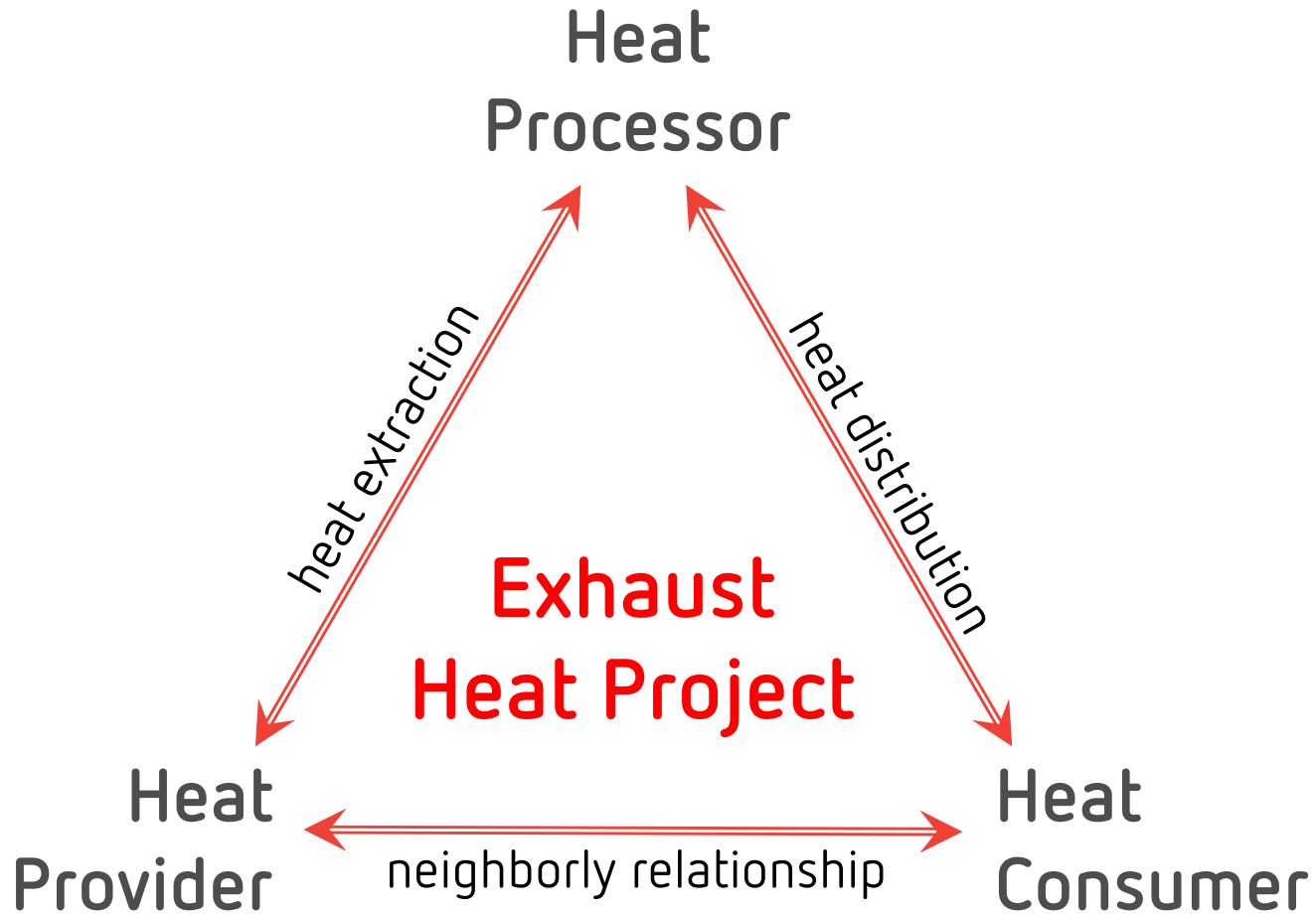
**Exhaust heat project of the past** ⇒ large heat amount at temperature level > 80°C

- typically surplus process steam and/or
- flue gas heat recovery

**Exhaust heat project of the present** ⇒ large heat amount at temperature level < 50°C

- typically cooling processes and/or
- waste water (sewage)

Temperature level of the exhaust heat from the brewery Puntigam average 20°C !



Thank you  
for your attention

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