Heat pump demonstrator at AGRANA wheat starch factory in Pischelsdorf, Austria

Industrial heat pumps for a greener European industry
30th September 2020

Agrana GmbH
Thomas Laminger

Grant Agreement No 723576 – Energy Efficiency-

Innovation Action H2020-EE-2016-2017

AGRANA organic refinery, Pischelsdorf

- ❖ 2007/8 Bioethanol plant
- ❖ 2013 Wheat starch processing plant WSA1
- ❖ 2019 Wheat starch processing plant WSA2

- 250,000 m³/a of bioethanol,
- 80,000 to/a of biogenic CO2,
- 260,000 to/a of wheat starch,
- 50,000 to/a of wheat protein,
- 170,000 to/a of the protein-rich animal feed ActiProt®
- 100,000 to/a of Actigrano ®
- 10,000 to/a of bran

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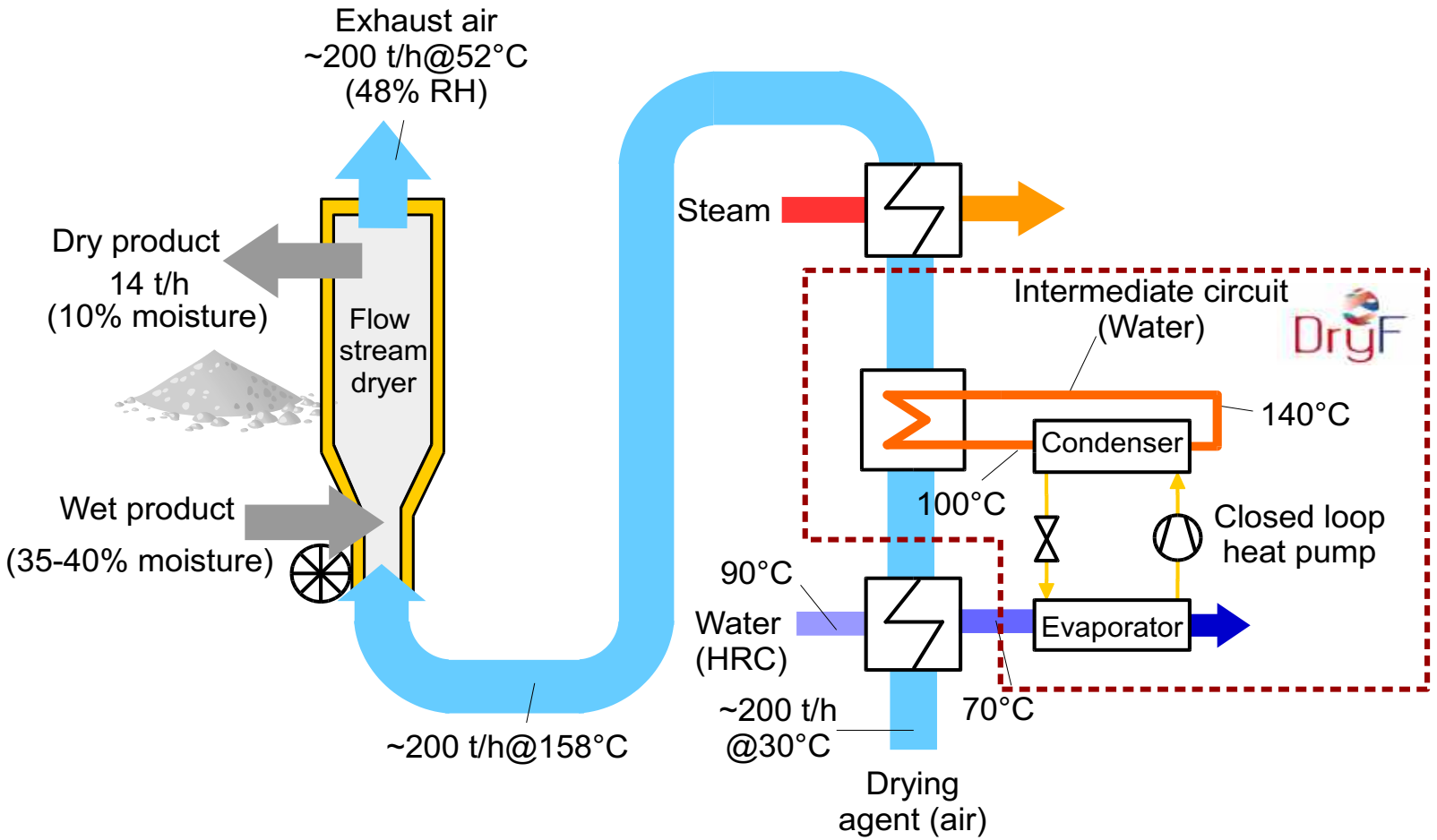
Heat pump demonstrator – Starch dryer WSA1

- Heating capacity of ~400 kW (appr. 10% of the starch dryer's heat demand)
- The heat supply temperatures are in the range of 110 - 160 ^{0}C.



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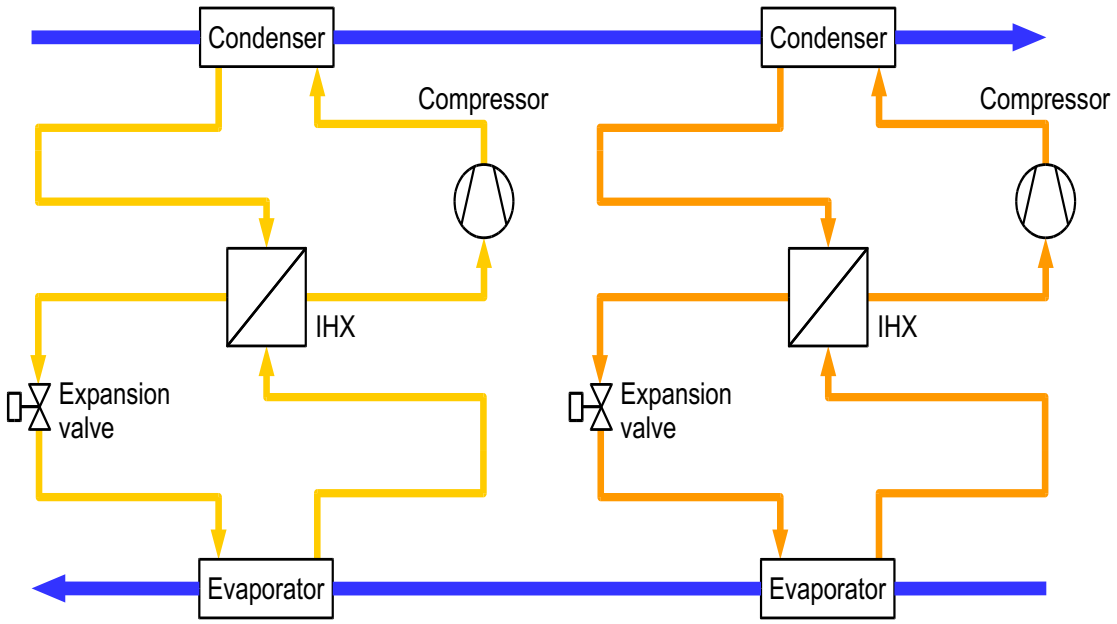
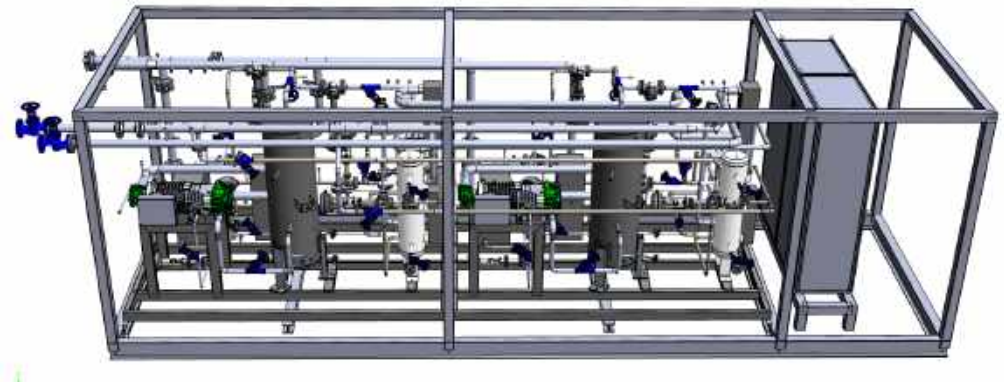
Heat pump demonstrator – Starch dryer WSA1

- Closed loop heat pump cycle
- 2 screw compressors
- Variable configuration (twin-cycle source parallel or serial)
- COP up to 4





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Heat pump demonstrator – Starch dryer WSA1

- Container outside the starch dryer WSA1
- Start of installation September 2019
- Start of commissioning May 2020

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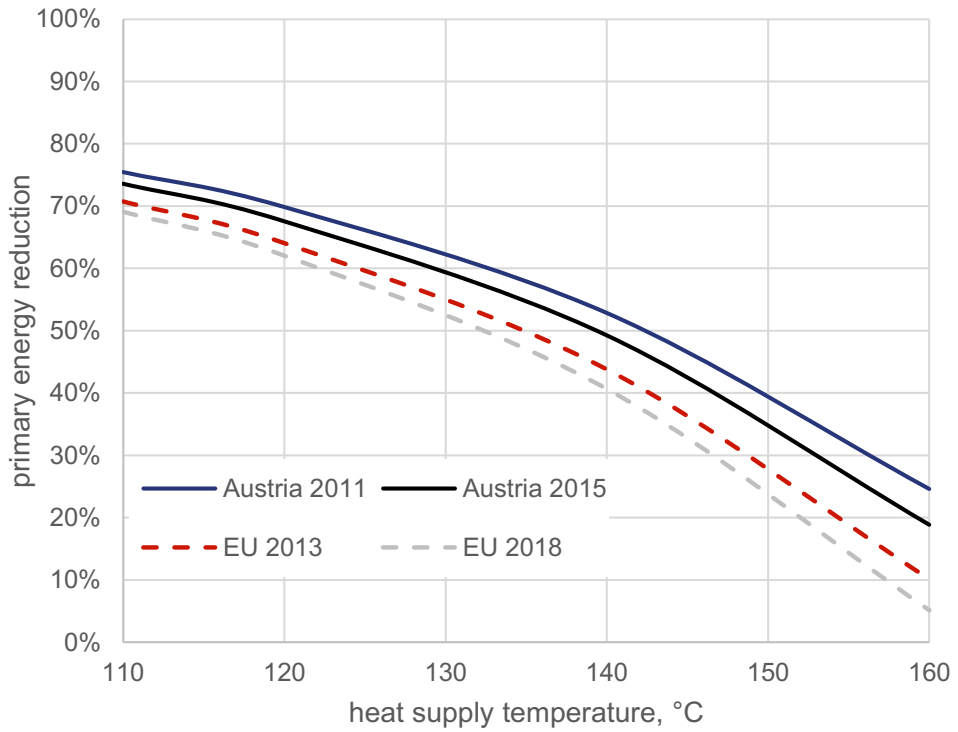
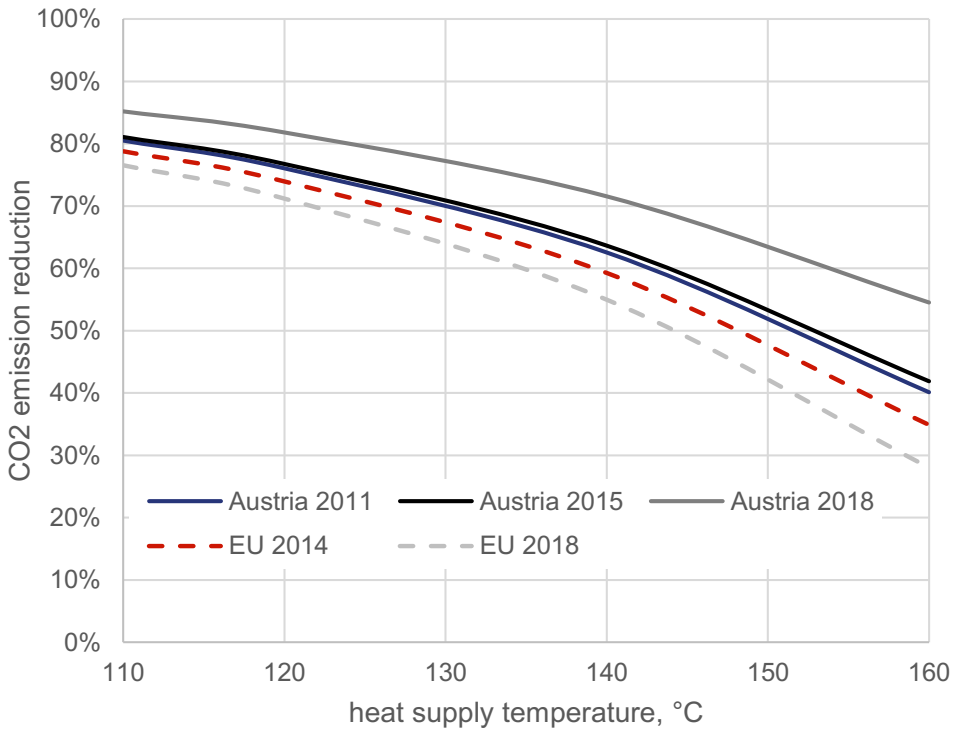
Heat pump demonstrator – Starch dryer WSA1

- Primary energy reduction from 20-80%
- Decrease the end energy consumption by 2,200 MWh/a

- CO2 emission reductions up to 40-90%
- Reduction in CO_2 emissions of 500 t/a.





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Time schedule

Ongoing commissioning by the heat pump manufacturer AMT in cooperation with Agrana, AIT and ENERTEC.

The demo phase until August 2021 will be split in thirds:

- providing the heat supply temperature of the design point with different operation conditions and
- providing the heat supply temperature close to the design point with different operation conditions.
- more challenging conditions at the operational limits of the heat pump

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