

Warmtebedrijf Rotterdam

AVR - CEWEP

17 June 2016



Content



Background

Features, statistics & environmental impact

Organization & business model

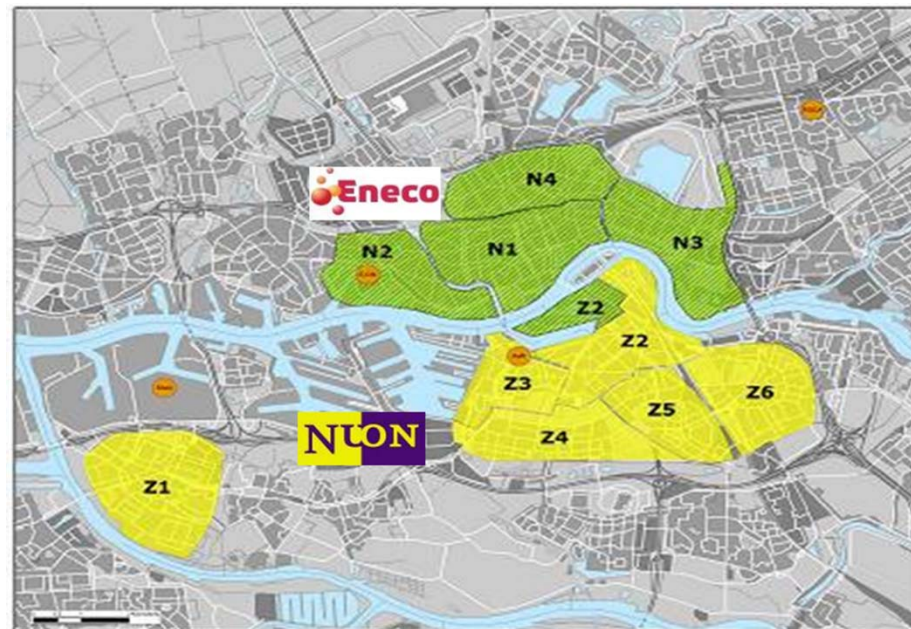
AVR – Heat offtake

The Heat Hub

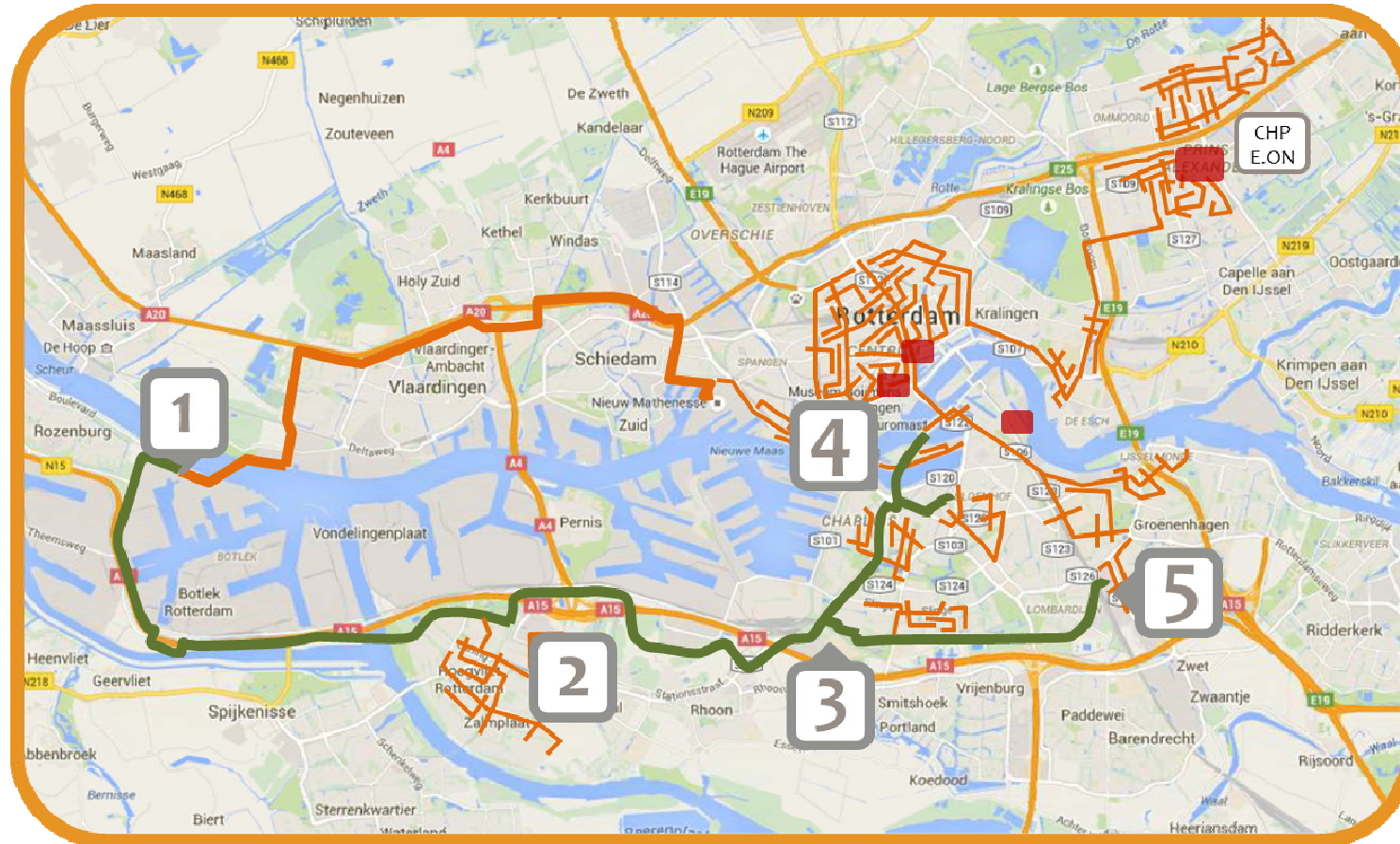
Future plans

Background

- ❑ District heating in Rotterdam has been in place for many decades;
- ❑ Primarily supplied by gas-fired generation assets;
- ❑ Rotterdam was one of the most polluted cities in the Netherlands due to the industry;
- ❑ WBR was founded to match the available waste heat in the harbor area in order to meet demand in the city and reduce emissions;



Heat networks Rotterdam



1

2

3

4

5



Waste incinerator and energy plant



Booster station Hoogvliet



Booster station Groene Kruisweg



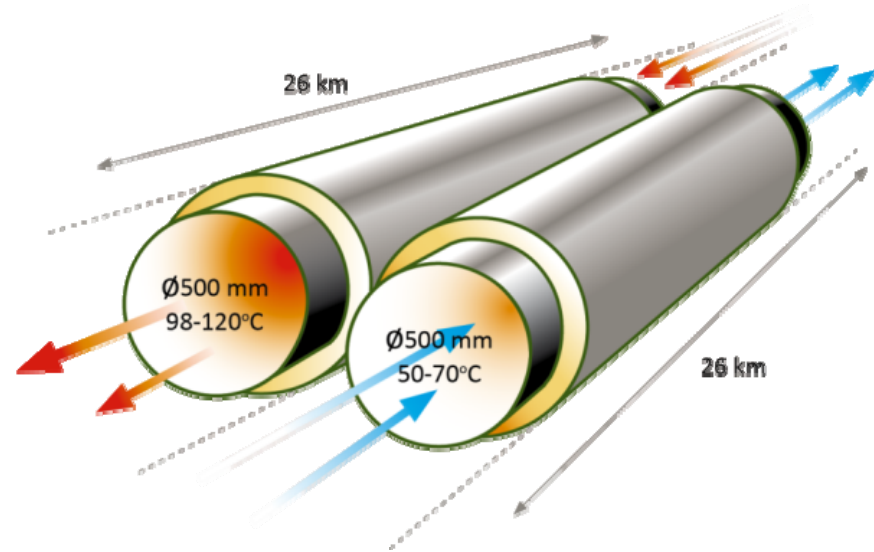
Heat hub Brielselaan



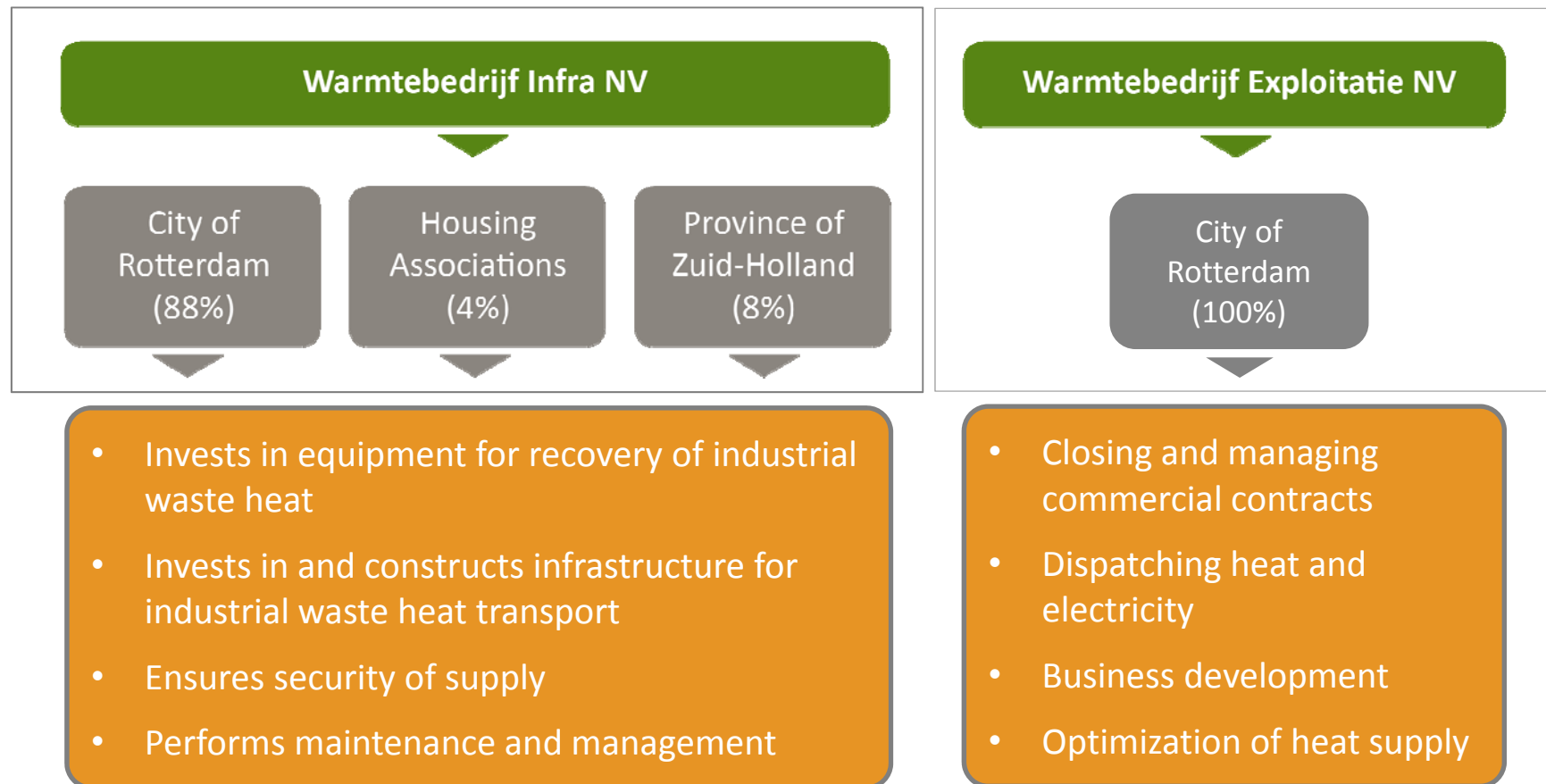
Heat station Maastad Hospital

Features and statistics

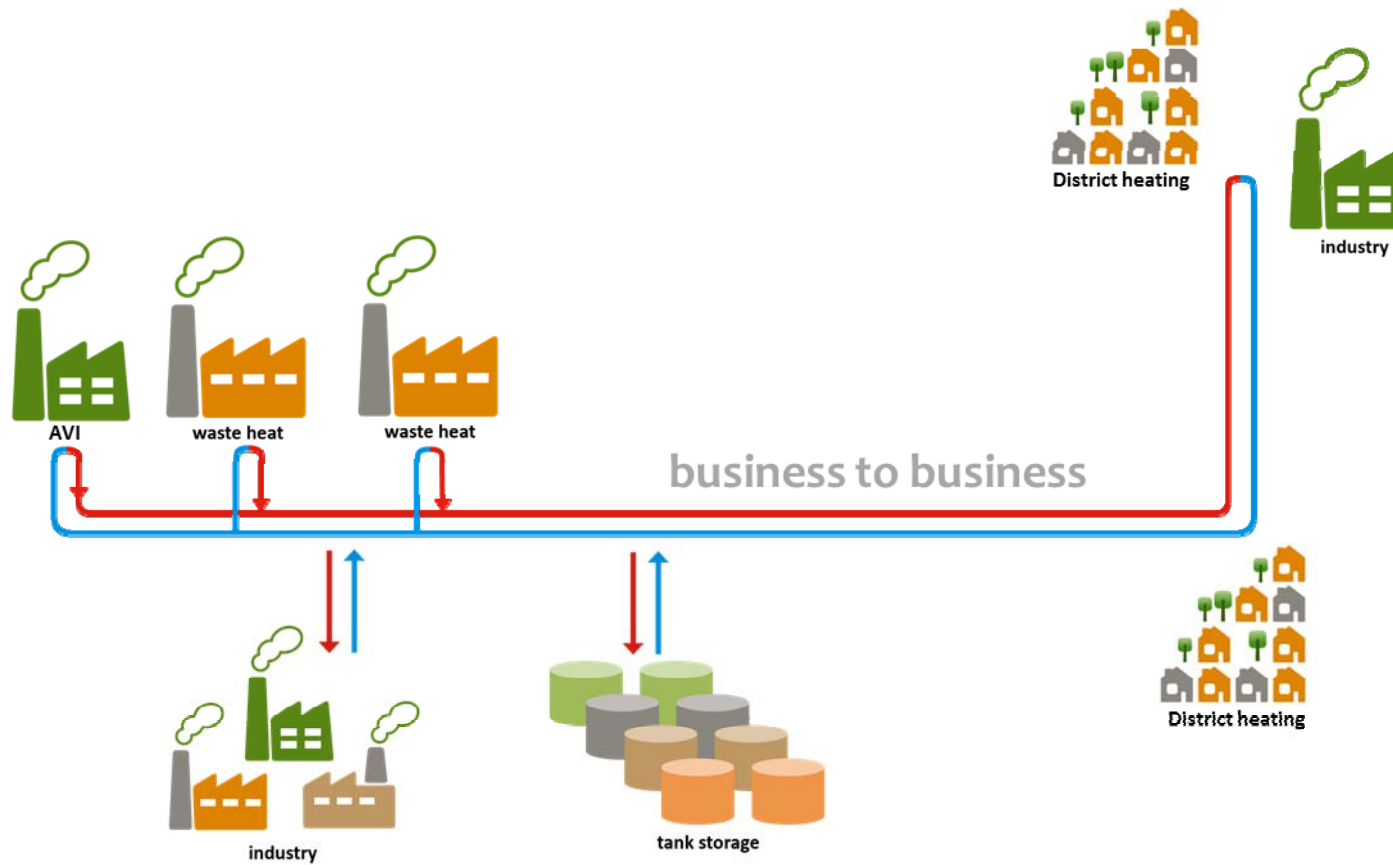
- Investment € 100 mio
- Capacity 105 MWth
- COD: 1 October 2013
- Annual volume of 1.500.000 GJ
- Sustainability > 50%
- CO₂-reduction of circa 85 kton per year
- 10% reduction of NO_x-emissions



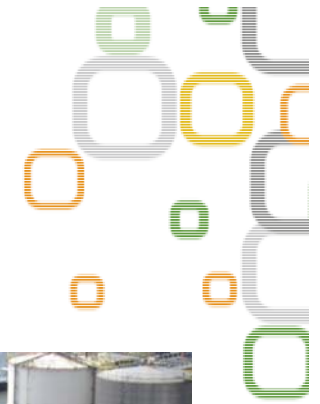
Integrated business model



Position and role in the heat chain



AVR heat offtake



- AVR supplies the waste heat from AVI in Rozenburg;
- Heat supply started from 1 October 2013;
- Multiple heat sources at AVR;
 - Energy from waste
 - Residual Heat from Caustic Water Treatment
- Main equipment;
 - 3 supply pumps frequency driven
 - 3 return pumps
 - 2 buffer pumps
 - 4 heat exchangers
 - Buffer for heat storage





The Heat Hub



Virtual impression



Actual building

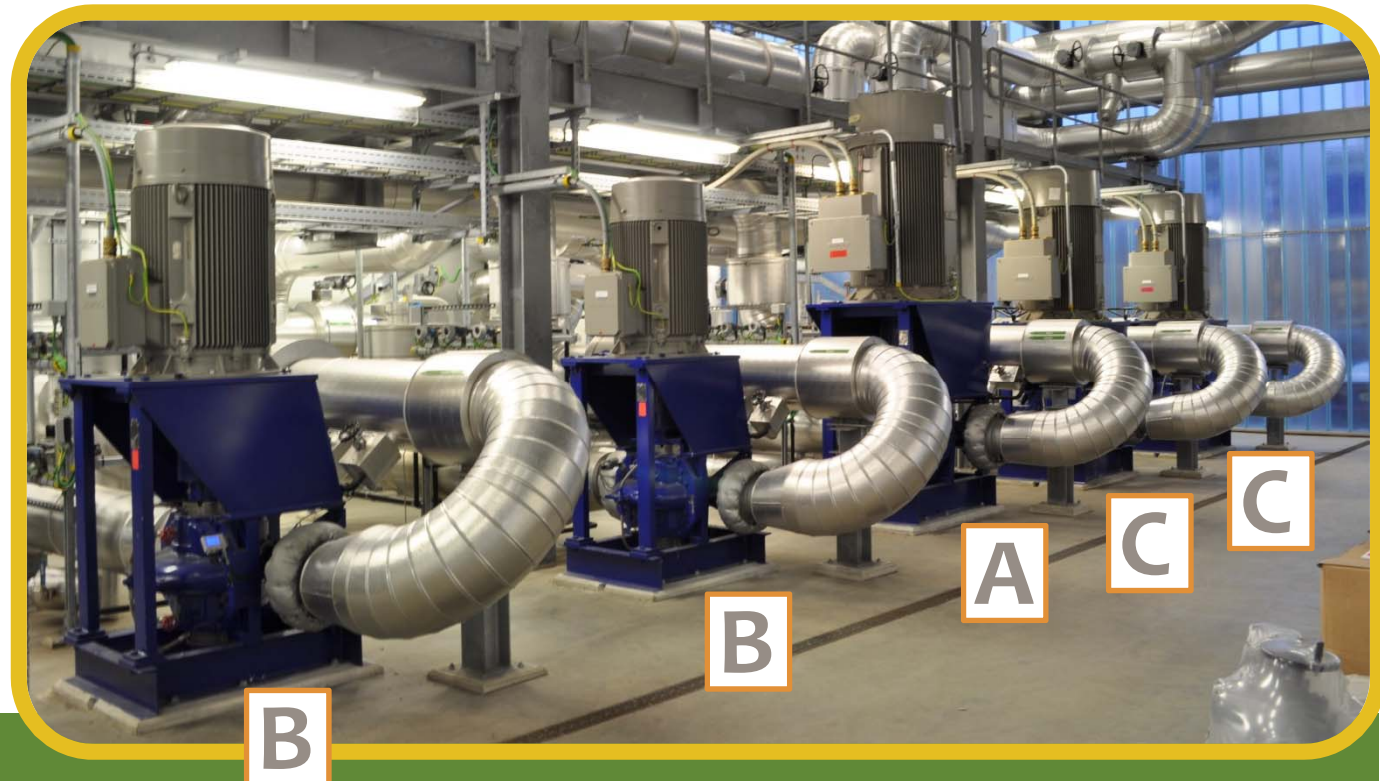


Pumps @ The Heat Hub



Five pumps:

- A** Largest pump charges and discharges the heat accumulator
- B** Two pumps are for back up to return the water to the waste heat source
- C** Two pumps situated behind the heat exchangers and are connected to the district heating network on the north bank of Rotterdam

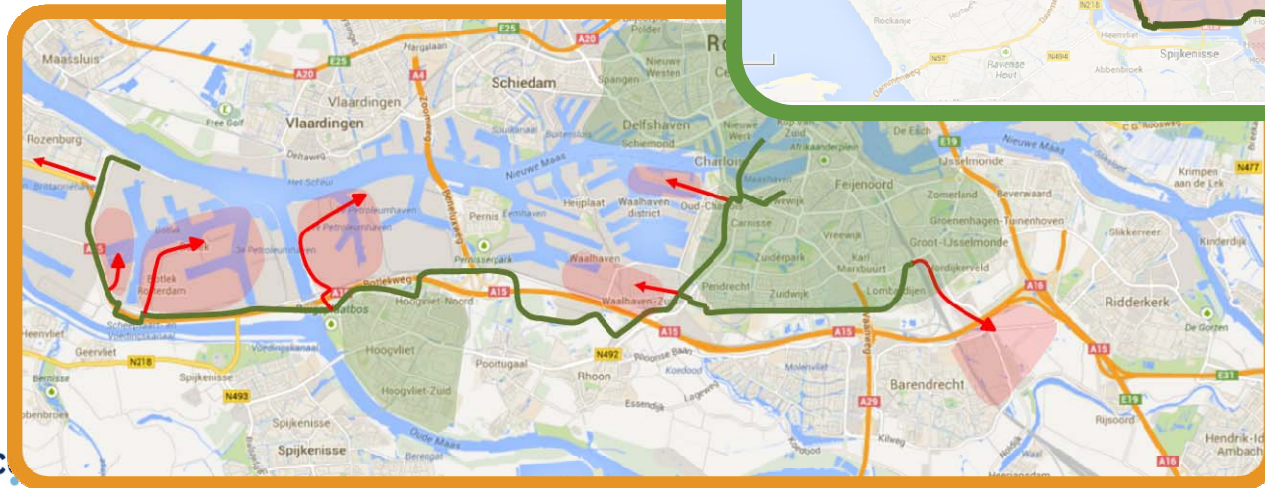
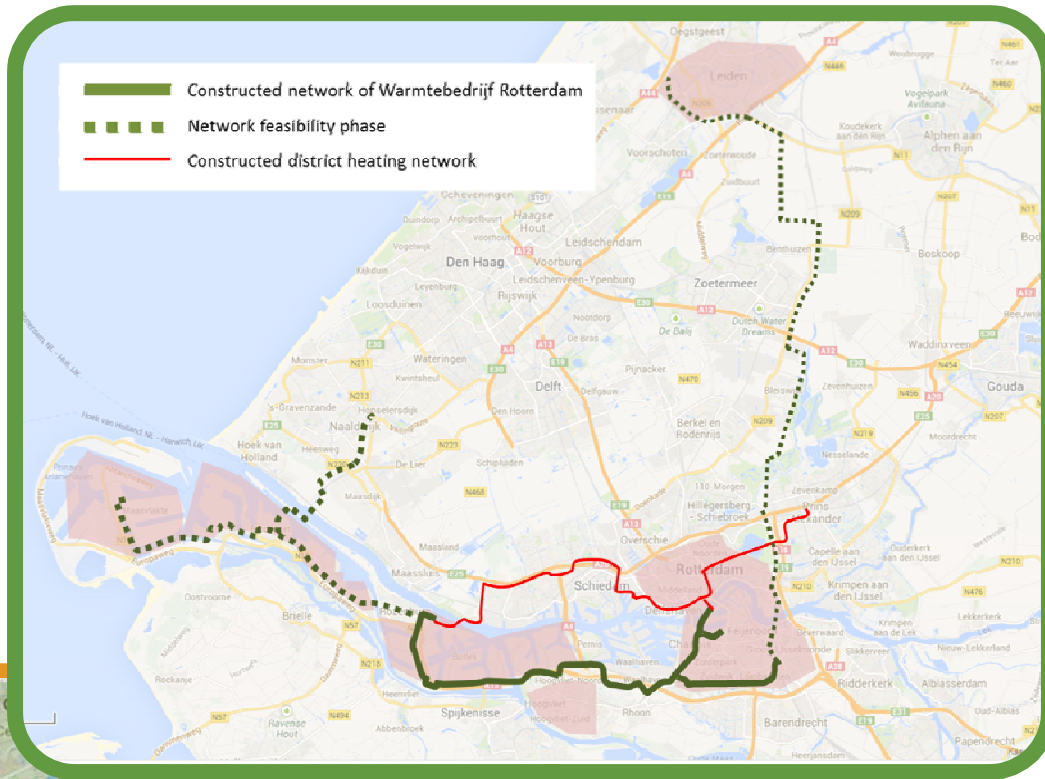
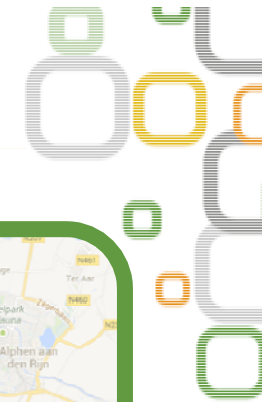


Heat accumulator @ The Heat Hub

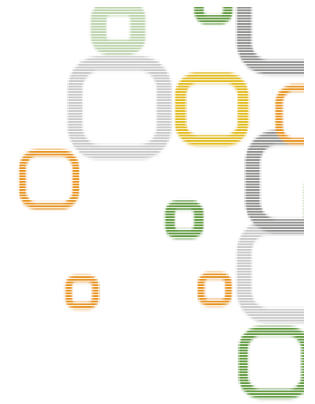
- Volume of 5.000 m³
- Charged when low heat demand in the district heating grid
- Discharged when high heat demand in the district heating grid
- Accumulator is also used as back-up capacity to ensure the security of supply
- Speed of discharging: 6 - 10 hours



Future plans: regional expansion

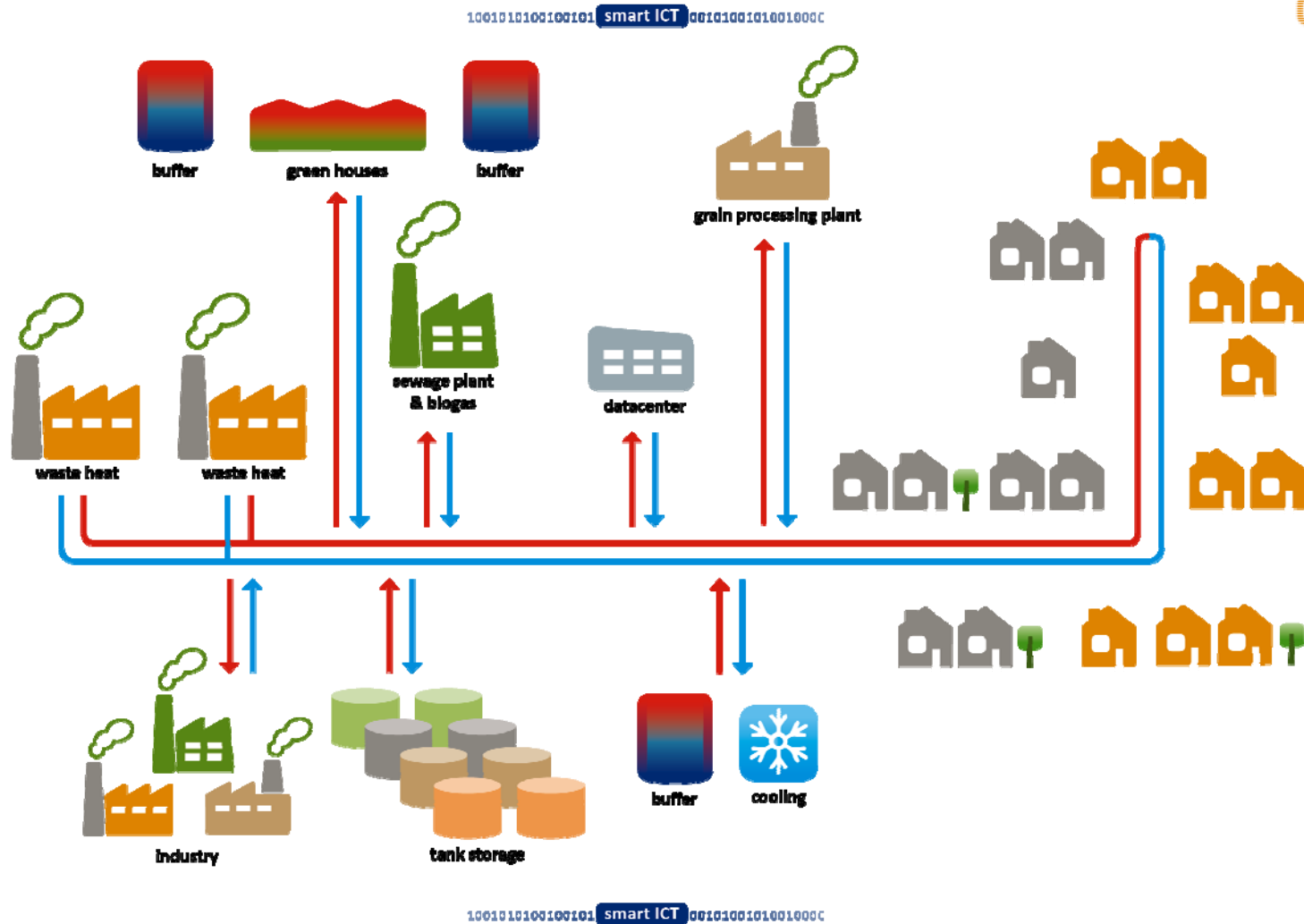


Future plans: impression



- <https://youtu.be/JyaVmYEZMzs>

Future plans: Transition to Smart Grid



Thank you for your attention



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