

Almere NL

Smart district heating from waste heat and solar

Christian Engel, Thermaflex

Thermaflex: Sustainable thermal networks

District Heating & Cooling and Indoor Solutions



Almere: Smart city in The Netherlands

Leveringsgebieden stadswarmte 2007



Almere
25 km east of Amsterdam



Almere

the fastest growing city in NL



Almere History & Future



1956: Draining southern Flevoland

1968: Start of city development

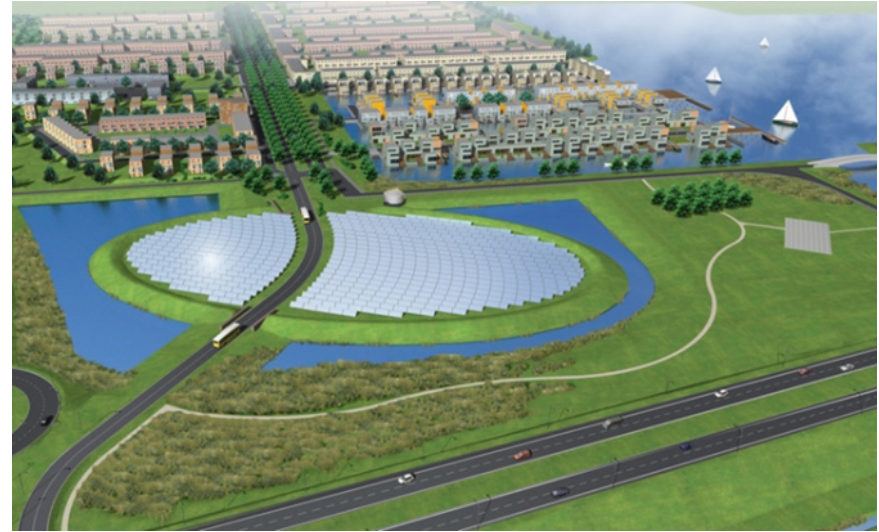
1979: Start district heating

2014: population 196,000

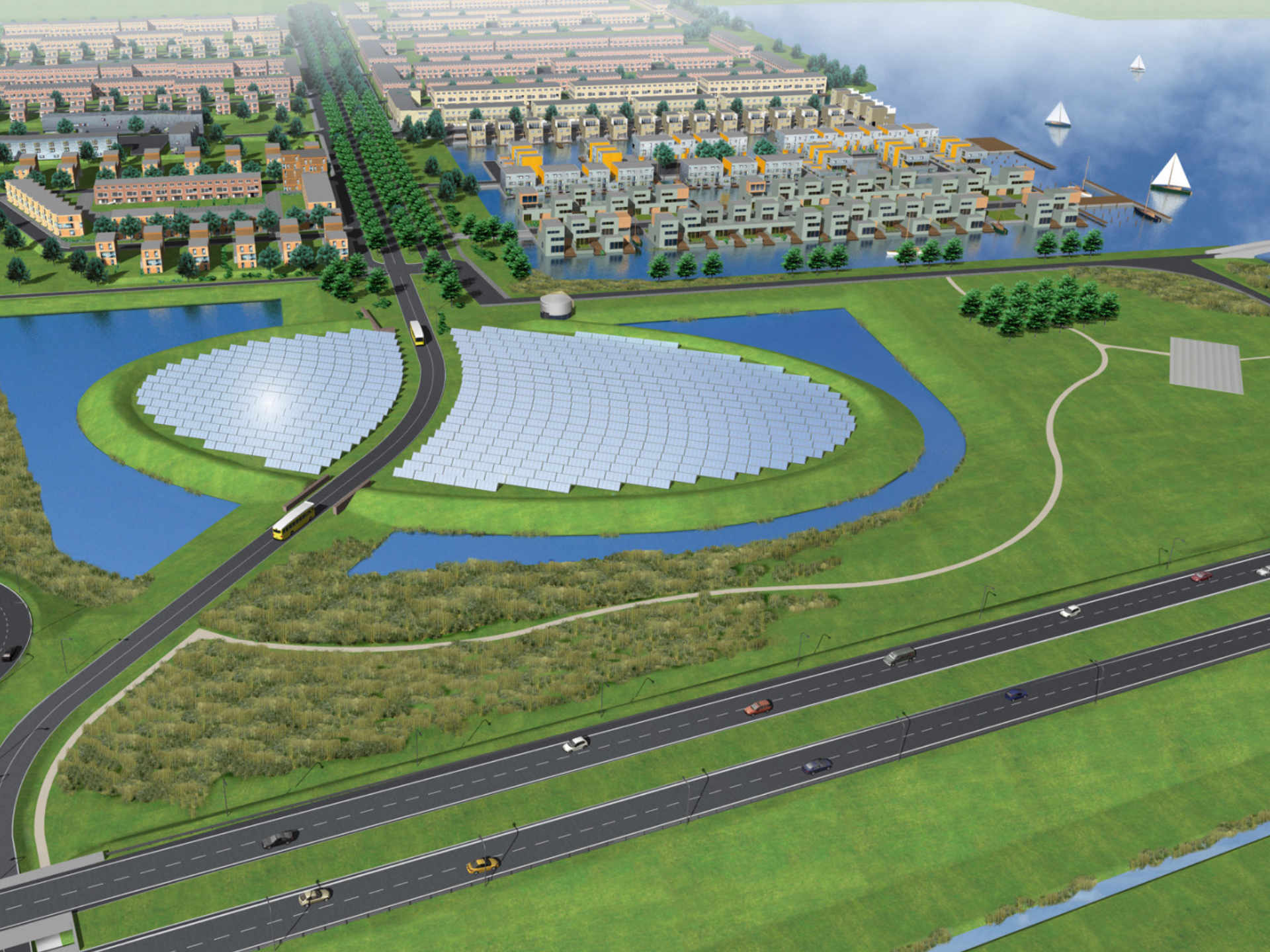
2030: Exp. population 350,000



District Heating supply from waste heat & solar



- Cogen: 114 MW
- Sun Island: 5 MW
- 60.000 ton CO₂-reduction



Almere 2014

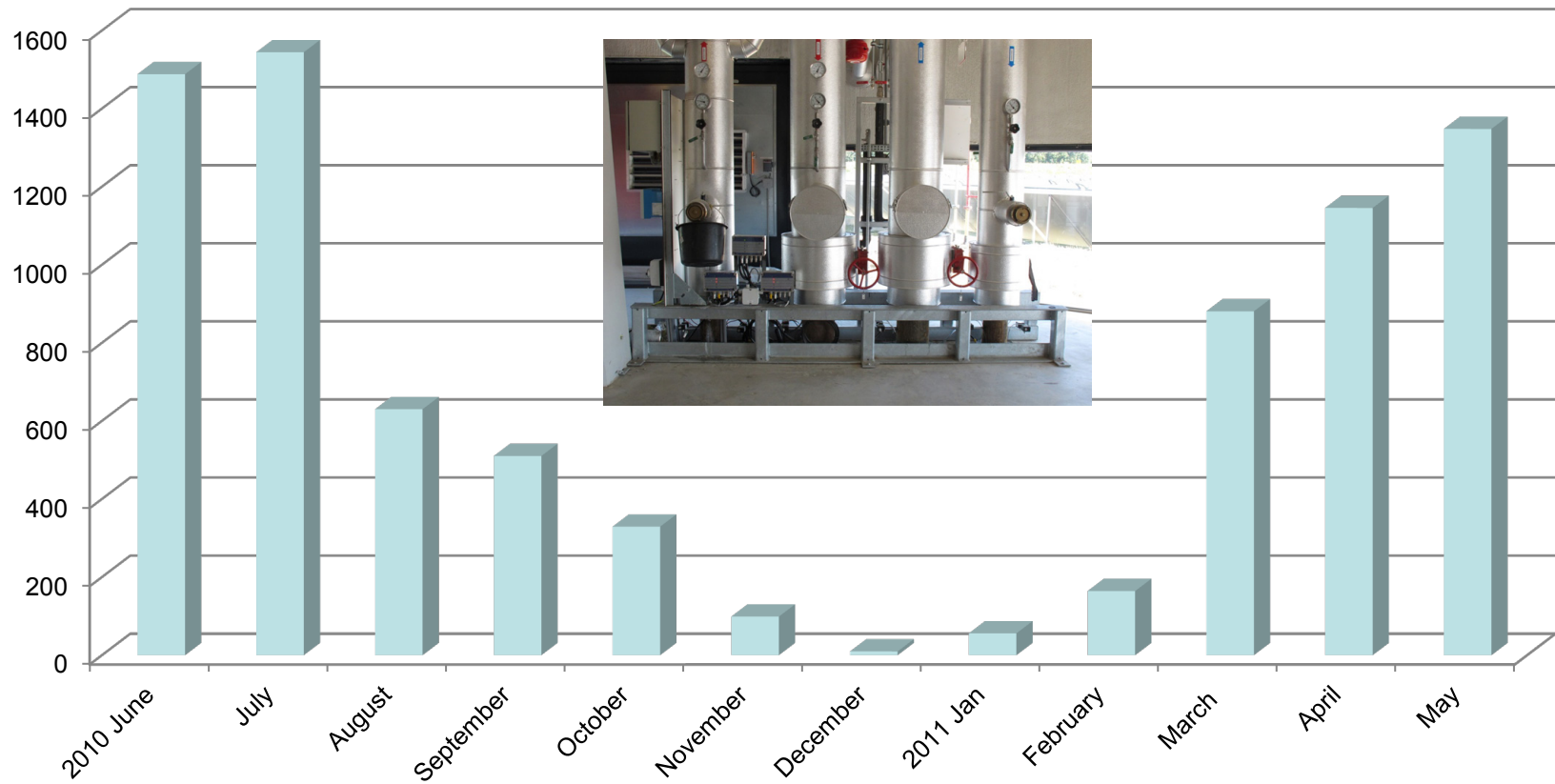


Solar contribution

- 520 solar collectors / 7,000 m²
- 2,700 households
- 10 % of the heat demand covered
- 9750 joule /equivalent of 1 million showers

Annual distribution of Energy Production 2010-2011

Sun Island monthly energy production in GJ



Sun Island Facts

- Gross investment 4.2 Mio €
- Local contribution/MAP subsidy 1.5 Mio €
- European funding (cRRescendo) 1.4 Mio €
- Net investment 1.3 Mio €
- Pay Back period (Wacc 7%) 13 years

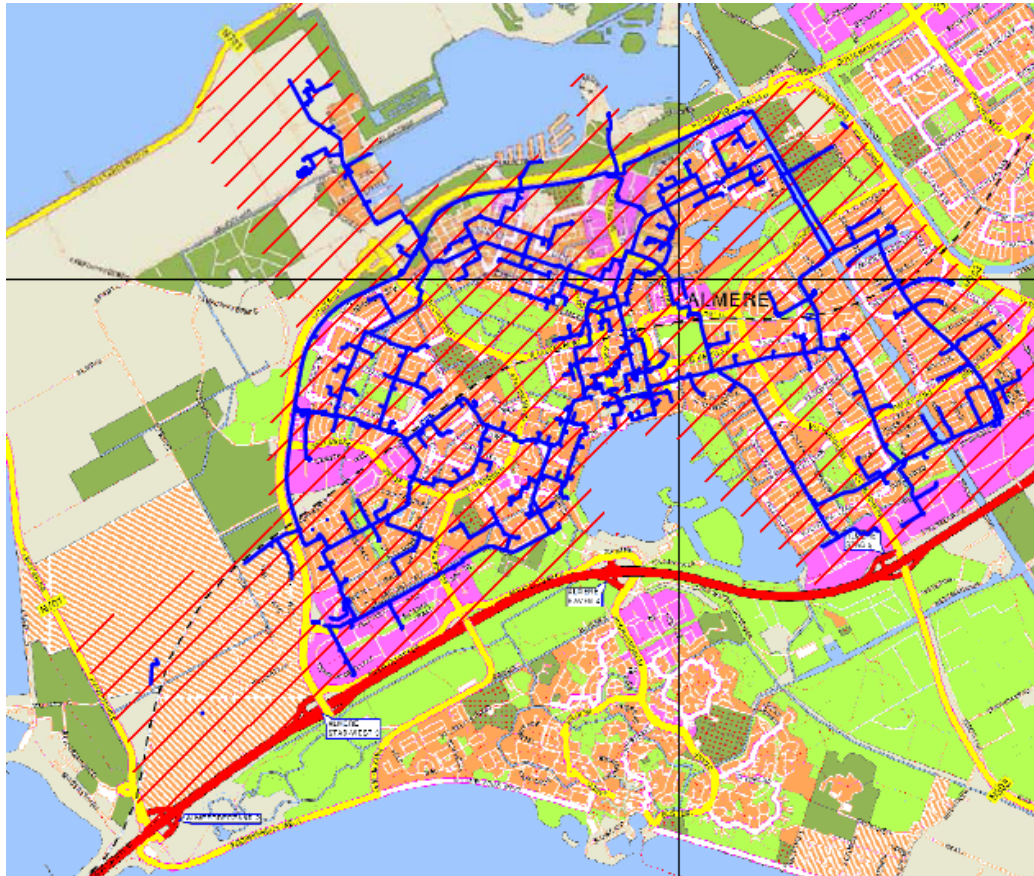


Almere commercial buildings



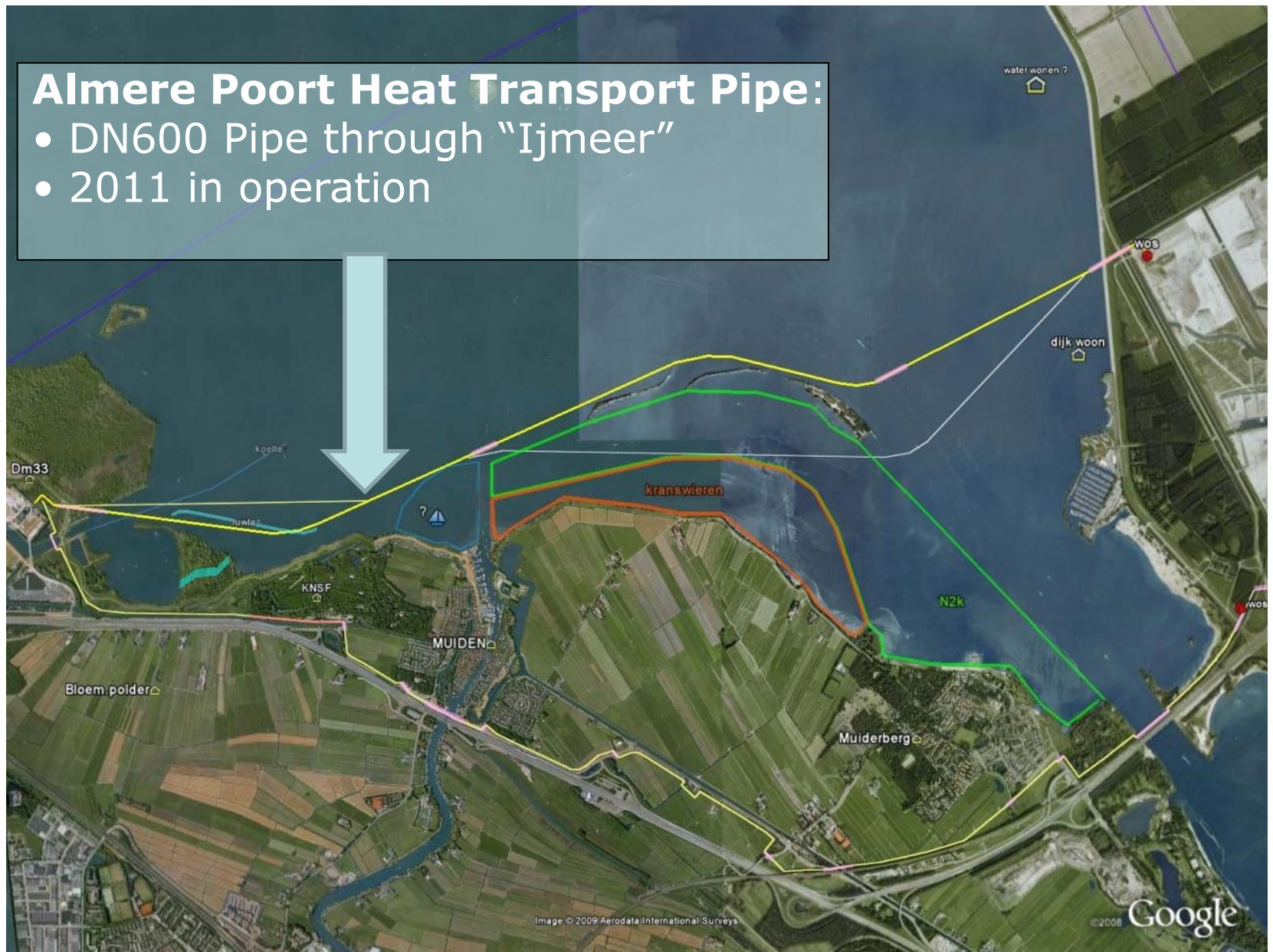
Almere heat distribution

- 45.000 houses
- 660 commercial buildings



Almere Poort Heat Transport Pipe:

- DN600 Pipe through "Ijmeer"
- 2011 in operation



Thermal Stations connect Primary 130°C to Secondary 85°C networks

Heating
Max 85°C
Av. 75°C
Max 6 bar



Hot Tap water
Av. 65°C
Max 10 bar



NUON Warmte - Flexalen installation



2 double lines under the buildings

Heating and Sanitary supply
with Flexalen



Safe connections: electrofusion welding



NUON experiences

Flexalen

- No corrosion
- 50 year life span
- Flexible
- Insulation water resistant
- High quality plastic
PB (polybutene)



Almere 2.0: 2nd largest city in NL by 2030



350.000 inhabitants in 2030

Duin – next step 2014-2016



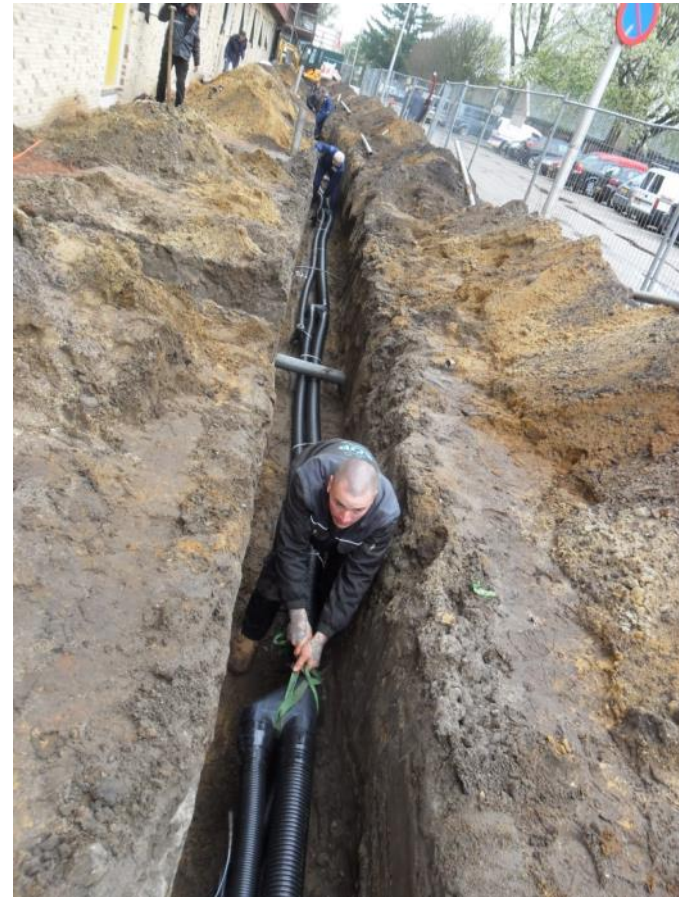
Living in the dunes &
on the beach



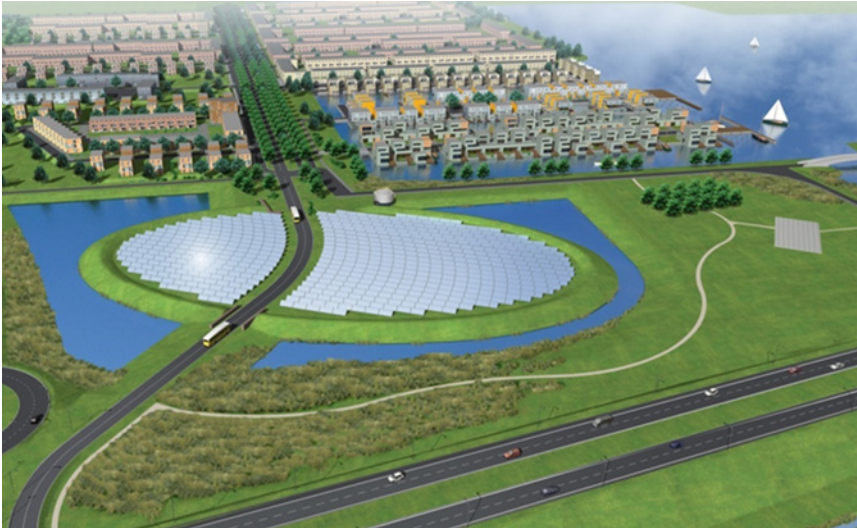
Next DH network solutions: A street connected to DH in a day



Record installation time for
District Heating with Flexalen

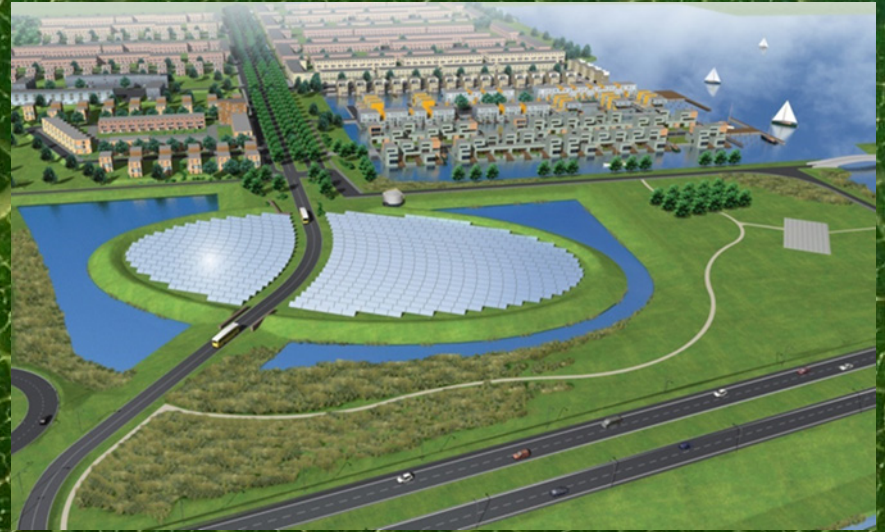


Almere – Smart green city



- ✓ 7.000m² Solar
- ✓ 1 mio shower equivalent
- ✓ 60.000 tons CO₂ savings
- ✓ Sustainable & fast to install DH network solution





 **thermaflex**

t a k i n g c a r e o f e n e r g y a n d
t h e e n v i r o n m e n t