Low-Temperature Grids And Ultra-Low Temperature Grids

what is it and
what can you do with it?

Presented by:
- Rard Rijcken
- Gertjan de Joode

Eteck

LT-Ready Symposium
14 oktober 2021

Who are we?

Eteck in a nutshell

Eteck

Mission Eteck:

Realizing the largest possible contribution with maximum impact, for the purpose of making the Dutch heat and cold demand more sustainable

Where do we come from?

1999: switch to more distinctive activities

contracting of Eteck's first sustainable energy solution with Ultra-Low temperature grid

- Establishment of contracting company Van Eck specialized in demolition — 1895
- 2000
- Autonomous growth by realization for energy companies — 2001-2010
- Growth through acquisitions of, a.o. , portfolios of energy companies — 2010-2017
- Strong growth in realization and operations in new building construction, and first steps in existing building construction — 2018-2021

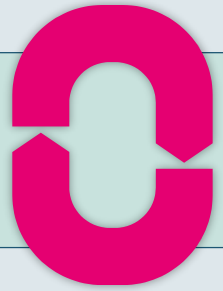
How does Eteck realize this impact?

Eteck uses locally available sources, and therefore prefers to access sustainable environmental energy

Demand for and supply of thermal energy usually do not match. That is why Eteck uses storage (such as STES) to match supply and demand

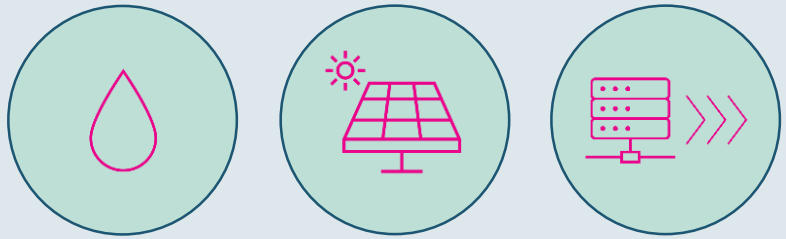
Transport of thermal energy takes place by ULT, LT or MT grids. Upgrade to suitable heat via central or decentralized heat pump technology

Together we go for



This is how we saved 34.000 ton of CO_2 emissions in 2020!

Eteck works technology-independently and above all together with others



Aquathermie | Solarthermie | Residual heat

First maximum use of locally available (residual) heat and therefore use of termal environmental energy

Always the best technical solution for the customer with attention to security of supply, affordability and sustainability. Long-term exploitation is the goal

Focus on long-term maintenance and performance guarantees in terms of rates, CO2 and customer satisfaction

By always putting the customer first and working together with involved parties.

Aquathermie

A technology from practice

Eteck

Eteck & (U)-LT (most aquathermie)

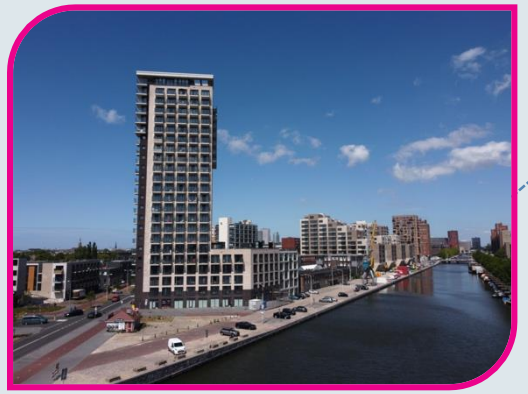
Pipeline
Projecten: 6
LEQ: 20.865

In aanbouw
Projecten: 7
LEQ: 1.344

In exploitatie
Projecten: 25
LEQ: 10.981

Oostelijke Handelskade Amsterdam
668 LEQ,
STES, ULT-grid
Collective HP,

Caland Dock Den Haag
821 LEQ,
STES,
Collective HP, LT-grid



Waldo City Den Haag
431 LEQ,
STES,
Collective HP, LT-grid

Floriade Almere
594 LEQ, STES, ULT-grid (STG) Collectieve WP

Blaricummermeent Blaricum
933 LEQ, STES,
Individual HP,
ULT-grid

Keizershof-Tuindershof Pijnacker-Nootdorp
880 LEQ, STES,
Individual HP, ULT-grid

Floating Office Rotterdam
36 LEQ, Tank storage, Collective HP

Merwehoofd Papendrecht
417 LEQ, STES,
collective HP,
LT-grid

Ultra-Low-Temperature and Low Temperature!

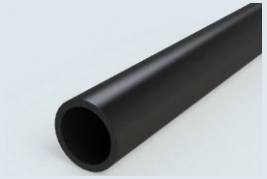
What is it actually
and
what can we do with it?

Eteck

First some characteristics of de different grid’s

Ultra-Low Temperature

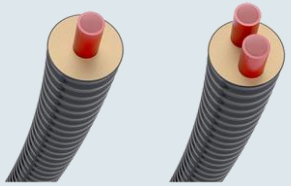
10 – 30 °C



Uninsulated pipe HDPE

Low Temperature

30 – 55 °C

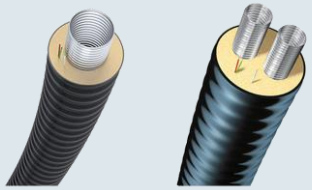


Insulated pipe HDPE

Applied materials

Mid Temperature

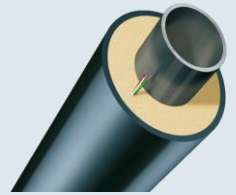
55 – 75 °C



Insulated pipe stainless steel

High Temperature

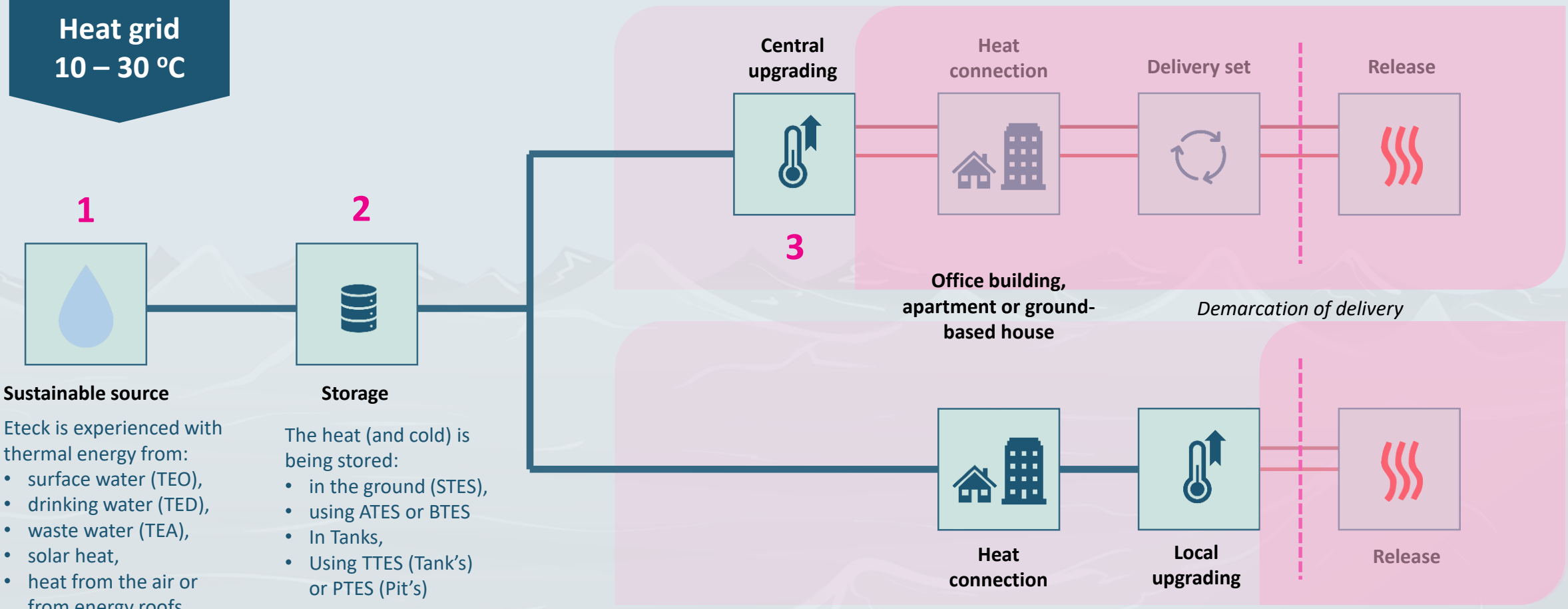
> 75 °C



Insulated pipe steel

The chain of operations for a Smart Heating System (SHS) with ULT grid

Heat grid
10 – 30 °C



Sustainable source

Eteck is experienced with thermal energy from:

- surface water (TEO),
- drinking water (TED),
- waste water (TEA),
- solar heat,
- heat from the air or from energy roofs.
- Another source is sustainable residual heat.

Storage

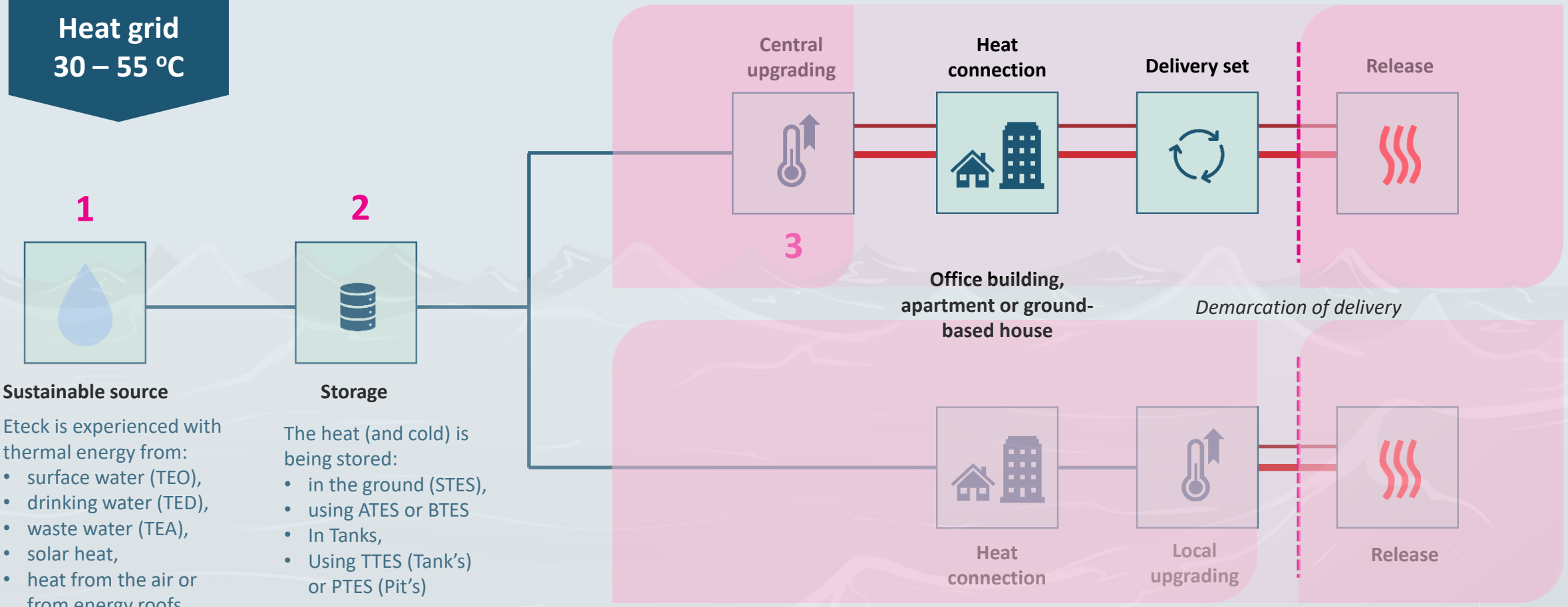
The heat (and cold) is being stored:

- in the ground (STES),
- using ATES or BTES
- In Tanks,
- Using TTES (Tank's) or PTES (Pit's)

Upgrading suitable heat can happen centrally in the area, or locally inside the building. Source-energy is upgraded through a heat pump to suitable heat.
The location of upgrading determines whether Ultra-Low- or Low temperature goes into the building. The chain of operations is always the same!

The chain of operations for a Smart Heating System (SHS) with LT grid

Heat grid
30 – 55 °C



Sustainable source

Eteck is experienced with thermal energy from:

- surface water (TEO),
- drinking water (TED),
- waste water (TEA),
- solar heat,
- heat from the air or from energy roofs.
- Another source is sustainable residual heat.

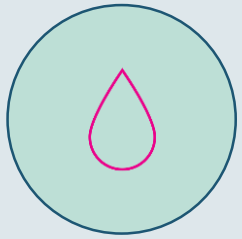
Storage

The heat (and cold) is being stored:

- in the ground (STES),
- using ATES or BTES
- In Tanks,
- Using TTES (Tank's) or PTES (Pit's)

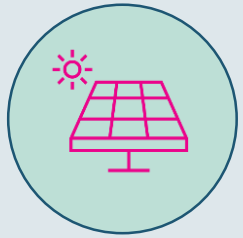
Upgrading suitable heat can happen centrally in the area, or locally inside the building. Source-energy is upgraded through a heat pump to suitable heat.
The location of upgrading determines whether Ultra-Low- or Low temperature goes into the building. The chain of operations is always the same!

Sustainable Sources for Ultra Low- or Low-Temperature grid



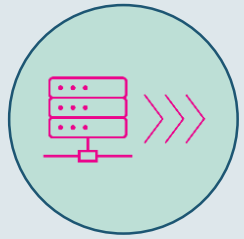
Thermal energy from water (aquathermy)

- Eteck is experienced with thermal energy from surface water (TEO), drinking water (TED), and waste water (TEA),
- TEO is specifically suitable for the heating and cooling of buildings **(ULT-grid)**
- TEO utilizes seasonal temperature differences of surface water
- In spring, summer and autumn, 'heat' from surface water is stored in a the storage or is suitable for direct delivery over the ULT-grid (source energy)



Thermal energy from sunlight

- Solar collectors turn solar energy into heat, instead of electricity
- Solar thermal energy is a relatively unknown source compared to others, but it has great potential (highest output per m^2)
- Heat from solar collectors can also be stored in the ground using a ATES or BTES

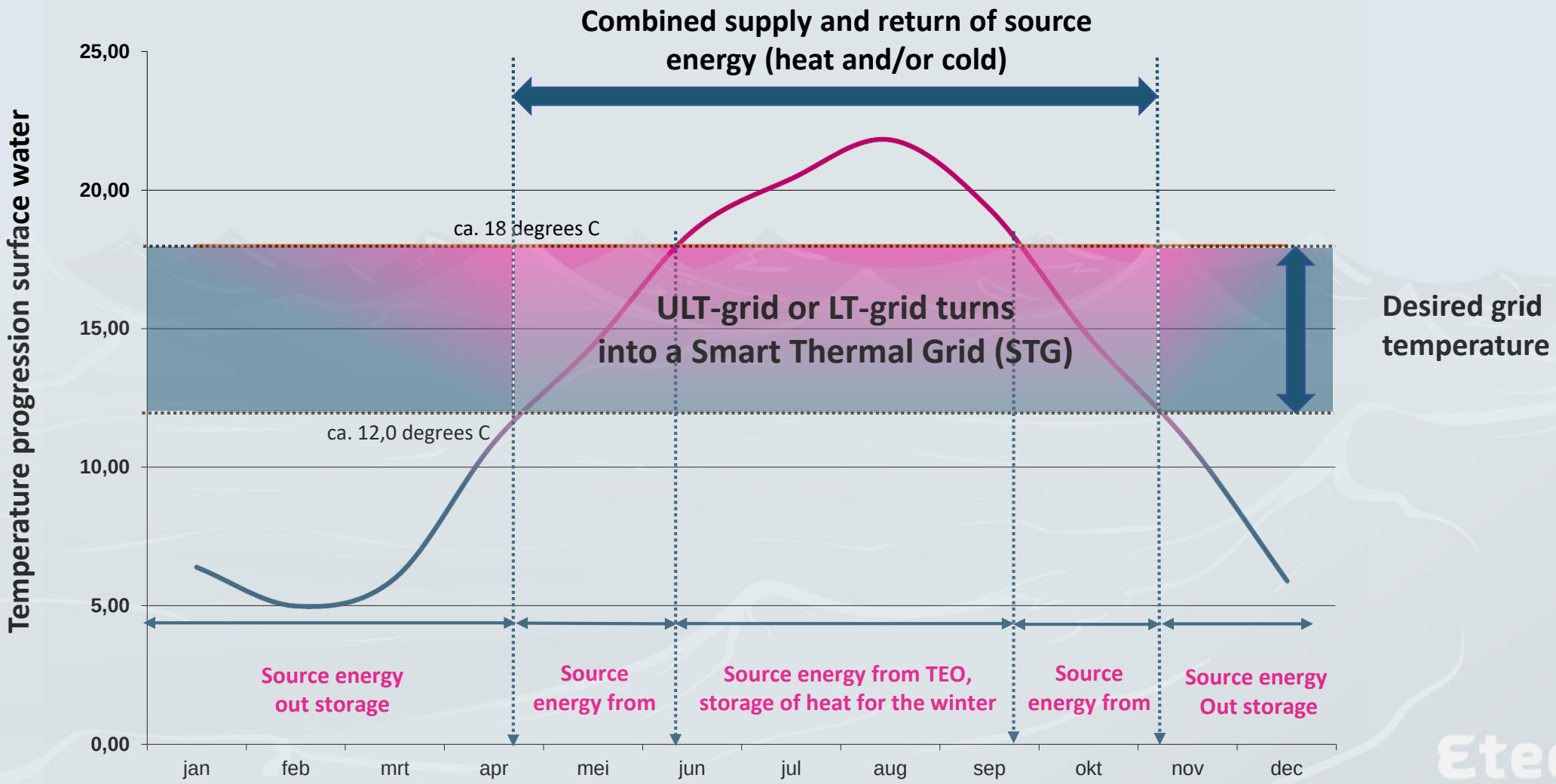


Sustainable residual heat

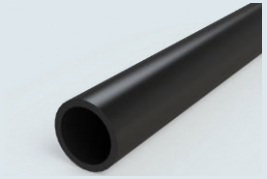
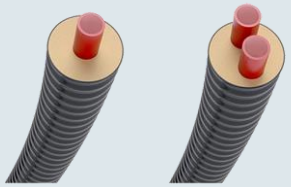
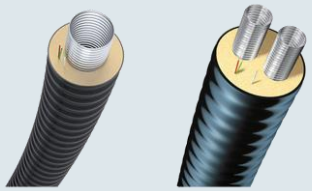
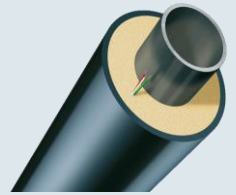
- Residual heat is energy that remains after (industrial) processes and is often unused
- This energy too can be stored and used to heat houses and other buildings
- Similar to aqua and solar thermal energy residual heat can be upgraded using a heat pump

Eteck

The great benefits of ULT or LT grids

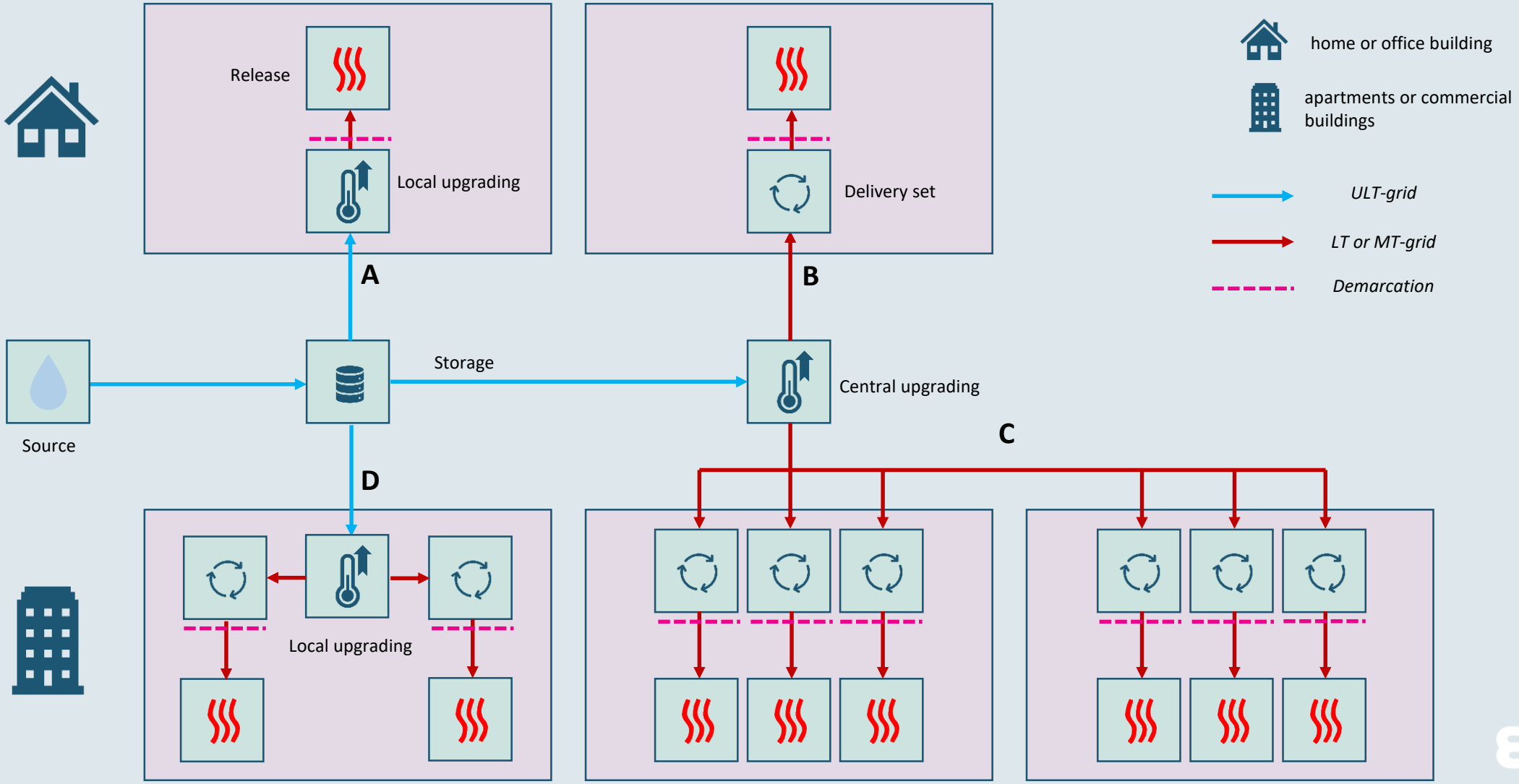


Some characteristics and properties of ULT- and LT-grid's compared to other thermal grids

Ultra-Low Temperature	Low Temperature		Mid Temperature	High Temperature
10 – 30 °C	30 – 55 °C		55 – 75 °C	> 75 °C
		Applied materials		
Uninsulated pipe HDPE	Insulated pipe HDPE		Insulated pipe stainless steel	Insulated pipe steel
DHW preparation with individual heat pump	DHW preparation with collective heat pump		DHW preparation with delivery set	DHW preparation with delivery set
DHW preparation with individual heat pump (60 °C)	DHW preparation with collective heat pump (60 °C)		DHW preparation with delivery set	DHW preparation with delivery set
Cooling ✓	Cooling ✓		Cooling ✗	Cooling ✗

Eteck

ULT- and LT-grid's for different buildings in practice



Eteck

Thank you for your time and attention!

More to see from Eteck?

eteck.nl | impact report | LinkedIn

Get in touch with us?

E-mail: info@eteck.nl | Tel.: 085-0218018

Disclaimer:

This presentation and any attachments are intended solely for the intended recipient. Access and use of its content is reserved for him or her. If you are not the intended recipient or its authorized representative, access, use and distribution is therefore prohibited. In case of incorrect receipt, you are kindly requested to contact the sender of this document as soon as possible and arrange for immediate removal of this document from your systems. Eteck can therefore never be held liable in any way for any breach of the GDPR requirements, if any, and associated responsible action on your part. We cannot accept any liability for the received content, nor can you derive any rights from it.

.

Eteck