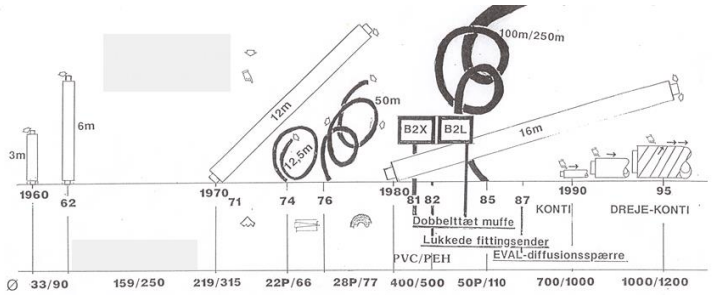
LOGSTOR

Advance Hot Water Piping

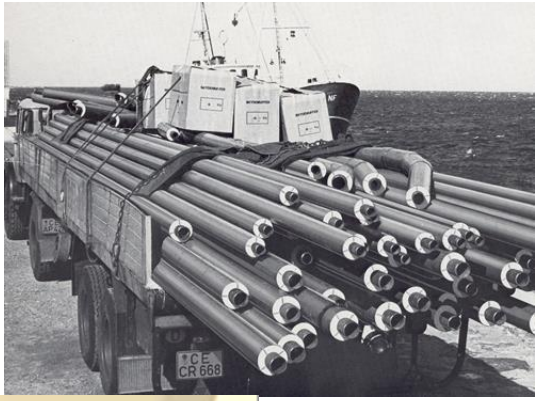
Jean Laganiere, P.Eng.
District Energy Product Manager
Georg Fisher Urecon Ltd.
December 6, 2017

LOGSTOR
Defining network efficiency

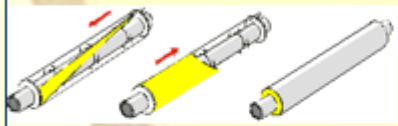
LOGSTOR's concept for DHC



- *We invented the buried pre-insulated pipe technology*



Traditional



All sizes

λ = 0,027 W/mK

Axial Conti & flexible

1. PUR-molding

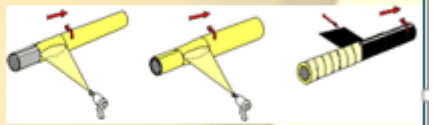
2. Casing extrusion

Max ø315 mm casing

λ = 0,023 W/mK

Spiral Conti / Opti-pipes

1. PUR-sprayed
2. Casing extrusiuon



Casing

Spiral > ø315 mm

Opti > ø500 mm

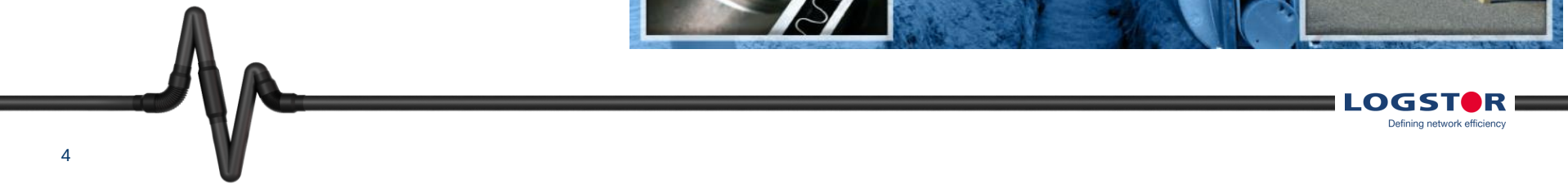
λ = 0,025 W/mK

Standardized and complete pipesystem with all elements included

With: Preinsulated straight pipe
- Preinsulated bends
- Preinsulated branches
- Preinsulated valves
- Connected with joins

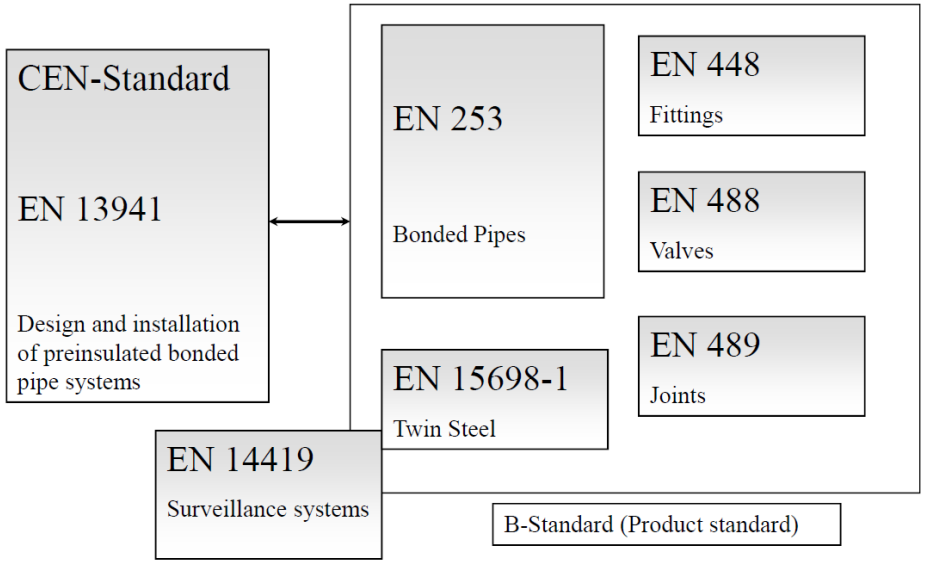
Low CAPEX

- Standardized industrial products, development based on +50 years of experience
- Established and proven EN standards, products, design & install, EN253, EN13941
- Simplification and optimization of design and installation
- Integrated fittings & joint solutions, savings by pipe & joint philosophy
- Robust and durable solutions
- Reduced installation costs
- Shallow trenching
- Quick & easy pipe installation



Design of Bonded Pipe Systems

- European Standards



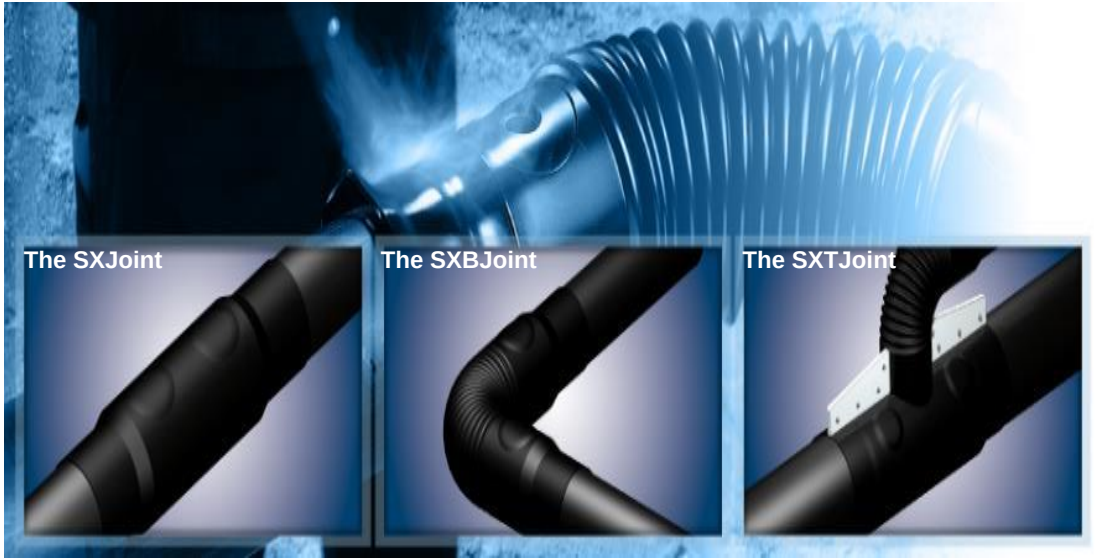
EN 253 Piping in NA

Why choose EN over traditional steel systems?

- The **thin wall steel** results in reduced overall stress versus conventional schedule 40 steel—allowing numerous laying methods often saving in number of expansion loops and welds. Thin walled steel is also more flexible allowing for fewer fittings.
- **Design**. EN systems are **shallow bury** (min cover 2 ft) saving in excavation and civil costs.
- **Quality and 30 year service life.** The EN 253 system is a fully welded system (no flanges). It comes complete a with **five year warranty** (NA systems have one year warranty)
- **Leak detection.** Simple and effective central surveillance that constantly monitors the pipe network for faults (and precise location). Even minor irregularities can be detected providing basis for preventative maintenance.

LOGSTOR
Defining network efficiency

Our Innovative design : more flexibility



LOGSTOR
Defining network efficiency

Innovation in Service Connexion

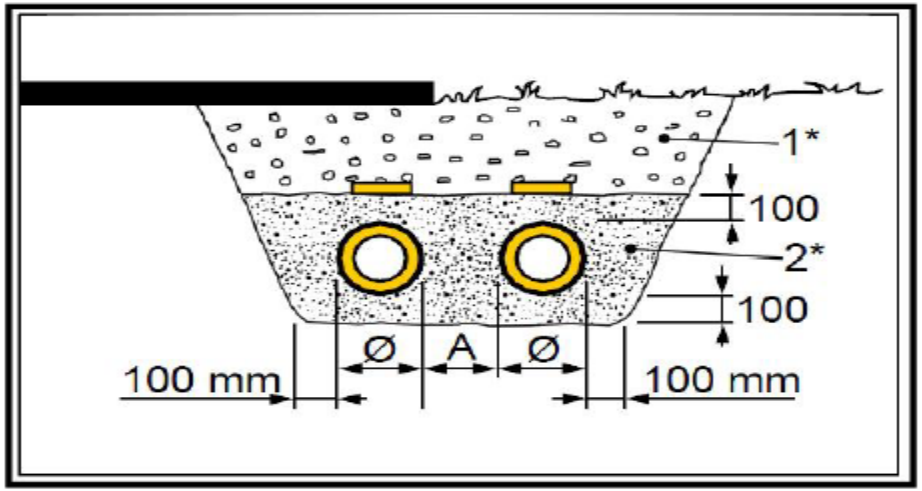
INTRODUCING A NEW GENERATION OF PRE-INSULATED FLEXIBLE PEX PIPING – REINFORCED WITH KEVLAR – SHIPPED IN COILS.

- **Larger** sizes and **higher** temperatures: up to 160 mm (6 in) at 115°C (240°F) @ 16bar (230psi). Custom temperature/pressure configurations available.
- Ideal for FAST installations in remote locations or busy urban cores - industrial or hydronic applications.
- Due to reduced carrier pipe wall thickness, these pipes have smaller ODs compared to conventional flexible plastic solutions – making them easier to handle and install.
- Full range of supporting press fittings and joints.

Civil work represent 60% of the Total project cost

The Trench

LOGSTOR

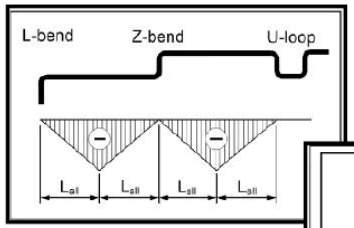


Casing ø mm	Distance A mm
90-180	150
200-560	250
630-900	300

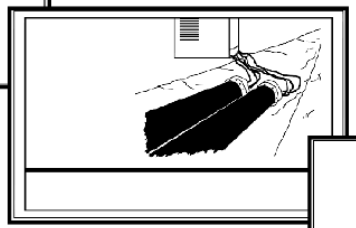
3 Methods to Reduce Axial Stresses

LOGSTOR

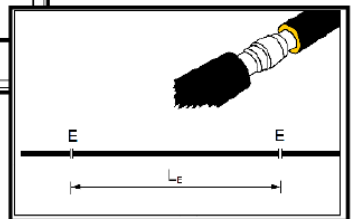
Stress reduction with bends



.. by prestressing



.. with E-Comp



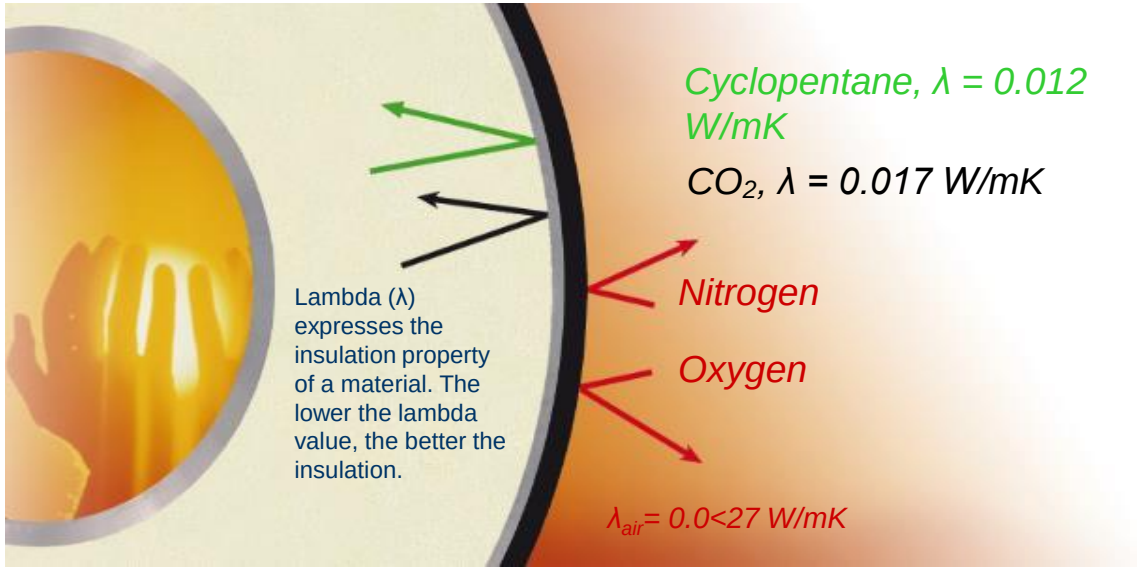
Design manual section 1.10

Energy Efficiency / Heat Loss

- Lower operating costs
- Less environmental impact

Our diffusion barrier

- Prevents ageing of insulation
- Reduces energy losses
- Implemented in pipes & joints



LOGSTOR
Defining network efficiency

OPEX optimization, type of pipe system

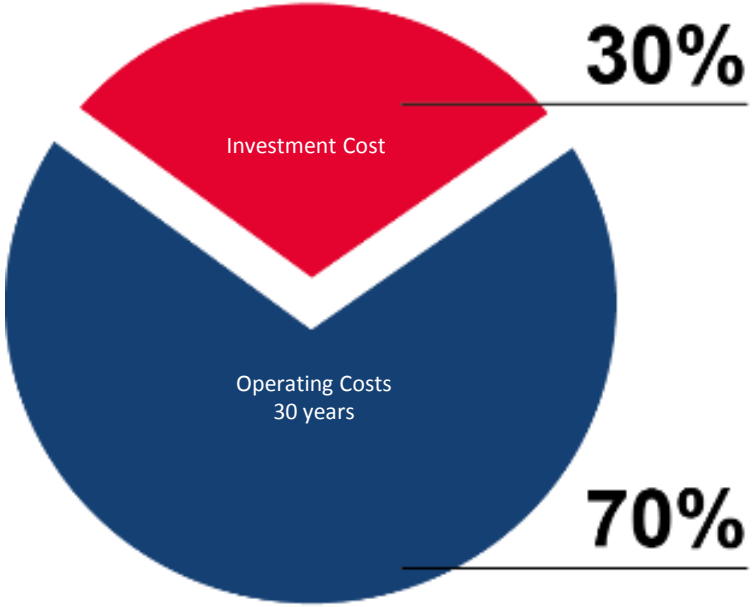
Example:
Heat loss - 1000 m
DN 80 – average 30 years

LOGSTOR
Defining network efficiency

Total Cost of Ownership / Lifetime costs

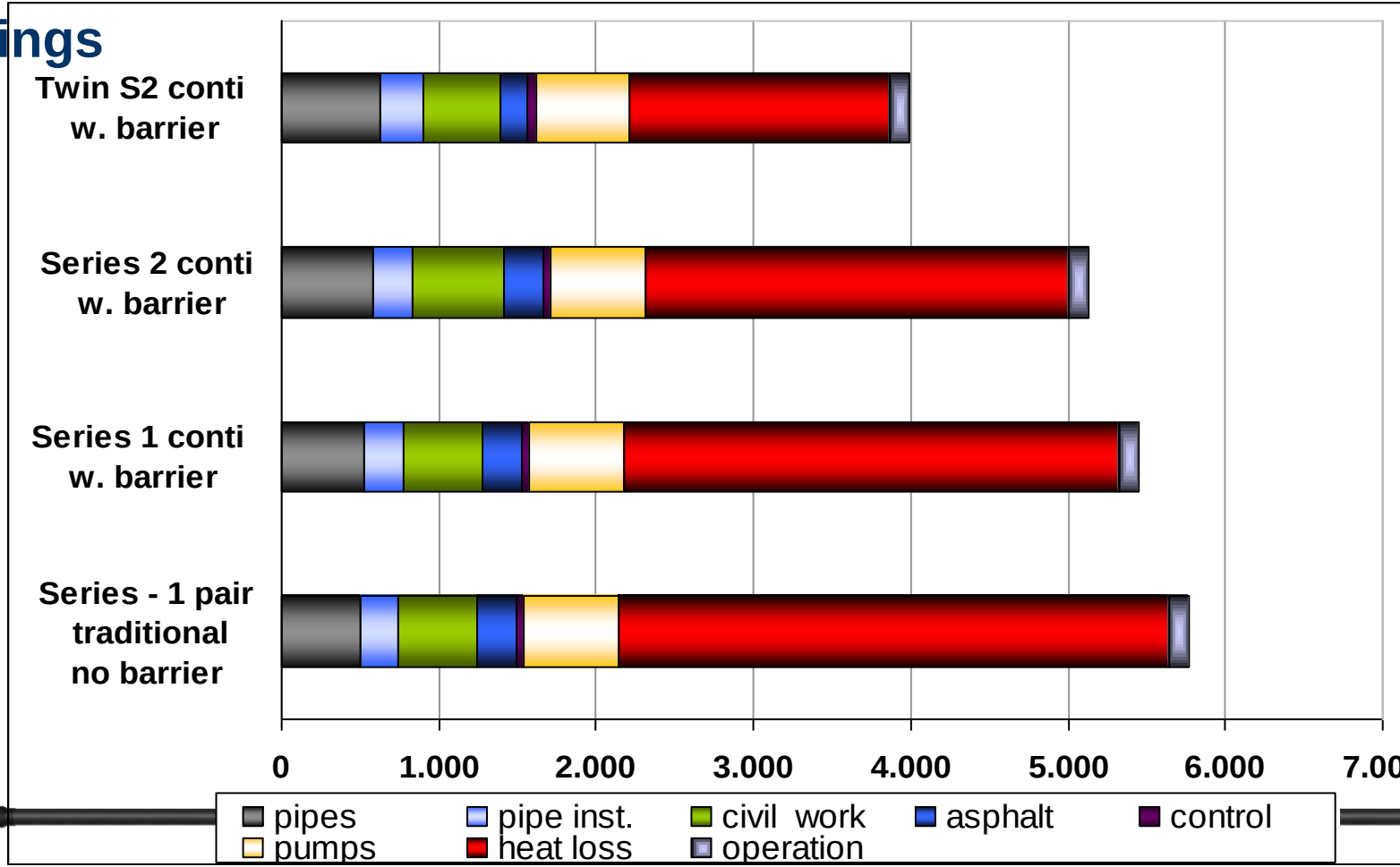
1. **Investment costs**
2. Purchase costs, components
   - Installation costs
   - Costs of planning and commissioning
3. **Operating costs** (annual costs)
   - Costs of energy & heat loss
   - Costs of maintenance
   - Costs of repairs
   - Costs of poor quality

4. **Total costs of the solution**



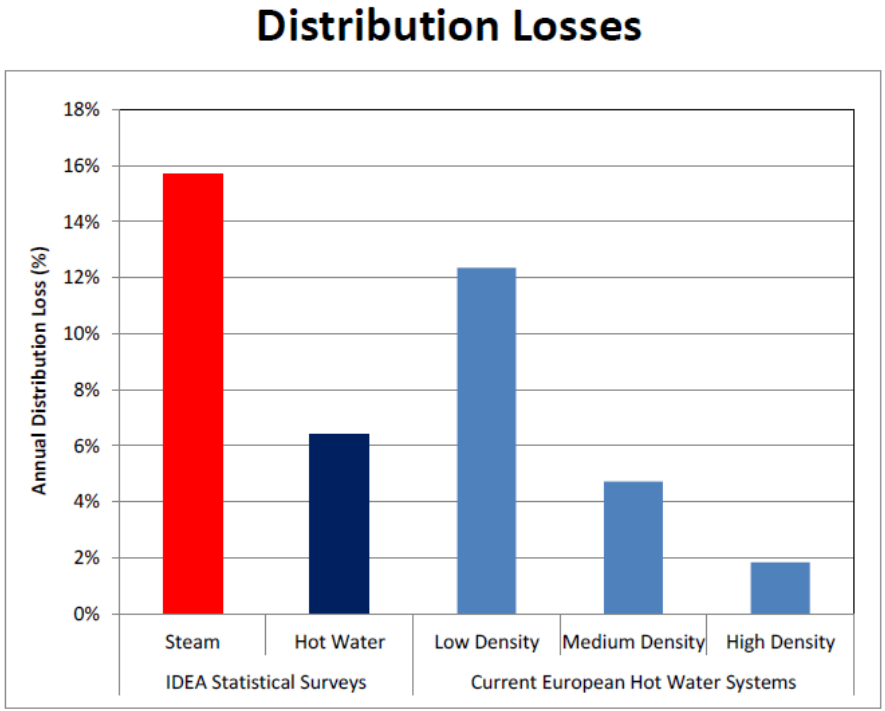
LOGSTOR
Defining network efficiency

OPEX savings



Hot water vs. steam distribution

- Lower capital costs
- Low distribution losses
- Reduced maintenance costs
- Enables access to a wider range of renewable and waste heat thermal resources
- Storable, thus facilitating technically or economically intermittent resources

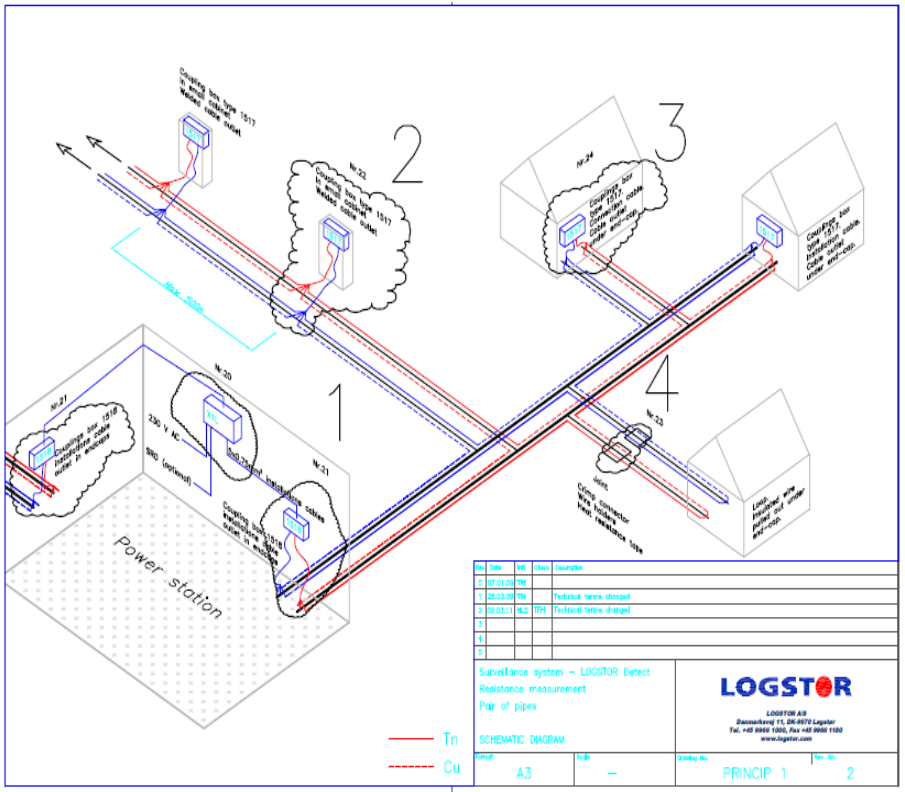


FVB ENERGY INC

Global Presence
Local Solutions

LOGSTOR
Defining network efficiency

System longevity secret : alarm system- quality joint- water treatement



LOGSTOR
Defining network efficiency

LOGSTOR Value Proposition to campuses, references

- **Stanford University**
- Part of Stanford Energy System Innovations program
- Meet growing energy needs while cutting costs and emmissions
- New CHP energy center, production of power, heat and cooling
- Steam to hot water conversion
- 24 miles of preinsulated pipes in dn50-dn600
- Installed in 2013-14

- **University of British Columbia**
- Establish a sustainable and energy efficient energy system
- Steam to hot water conversion project
- Combination with CHP based on renewable energy sources
- 20 km of preinsulated pipes in dn32-dn400
- Installation during 2014-2016

LOGSTOR
Defining network efficiency