



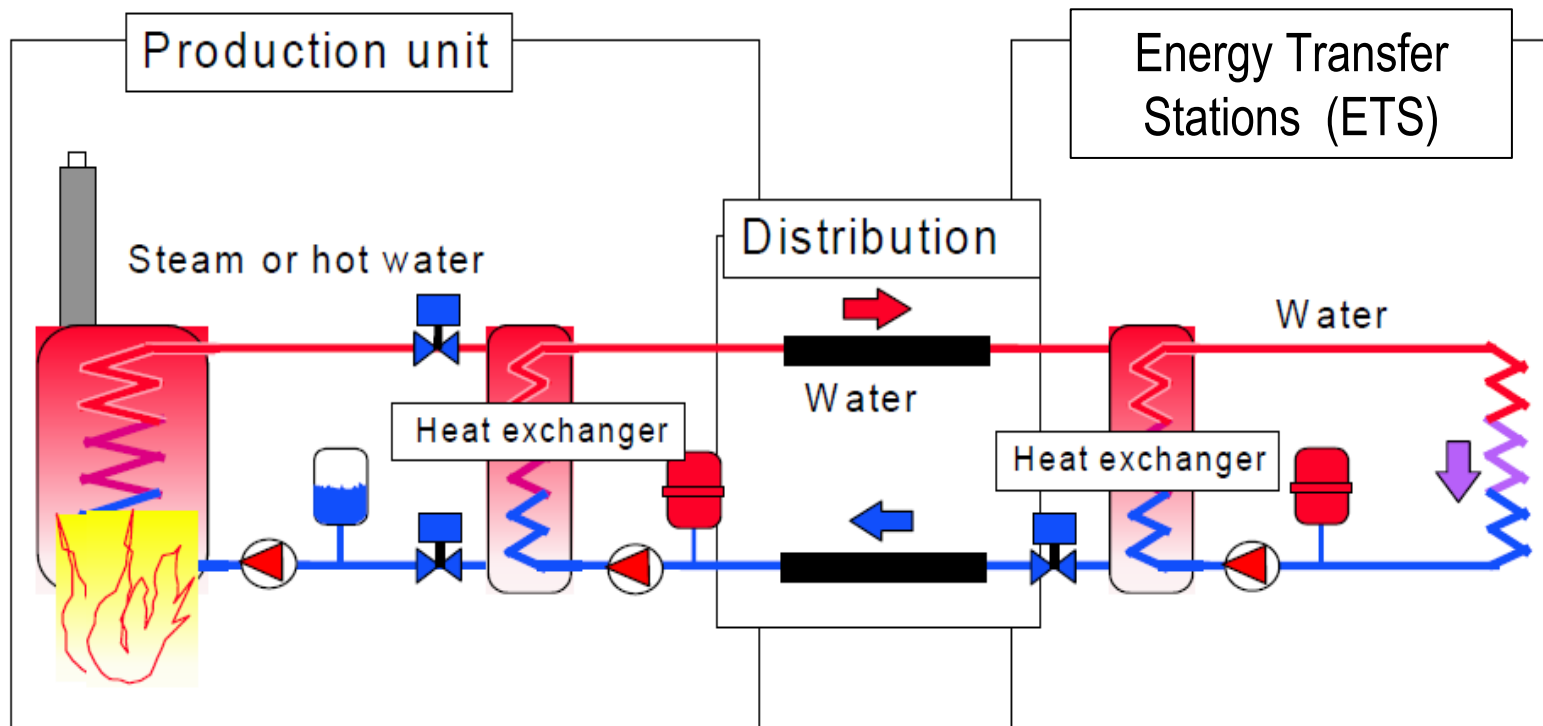
Pre-fabricated Energy Transfer Stations (ETS)

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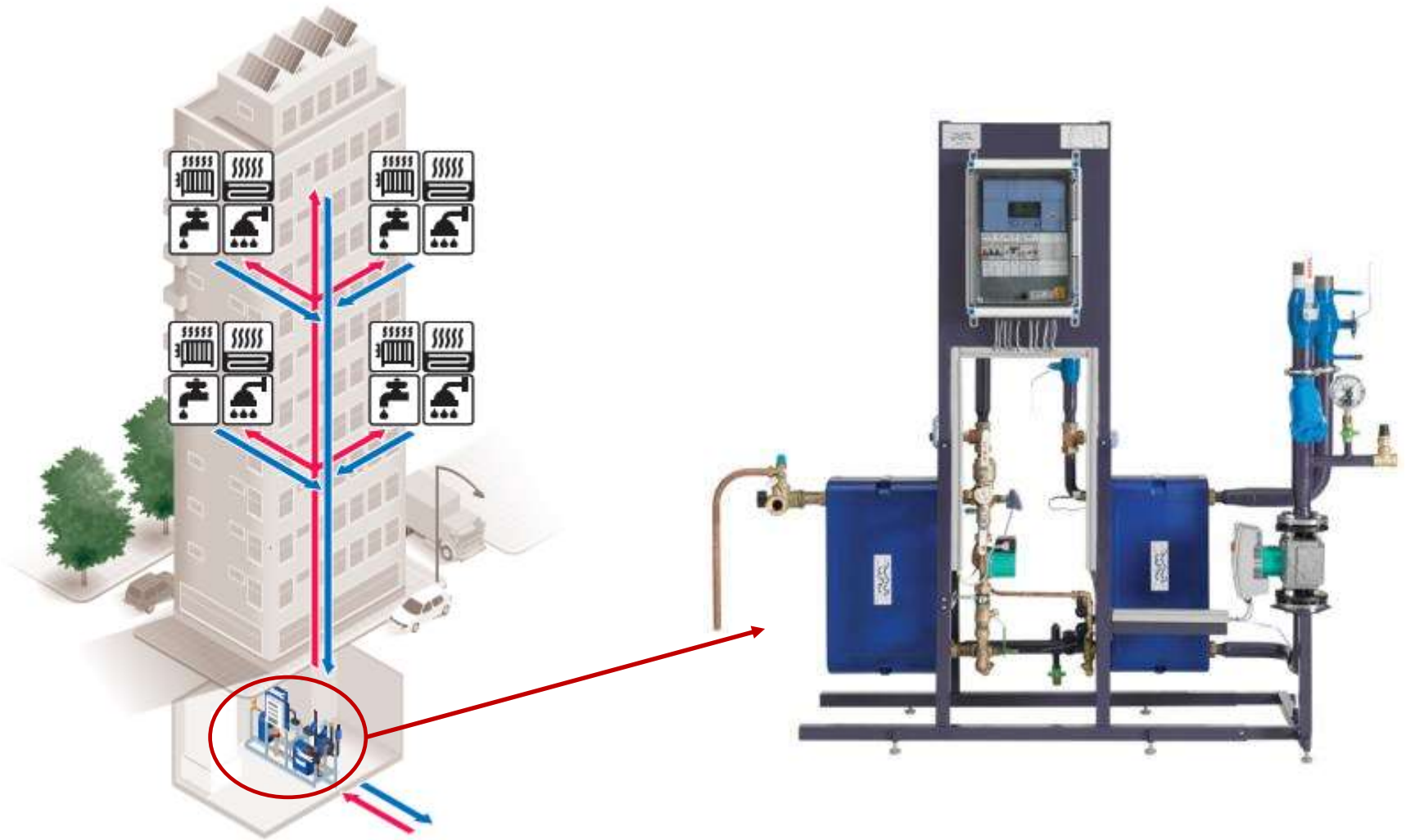
Vancouver
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District Energy Principles

Three main components



Typical Energy Transfer Station



Stanford ETS Case Story 2012-2015

- Project includes some 140 ETS
- First 10 ETS were field erected on site
- 130 were supplied as pre-fabricated ETS



Stanford ETS Case Story 2012-2015

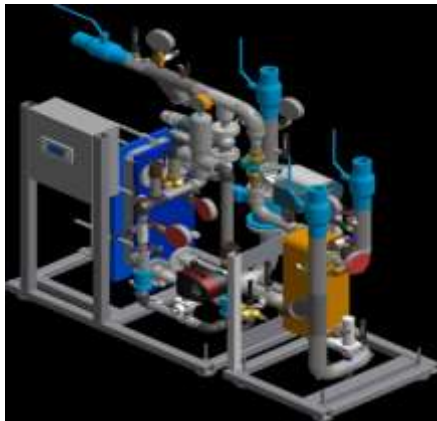


- Field erected installations took 4 weeks / ETS for one installation group
- Pre-fabricated installations done only in 1week / ETS. => saved 390 weeks (130*3w) for installation group time
- Theoretical savings $(5\text{men} * 50\$ * 8\text{h} * 5\text{d}) * 390 \Rightarrow 3,9 \text{ MUSD\$}$
- Pre-Fab. ETS also helped vitally to reduce the time required between contract award and starting installation work
- ETS supplier was the only one to contact for changes, start up or claims for all main components (pumps, control equip., energy meter, Heat exchangers etc.)
- All parties has been really satisfied for end results



Rochester ETS Case Story 2015

- Project includes 9 ETS
- Really cramped space for installation
- ETS max. width 32" and length 44" before break point
- Still disassembling needed but reassembly was easy because quick connection sensors etc.
- Installation time for 9 ETS was 2 months (app. 1 week / ETS)



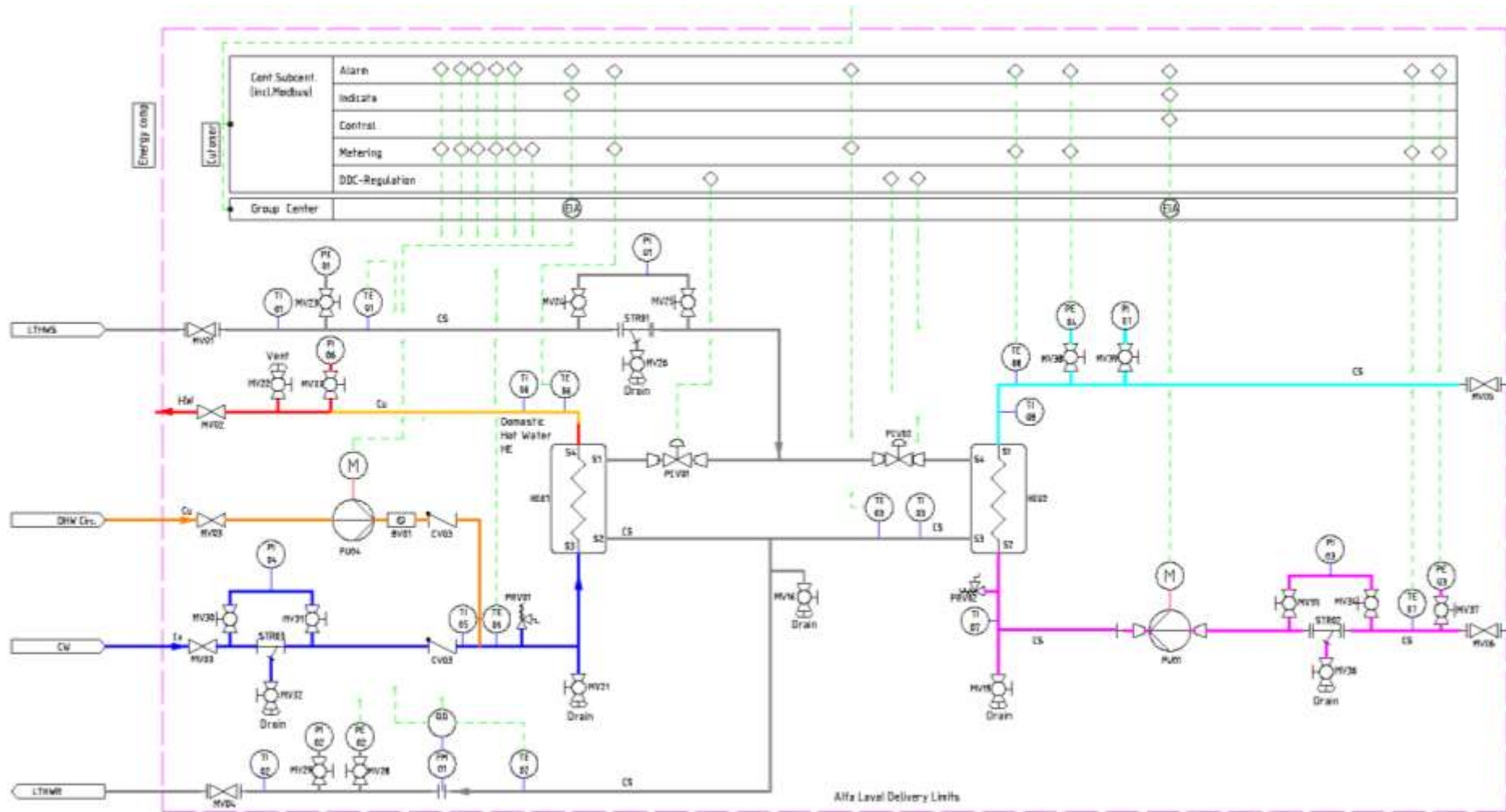
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Main components of ETS

- Heat Exchangers
- Control equipments
- Pumps
- Energy meter
- Piping components



Typical flow chart



Conventional ETS-Field Installed

- In Scandinavia (back in the 60's), and also currently used in some parts of Russia and China (larger capacities) and in most North American installation
- Design and selection of main component is done by different suppliers (does not necessary fit together)
- May not be hydraulically balanced
- Location of main components
- On-field installation for major components for one ETS could take several weeks
- Relative high costs



Conventional ETS-Field Installed

- Potential work-place hazards due to hot-works
- Scheduling on-site arrival of different components could be a challenge
- Large space requirements



The better solution: Pre-fabricated ETS



- A pre-fabricated ETS is delivered as a compact package, completely pre-piped, tested and ready for installation and immediate use (Plug&Play)
- ETS manufactures have experience of DE
- The manufacturer takes full responsibility for the design and function of the substation
- Factory installed units means much less work on site
- Manufacturing is done in a suitable environment => high quality
- Short Installation time, hardly any interruption in hot water or heat supply

The better solution: Pre-fabricated ETS

- Automation designed especially for DE, has many energy efficiency functions
- Lowest possible return temperature; saves energy
- System operation is easy; remote control -fine tuning made from distance
- For electrical installation only one main power supply needed to install on site



The better solution: Pre-fabricated ETS

- Pre-fabricated ETS is compact, neat and safe
- ETS have been tested
- Installation company have only one delivery and contact for ETS
- Supplier takes care of any possible problems (warranty) inside ETS.



Energy efficiency

Prefabrication ensures all components are properly dimensioned and compatible.

- Automation designed especially for DH substations has remote operation interface - fine tuning made from distance
- Lowest possible return temperature
- Lower energy consumption
- Less transport per package is needed



Requirements for low return temperature (energy savings)

- DHW also included
- Quality heat exchanger – (AHRI Certified)
- Control equipment and remote control
- Special DE software programming with friendly user interface (web,bacnet etc.)
- Fine tuning made from distance, also alarms
- Pumps and control of those
- Correct design of components above



“Show me the money!”

- Savings in time – reduce installation time by 75%
- Savings in money – design time and installation time
- Savings in Energy – with a systematic design and using smart controls, maximize energy efficiency during operation with continuous smart control



Proven success

In Scandinavia first installation of ETS was done in the 50's. Since then hundreds of thousands of ETS have been delivered in Europe on site installations is very rare.

- Increased cost efficiency
- Increased energy efficiency
- Better quality
- Increased safety
- Better user comfort
- Better competitiveness for DE



It is so easy...

Click the link and see the video...

[Alfa Laval Maxi ALS-02](#)



Thank you

Questions?

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