

FTDD Concept

What is that?

This is an example based on a "standard" Office Building – size ca. 15.000m²

- What is possible to achieve within 4.5 hours

This presentation is aiming at showing the potential with Engineering based on FTDD – Fast Track Detail Design. This Concept for Engineering shall show the Potential for using better and more efficient Engineering tools compared to whats normally used in the business (in Denmark) today.

FTDD Concept....

=D; Roof – Steel Structures

Standardized concept for Structural Steel for Technical Installations on the Roof. The Design is without Thermal Bridging to the Concrete Structures and therefore not Transfer of Moments to Building Structure. Detail Design of Roof Steel Structure shall be finished within approximately 2 working days including coordination with the Technical Installations.

There is also a version without support for Solar Panels.

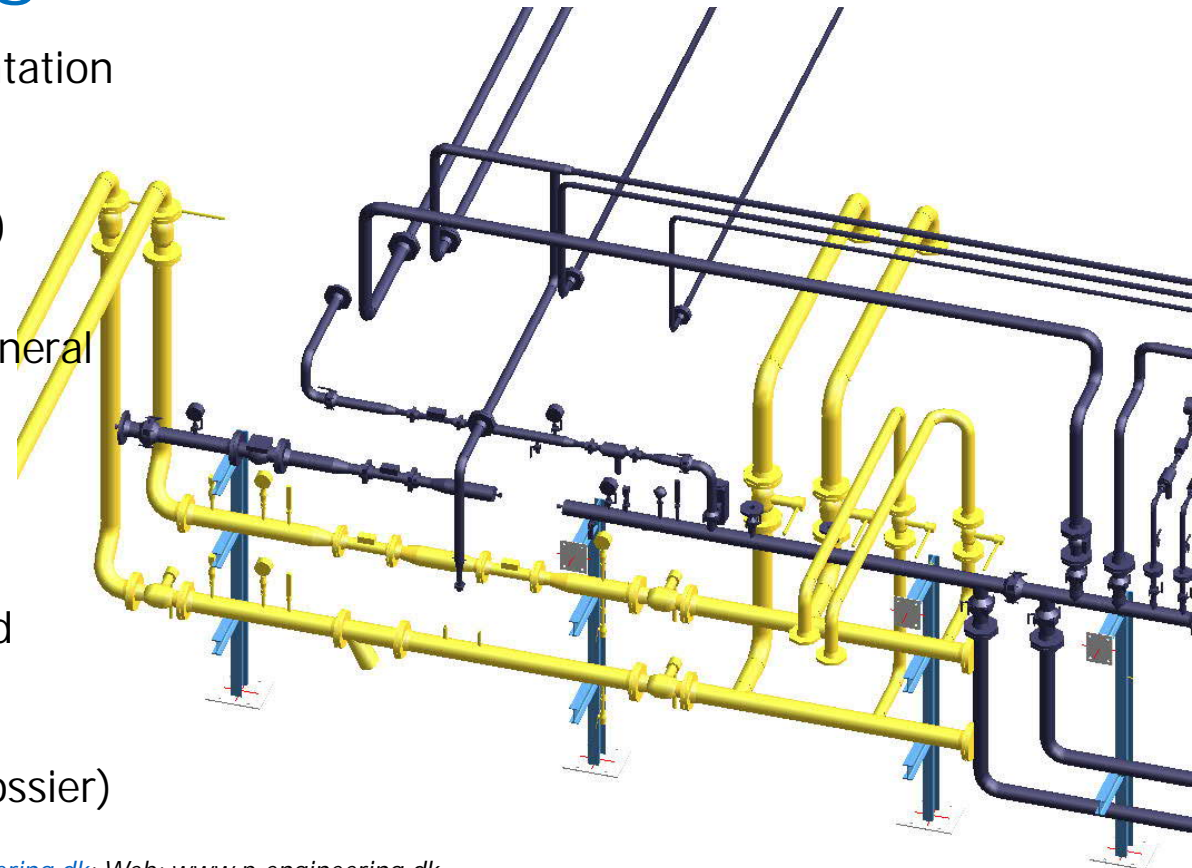


FTDD Concept

=H01 District Heating Main Distribution

District Heating Skidmounted Rack – Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
- FAT & SAT-protocols
- DS3090 Test Paradigms (DK only)
- Electrical: MCC Boards, PDBs and Cabling
- Instrumentation: Specification, Cabling, and Remote I/O design
- PLC Programming with SCADA
- CE-marking and Risk Analysis (Technical Dossier)

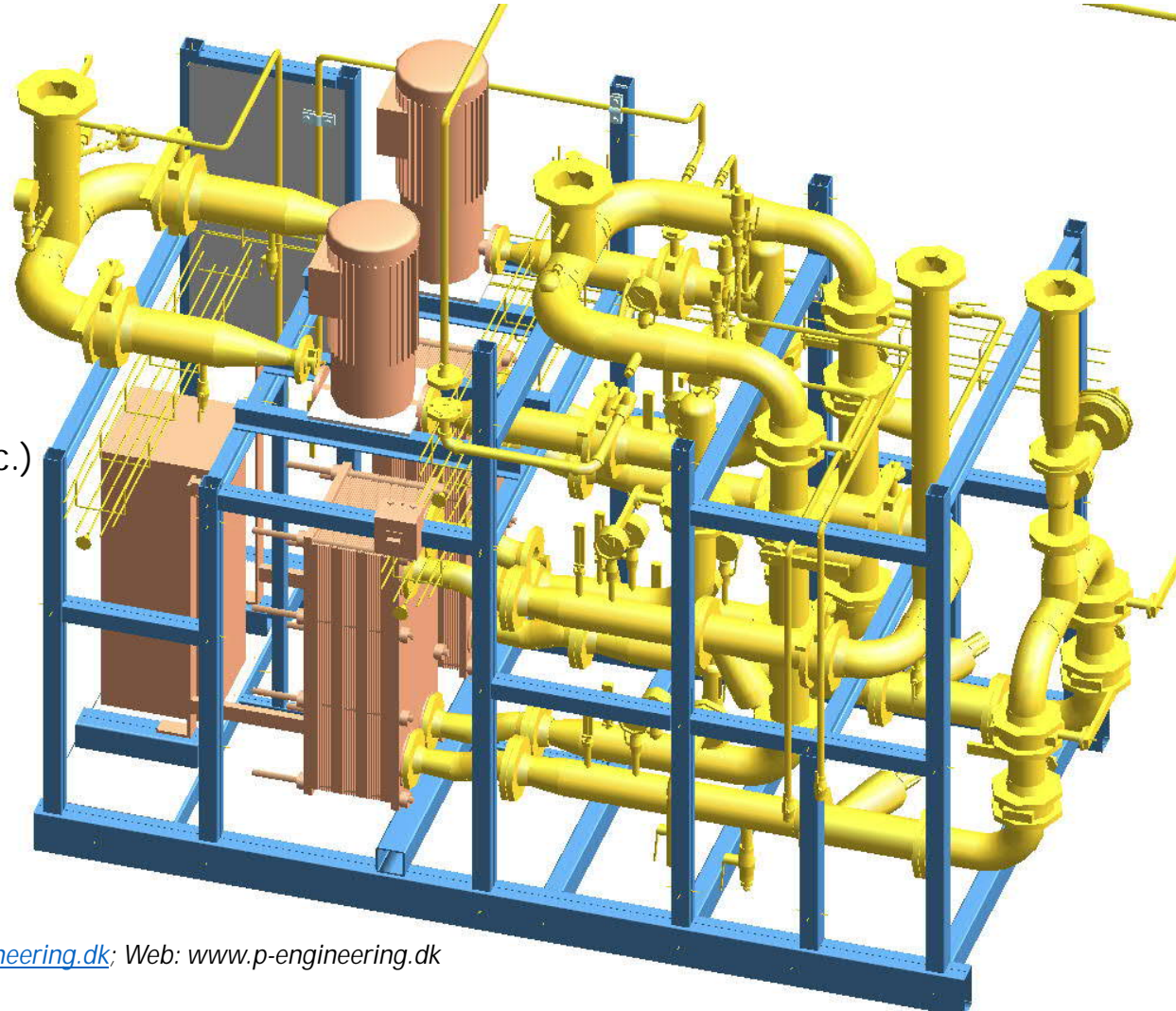


FTDD Concept...

=H03 Heating Unit

Heating Unit out of the Box – Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
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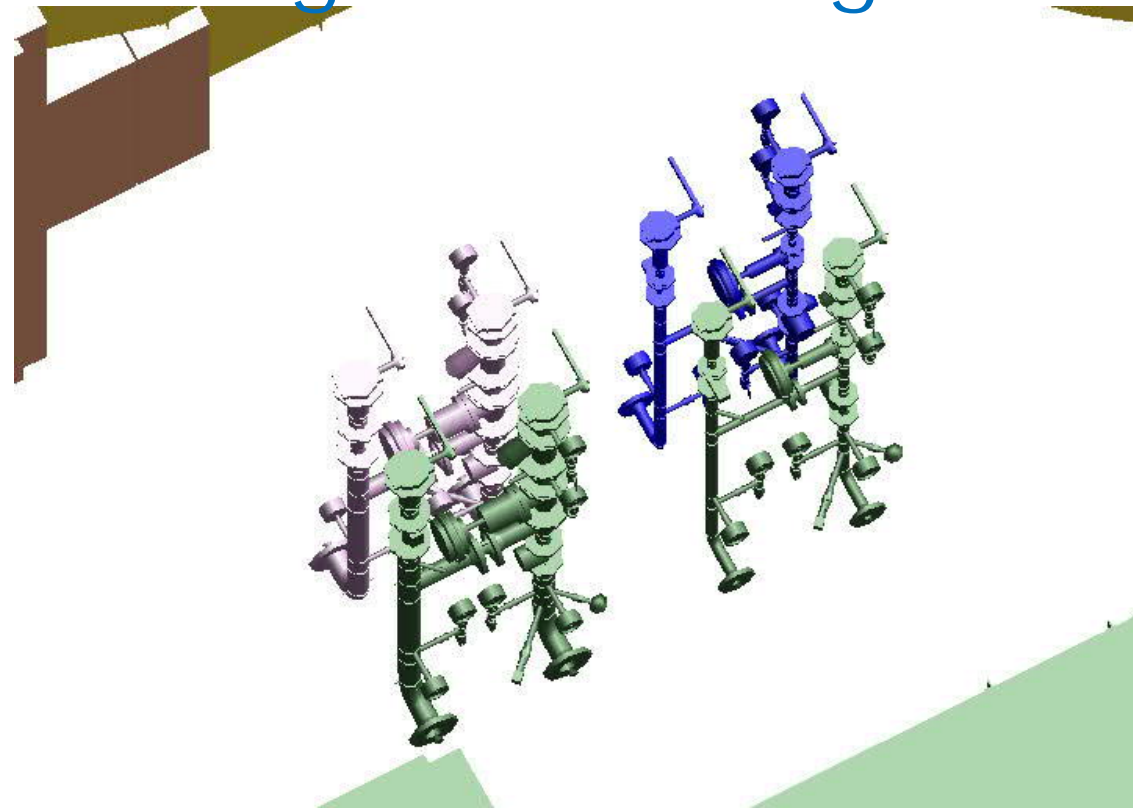


FTDD Concept..

=Hx4 Mixing Loops – Heating and Cooling

Mixing Loops for Heating and Cooling for the Air Handling Units (AHU). Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
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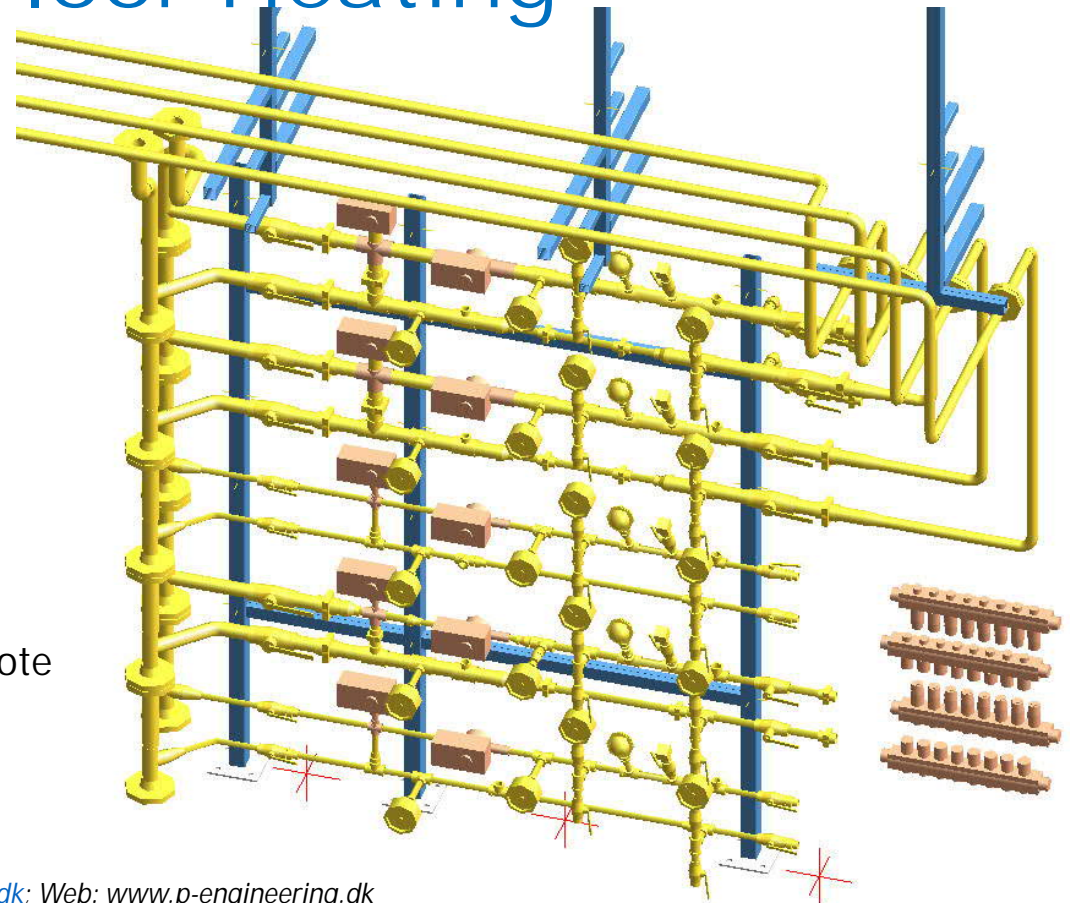


FTDD Concept...

=H05 Mixing Loops: Floor Heating

Mixing Loop for Floor Heating, Fan Coils etc.
Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
- FAT & SAT-protocols
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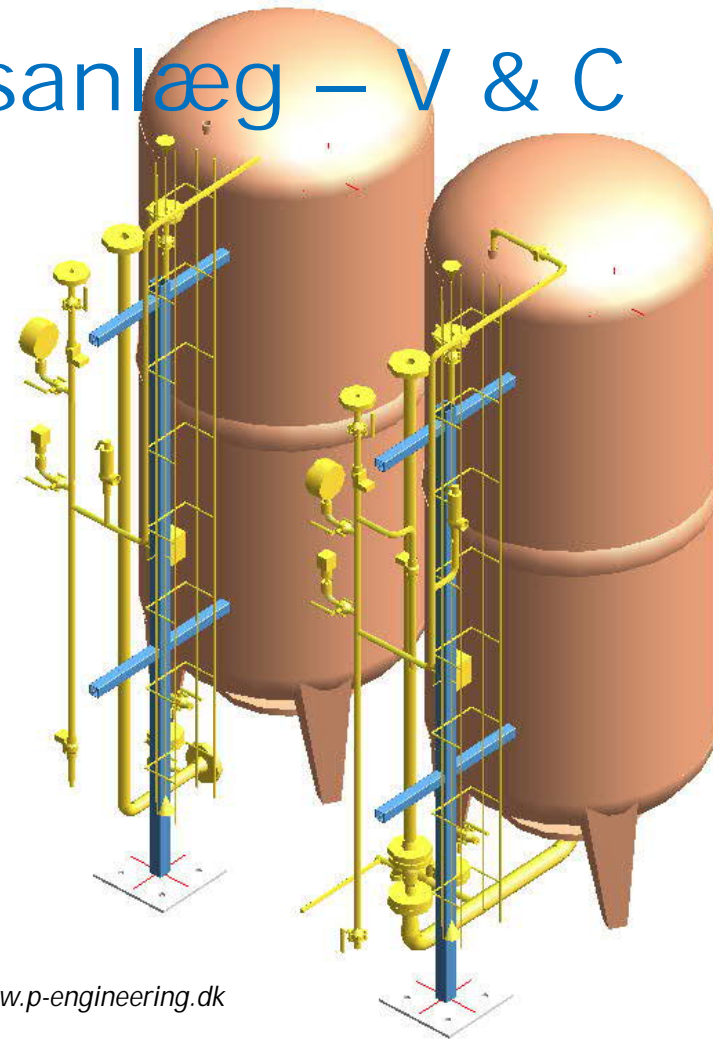


FTDD Concept...

= Hx3.KG01; Ekspansionsanlæg – V & C

Expansion Units with Mak-up Water and Leakage/Break Alarm. Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
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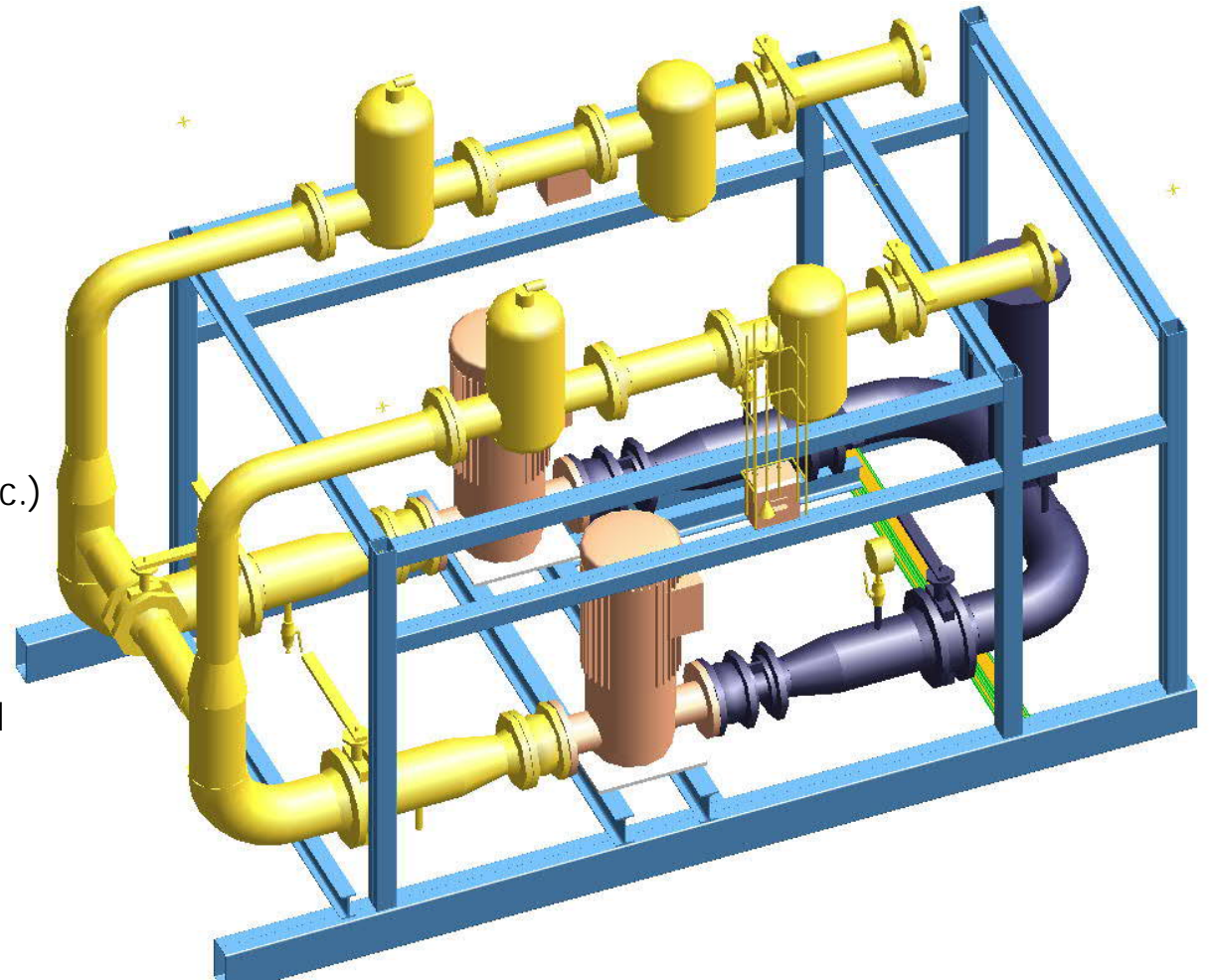


FTDD Concept...

=H13 Cooling Unit

Heating Unit out of the Box – Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
- FAT & SAT-protocols
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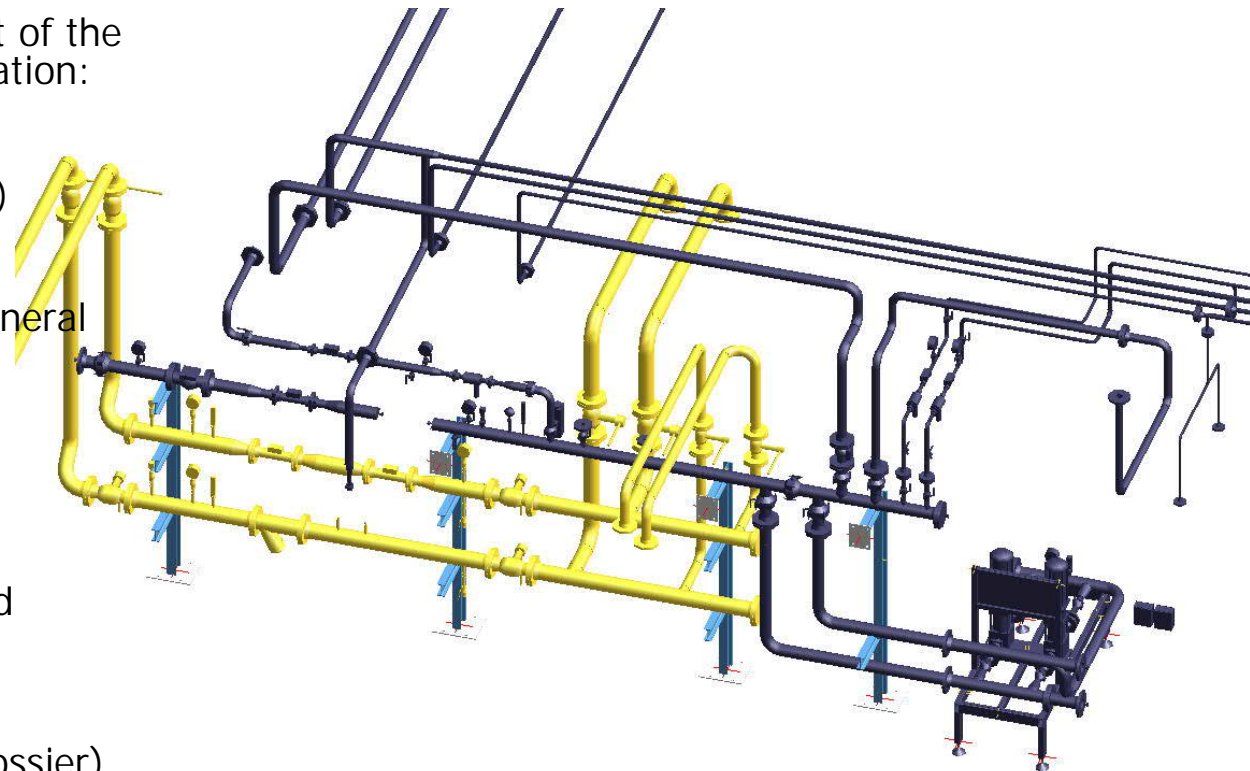


FTDD Concept...

=F01 Water Main & =F03 Booster Unit

Water Main Skid Mounted and Booster Unit out of the Box – Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
- FAT & SAT-protocols
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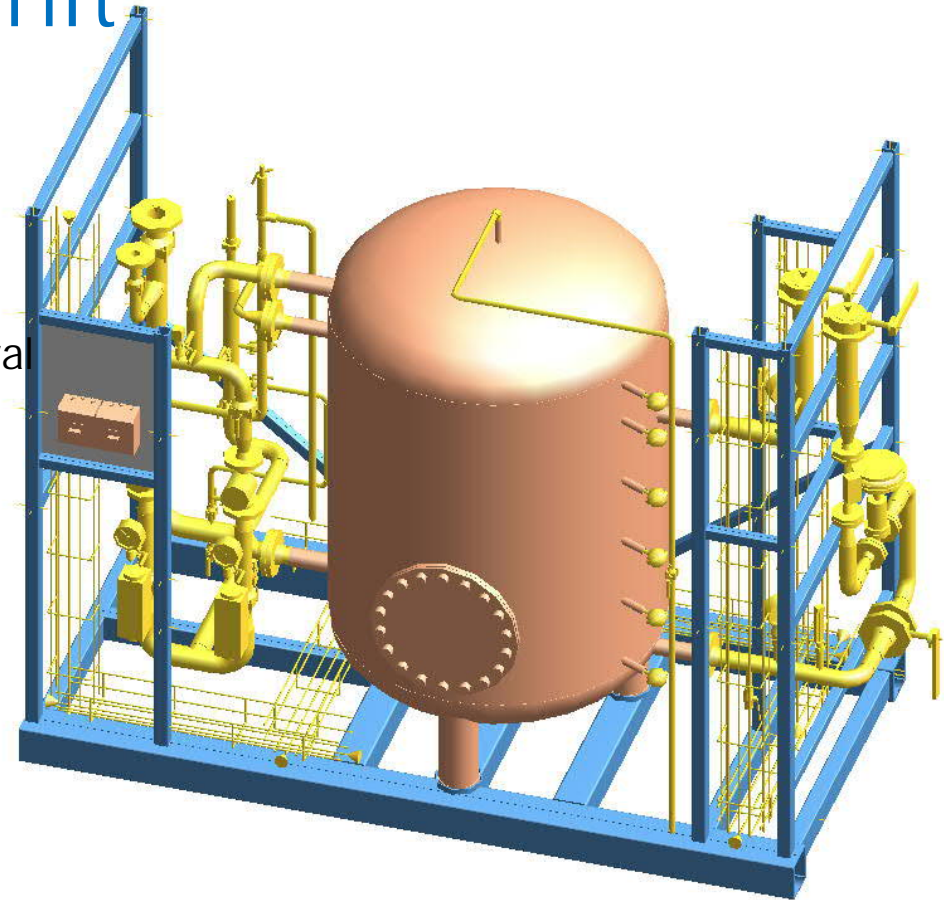


FTDD Concept...

=F04 Hot Tap Water Unit

Hot Tap Water Unit out of the Box –
Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
- FAT & SAT-protocols
- DS3090 Test Paradigms (DK only)
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- CE-marking and Risk Analysis (Technical Dossier)

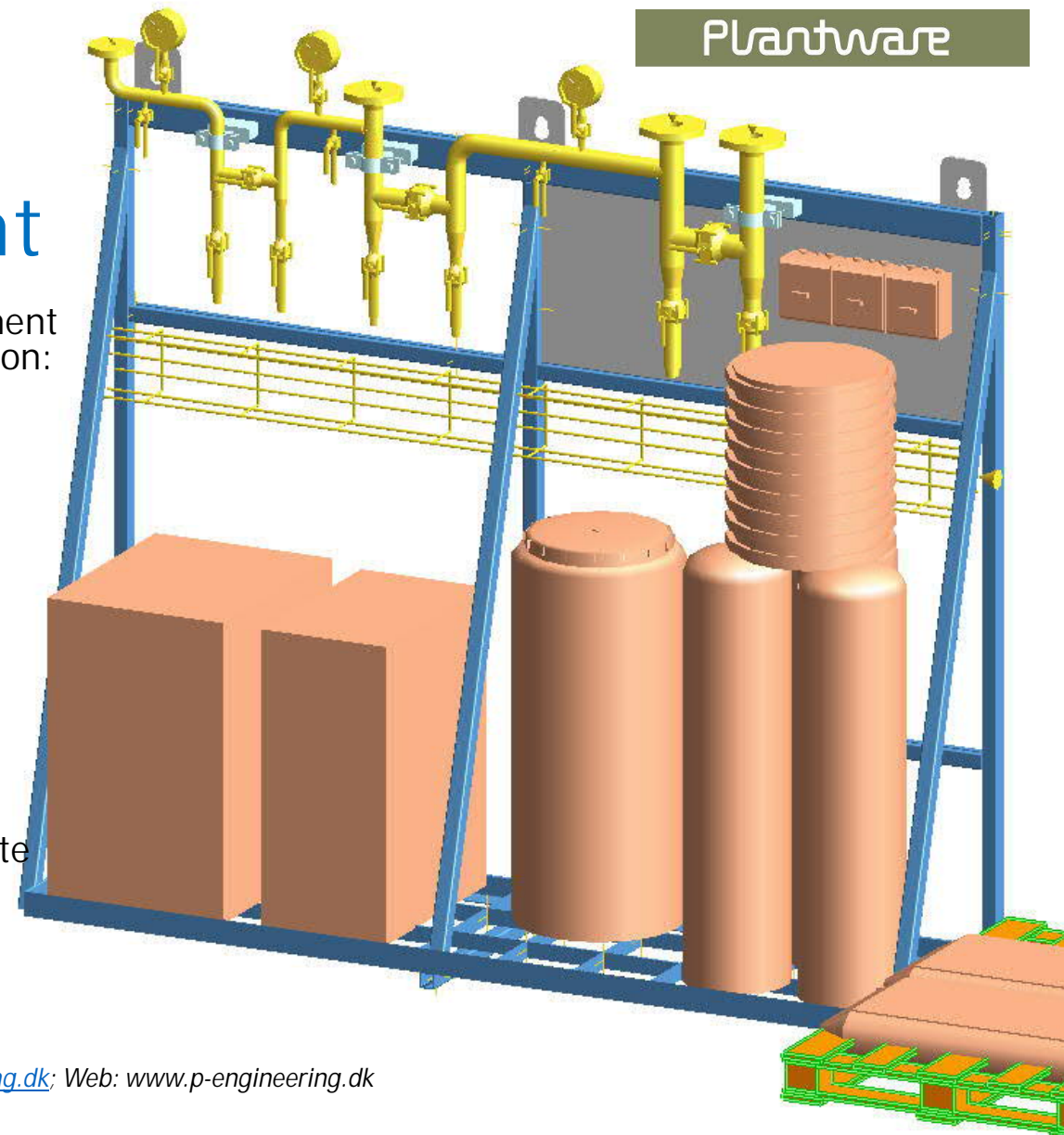


FTDD Concept...

=Fxx Water Treatment

Unit prefabricated based on Commercial Water Treatment Suppliers – Documentation ready for shop prefabrication:

- Functional Descriptions
- Manufacturing Drawings, Piping (LOD400+)
- Manufacturing Drawings, Steel (LOD400+)
- Purchase Specifications (Control Valves, General Valves, Heat Exchangers, Pumps etc.)
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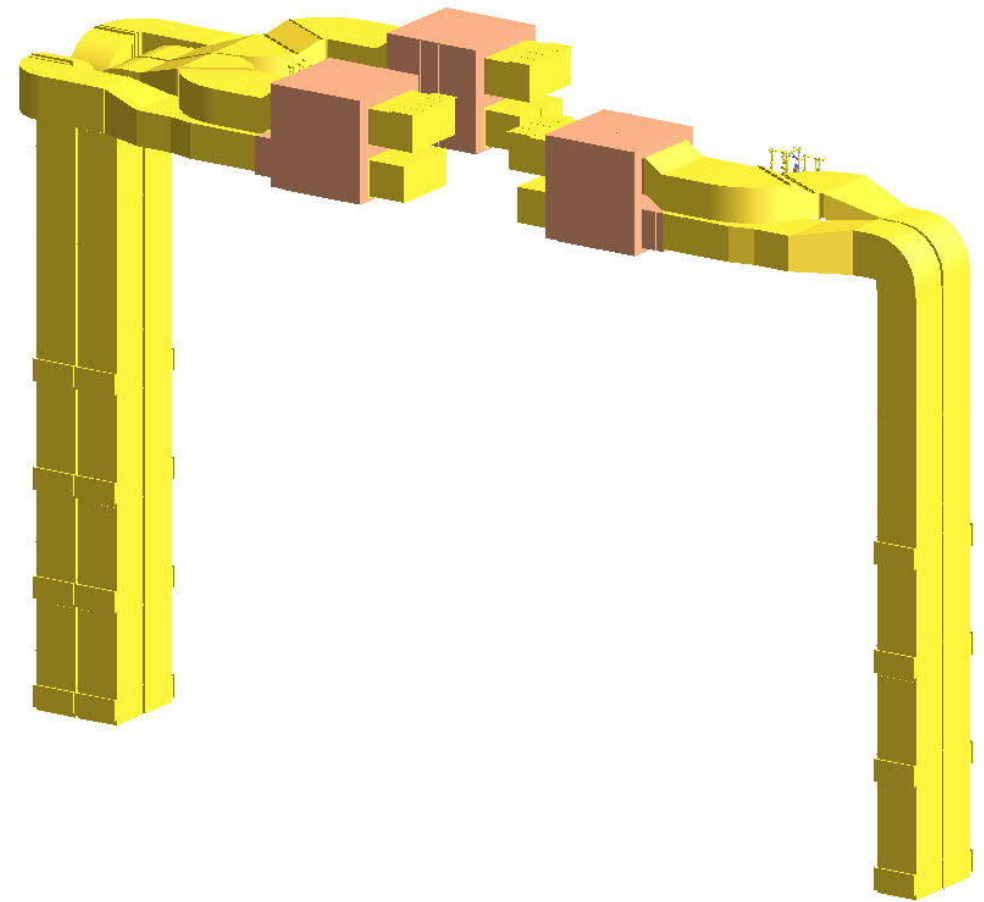


FTDD Concept...

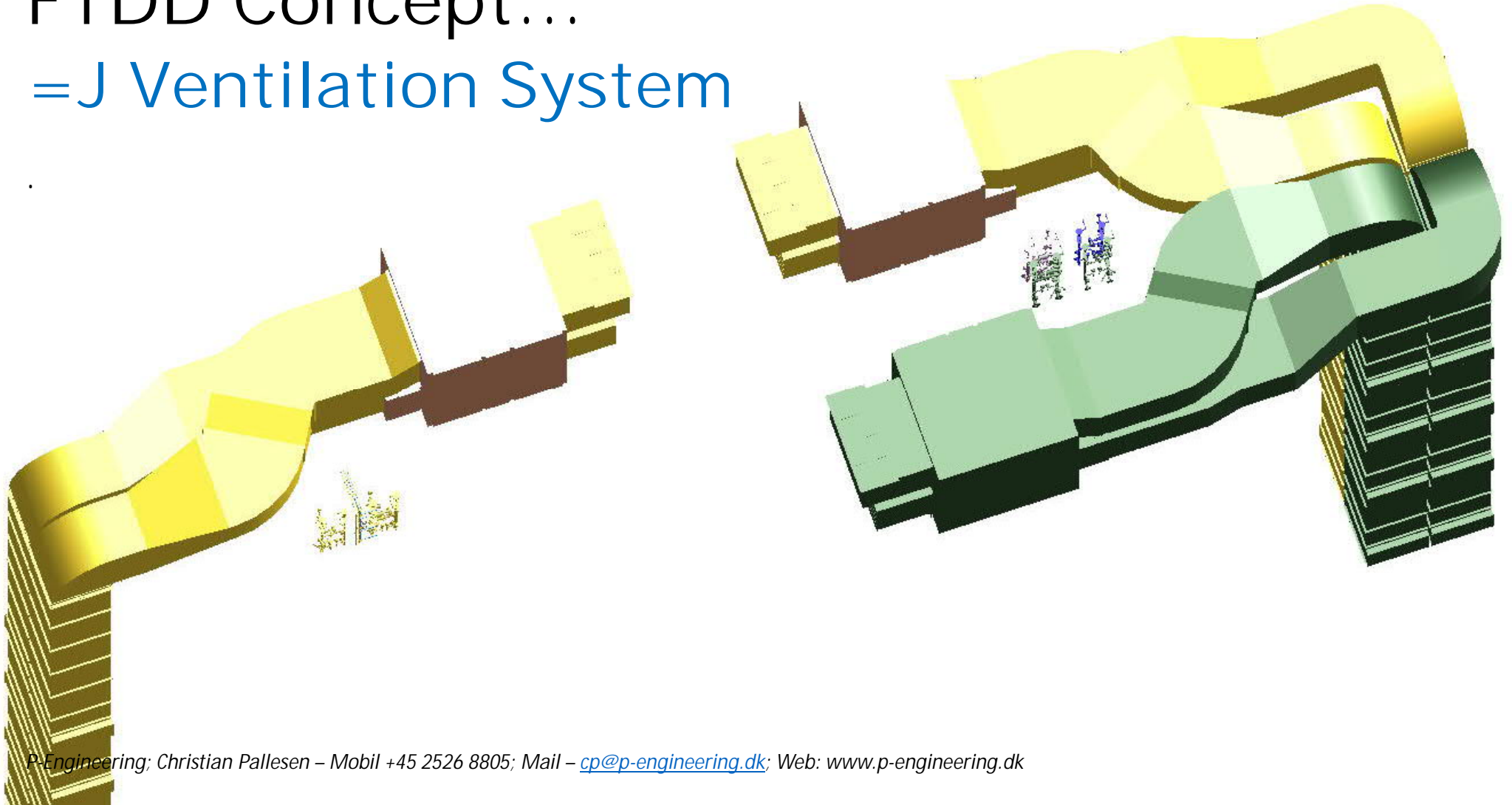
=J Ventilation System

Main Ventilation and Distribution in Vertical Shafts. The Southern Shafts cover a 1/3 of the area. The Northern Shaft with 2 off Systems covers 2/3 of the area.

Pending is Kitchen Ventilation which should be its own Full System as Process Ventilation as there is no upper Cap on Energy Consumption for this type of Ventilation. Furthermore, Parking Ventilation is Pending.



FTDD Concept... =J Ventilation System



FTDD Concept... =M31 Technical Network

Ready to Go Design of Technical Network –
the Backbone of the Intelligent House:

- Network Architecture
- SCADA and PLC Programming pre-defined for Network Surveillance.
- Detail design of Hardware for both in- and outdoor Mounted Switch Cabinets.
- Cabel Specifications
- SAT-Test Reports
- DS3090 Test Paradigms (DK only)
- Electrical Design with UPS.

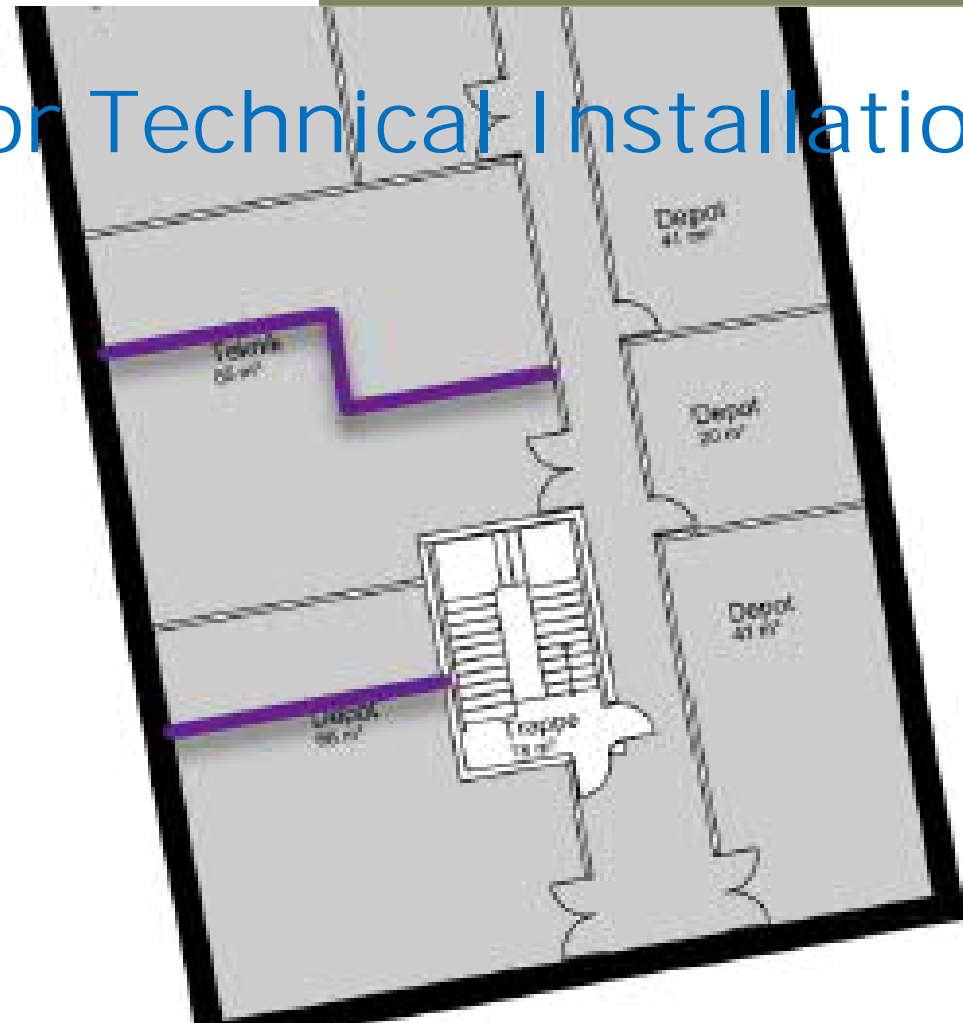


FTDD Concept...

Space requirement for Technical Installations

We have the Area requirements for the Technical Installation locked quite early in the Process. This would normally free a lot of Square meters for other purposes such as Storage, Fitness etc.

The Marked Area is all required for Water based Technical Installations in the GLK Project (H-House). Furthermore, Space for AHU for the Basement is needed.

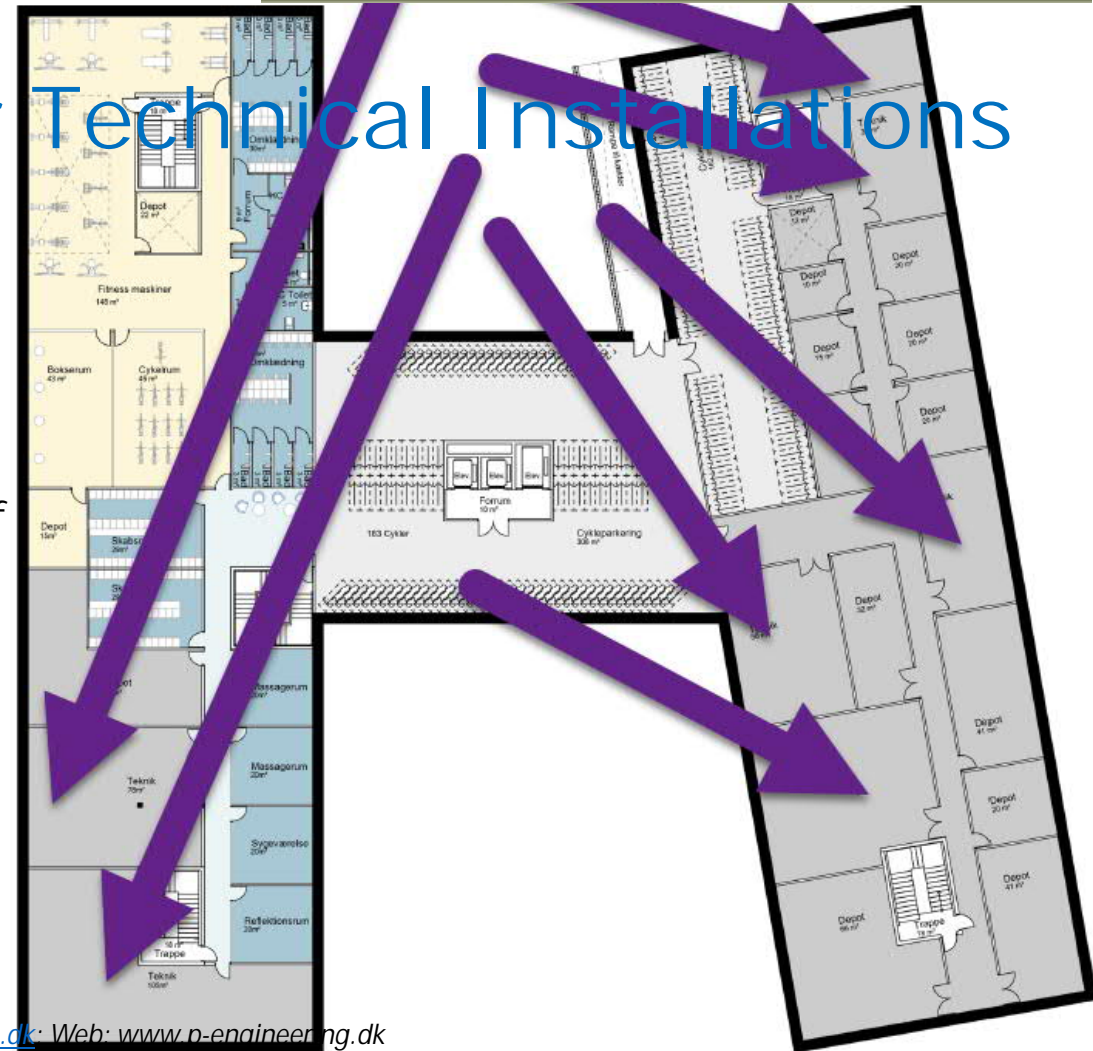


FTDD Concept...

Space requirement for Technical Installations

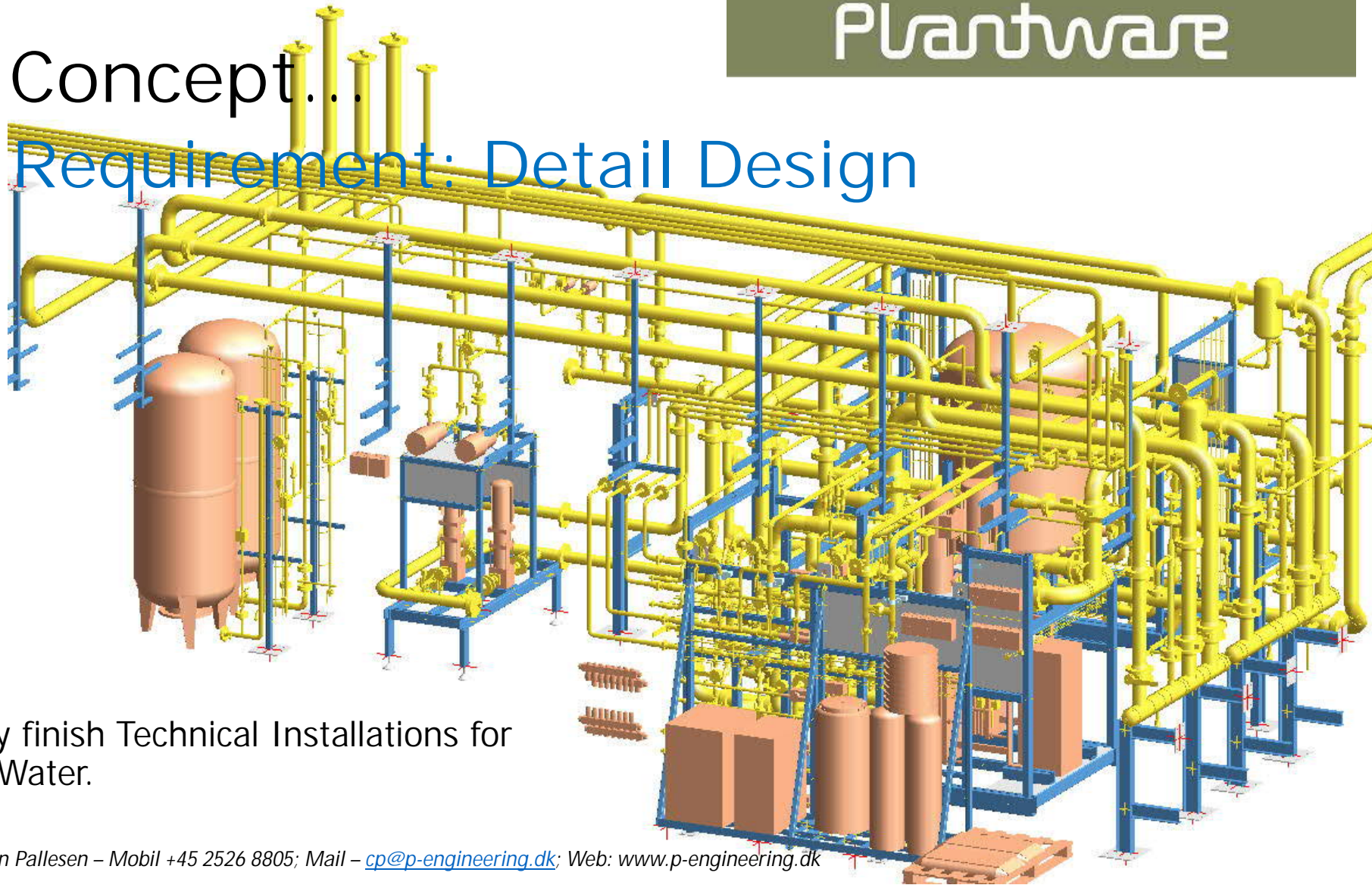
Here is the Basement of the H-house with markings on all areas allocated for Technical Installations.

The FTDD process can reduce this to approximately 40% by making the Engineering very Detailed and thereby having full control of the Space Management and Space Requirements very early in the process.



FTDD Concept...

Space Requirement: Detail Design

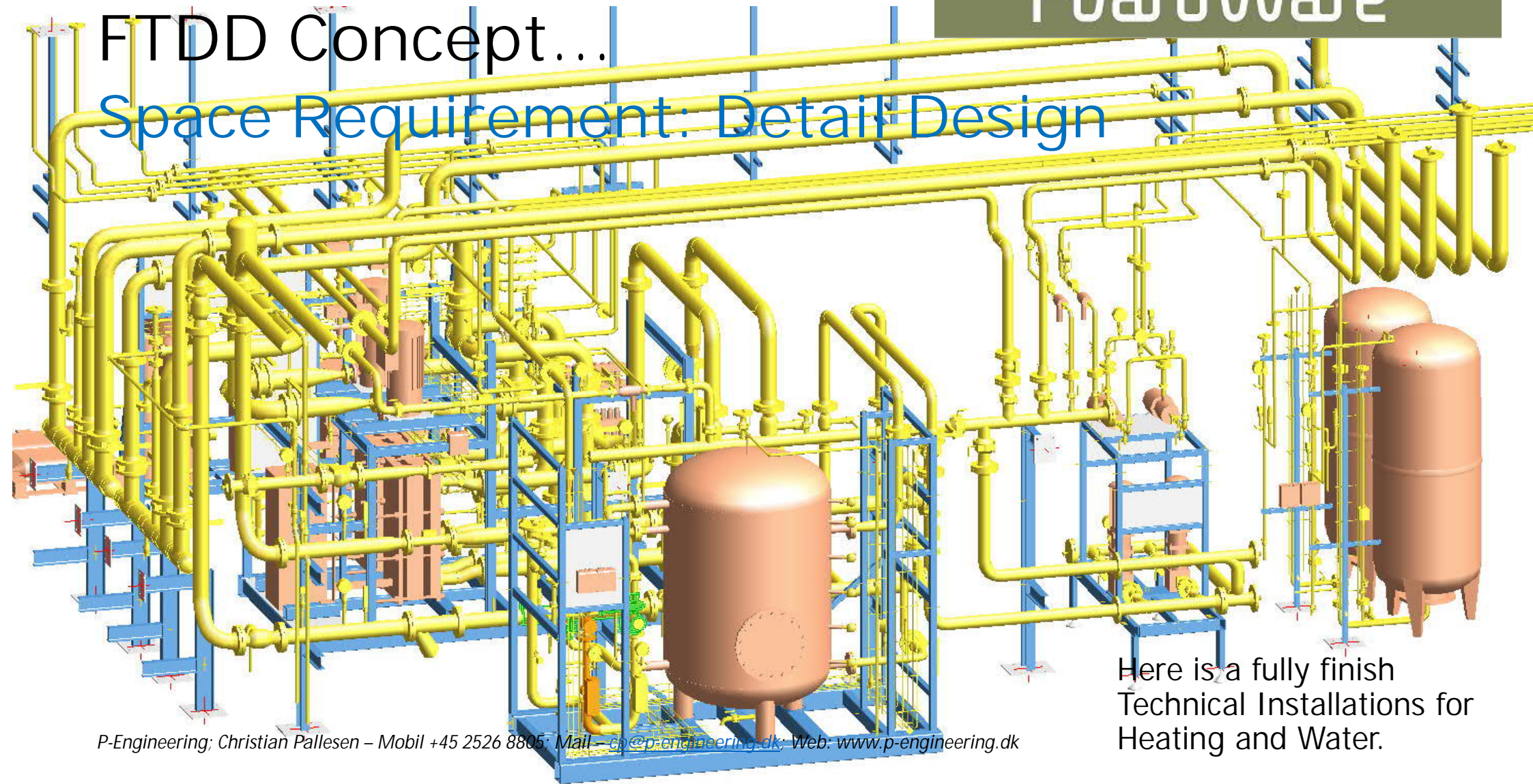


Here is a fully finish Technical Installations for Heating and Water.

Plantware

FTDD Concept...

Space Requirement: Detail Design



Here is a fully finish
Technical Installations for
Heating and Water.

P-Engineering; Christian Pallesen – Mobil +45 2526 8805; Mail – cp@p-engineering.dk; Web: www.p-engineering.dk

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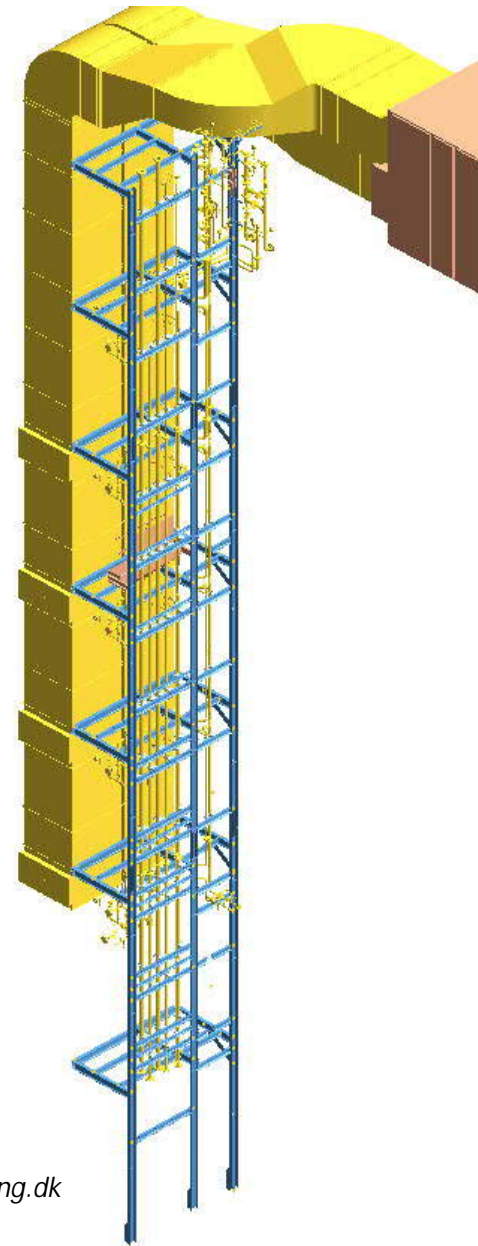
Technical Shafts

Detail Design of:

- Piping – Cooling (multiple Systems), Heating, Water (Raw, Hot, Circulation, Descaled, Osmosis etc.), Sewage, Sprinkling etc.
- Structural Steelwork
- Platforms with Grating

Everything with Final Design and Shop Drawings for Pre-fabrication.

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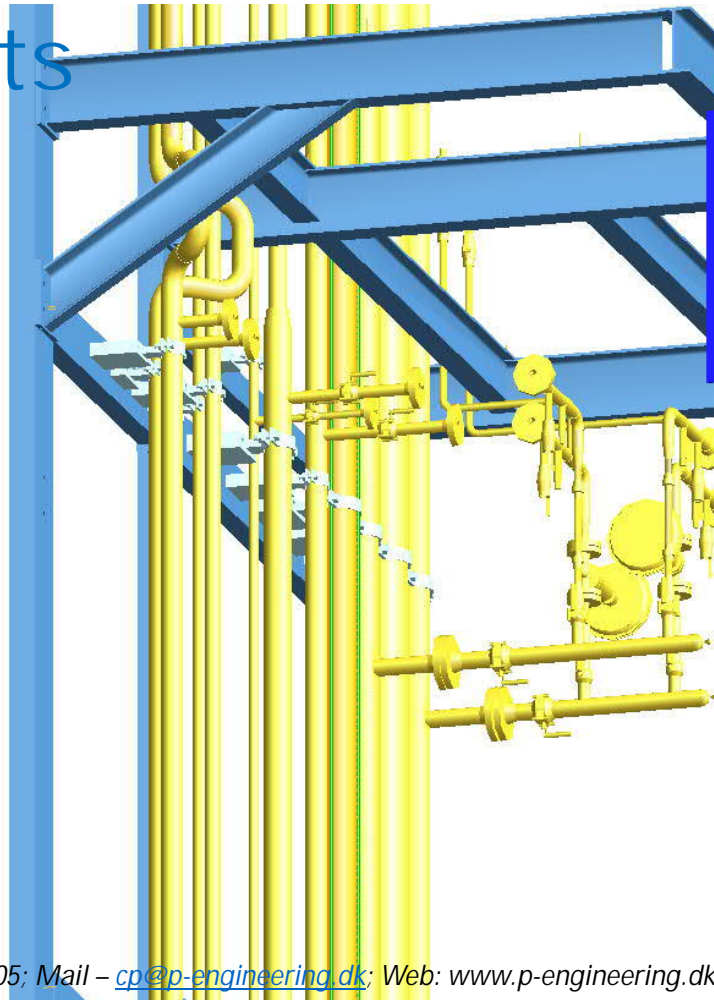
FTDD Concept....

Technical Shafts

Technical Shafts shall be fully Detailed. In this Example the following is added:

- Cooling AHU's in Basement
- Cooling for Server and Network Switch Room
- Heating Distribution Regulation per Section

The Heating Distribution Regulation is fully PLC controlled and no manual adjustment for Hydraulic balancing is needed.

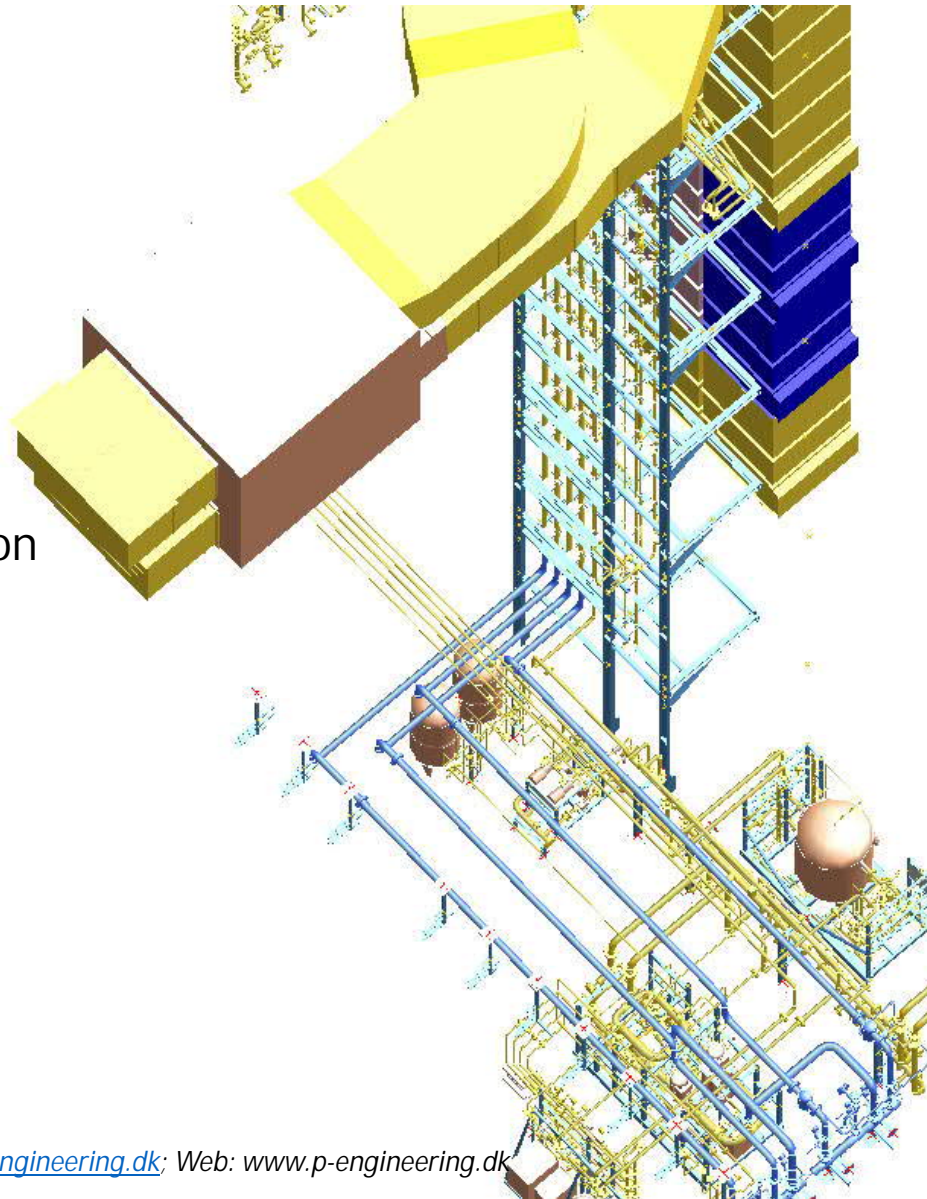
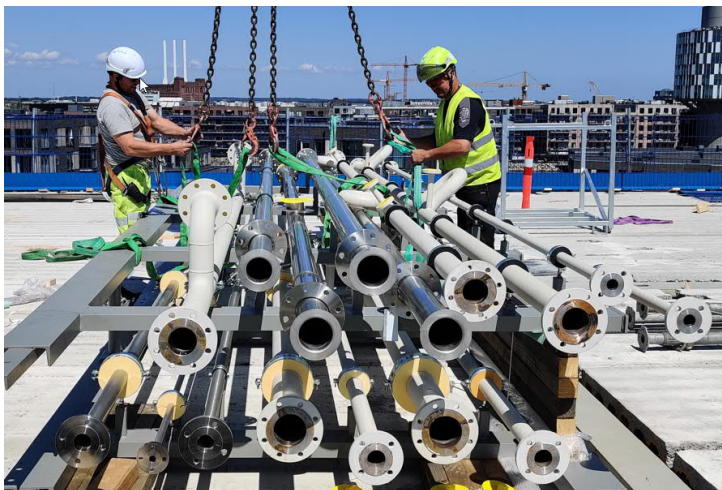


FTDD Concept...

Technical Shafts

The Technical Shaft is Design and Coordinated with the Main Technical Installations.

The Shafts is to be liftet in in large Section as DFDS HQ Office Building:

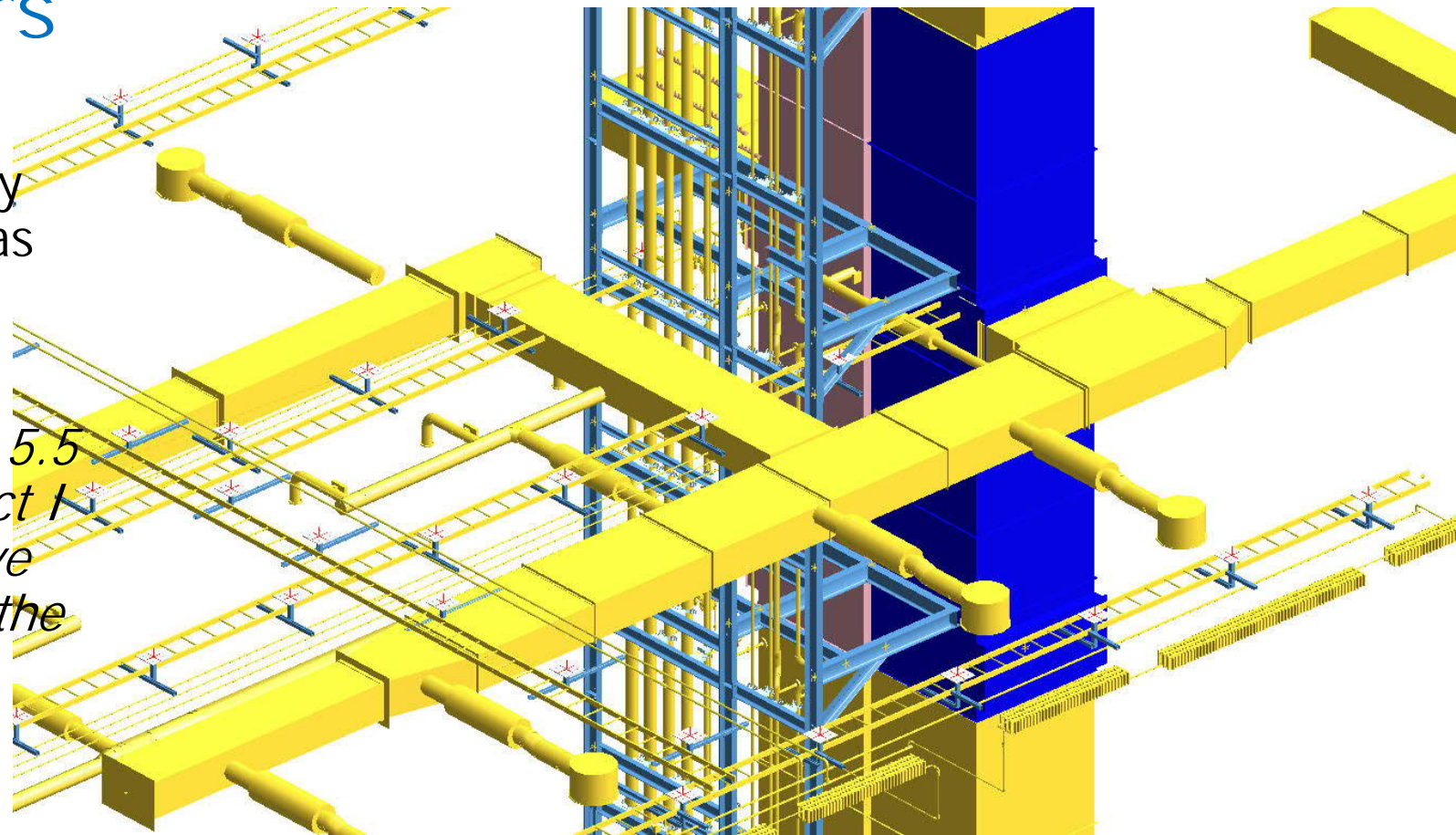


FTDD Concept...

Office Floors

The Concept for distribution on every Floor is developed as well.

PS: If I had spendt 5.5 hours on this project I would probably have manage to finalize the design.



FTDD Concept...

Possibilities!

"This was the Scope possible within 4.5 hours of Work"

For an Office Building of this Size – 12 till 18.000 m² – the Goal shall be, to be able to finalize the Design within 2 weeks.

This enables a fully coordinated project with Civil as all Concrete Wall and Hollow Slabs will be coordinated with the Technical Installations and all Penetrations have been sized and positioned.