



**60 years of the nuclear industry and  
65 years of technical university education in Pilsen**

**“Partnership in Nuclear operations”**

Fortum Nuclear Production

Teuvo Hämäläinen, Head of Strategic Purchasing

Next generation  
energy company



# Content of this presentation

- Fortum Power and Heat Oy and nuclear energy
- Some ideas of Partnership

# Fortum in nuclear production



## Loviisa

Two units  
 $2 \times 496 \text{ MW} = 992 \text{ MW}$

Fortum's ownership 100%



## Olkiluoto

Two units, third under construction

$880 + 880 \text{ MW} = 1,760 \text{ MW}$   
Under construction 1,600 MW

Fortum's share: 27% (468 MW)



## Oskarshamn

Three units  
 $473 + 638 + 1,400 = 2,511 \text{ MW}$

Fortum's share: 43% (1,089 MW)



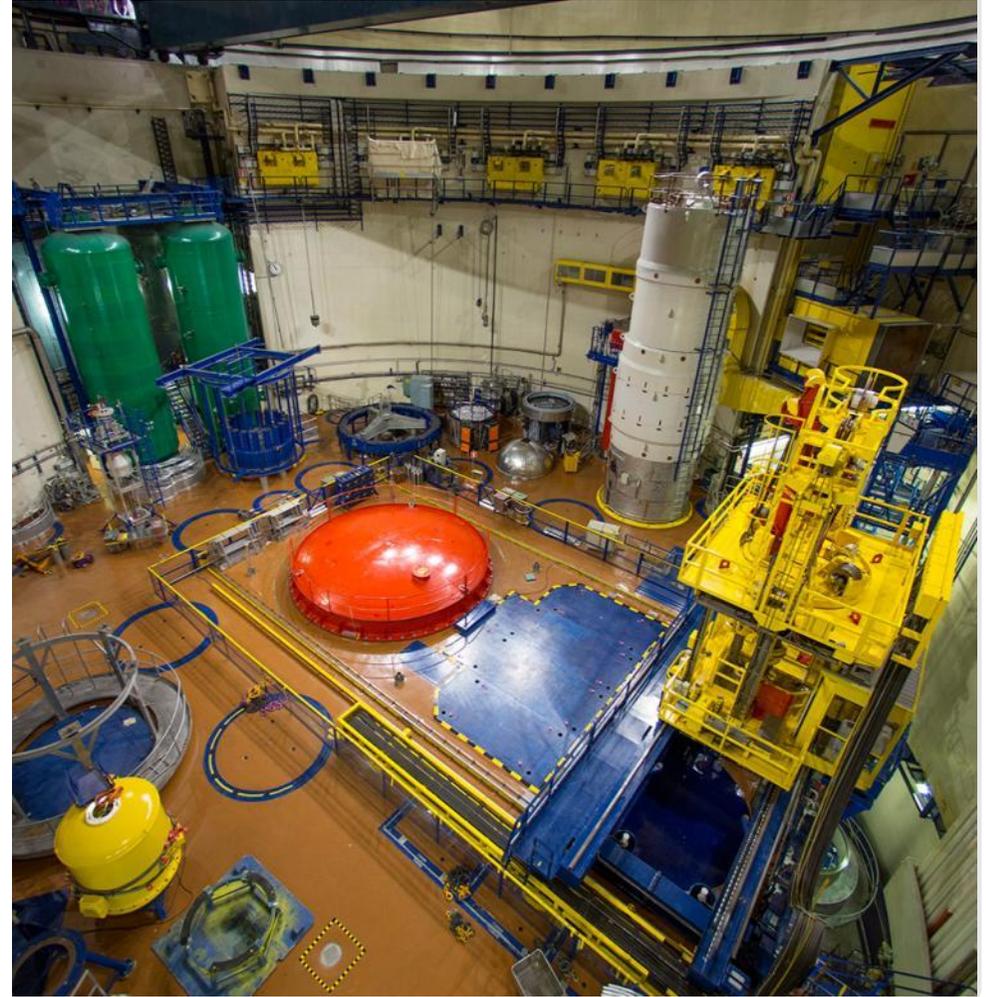
## Forsmark

Three units  
 $984 + 1,120 + 1,170 = 3,274 \text{ MW}$

Fortum's share: 22% (720 MW)

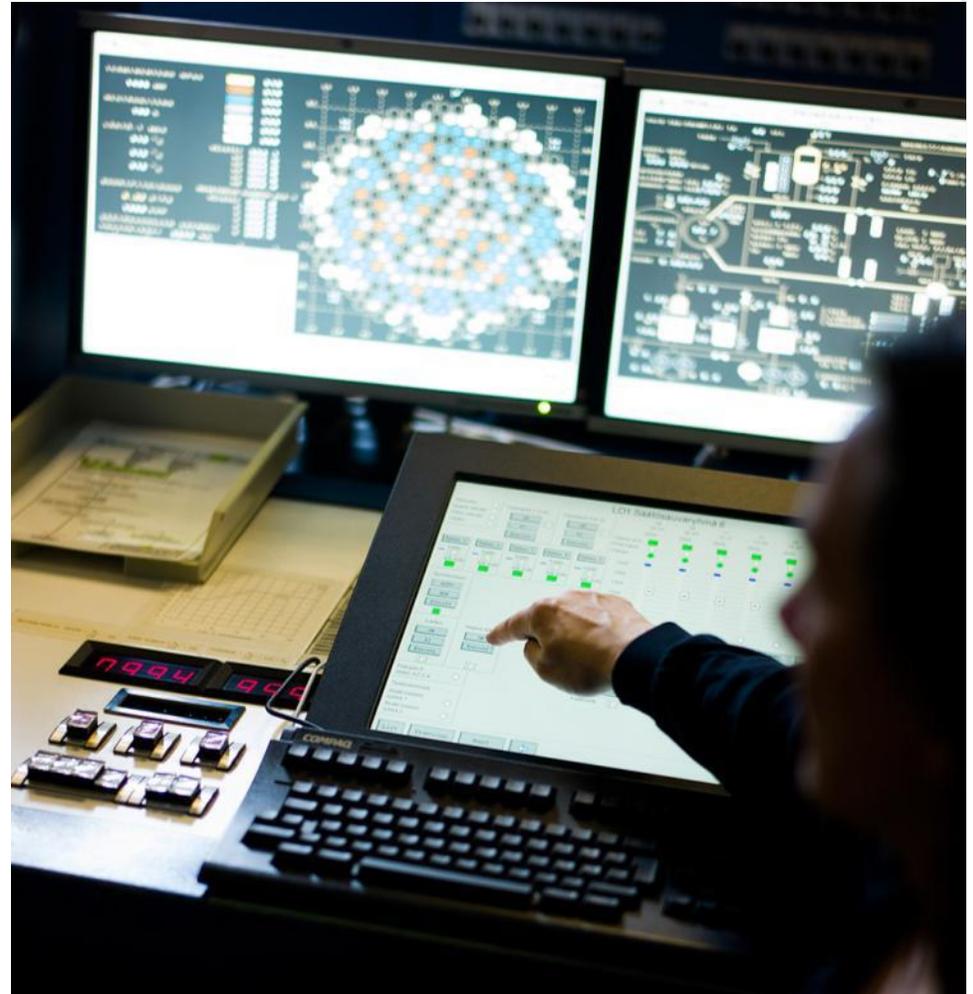
# Loviisa power plant has been continuously developed

- Loviisa 1 started electricity production in 1977 and Loviisa 2 in 1980
- After commissioning of the plants, their safety and availability has been continuously improved through multiple upgrade projects
- Continuous improvement of safety has been the guideline throughout the years in the development of the Loviisa units



# Loviisa power plant's availability and load factor are good

- Loviisa power plant's load factor has been good throughout its history
  - The Loviisa power plant's load factor in 2014 was 92.9% -- the international average is 83%
- Among VVER plants, Loviisa power plant's availability and load factor have been excellent



# Loviisa power plant is safe

- Loviisa power plant's technical safety is among the best in the world
- The power plant's safety functions have been systematically developed through the years
- Safety is maintained with a good operating culture, structural solutions and by constantly analysing risks



# We are continuously developing the Loviisa NPP: investments of approx. EUR 80 million in 2015



## Modernisation of turbines and reheaters

Implementation during 2014–2017. Increases the plant's electricity production capacity by a total of 29 MW.



## Automation modernisation

The modernisation of systems related to the safety of both units will be implemented during 2016–2019. Ensures safe and reliable electricity production until expiration of the existing operating licences.



## Cooling system independent of seawater

Air-cooled system secures the removal of the plant units' decay heat in situations where the normal seawater cooling isn't available for some exceptional reason.

# Base for Partnership in Nuclear energy

Real Partnership goes below the surface...



- Safety is the MUST!!!
- At design and planning phase the costs are nailed – specification in right level
- Requirements have to clearly explained and everyone's understanding checked
- Subsupplier chain and quality management
- Common cost savings in partners' focus
- Agreement have to include efficiency improvement requests
- Open minded and reliable atmosphere

# Principle guide lines for Safety and quality operation

Quality management		Nuclear management system	
1	Customer orientation	1	Nuclear safety is priority 1, addressing of conformity and documentation
2	Leadership	2	Emphasizing the Safety in management
3	Employee involvement	3	Clear responsibilities, individual's activity and initiative; competency
4	Process type operation model	4	Process type operation model; management of <b>boundaries</b>
5	Systematic management	5	Safety issues systematic management
6	Continues improvements	6	(independent) evaluation and analyzing Continues improvements and learning
7	In facts based decision making	7	In facts based decision making, extensive and <b>conservative</b>
8	Advantages for both partners in contracts and deliveries	8	Safety and quality is secured during the whole supply chain

# What does mean partnership?

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Good, deep and open cooperation between the partners,  
It's also question of reliability and trustworthy.

- Commitment to cooperation (high level management support).
- Partnership have to give added value for both parties.
- Open the cost drivers together for finding cost which are not beneficial.
- Long term contracts -> payback time for investments, no quick-winnings but sustainable earnings.
- Agree the way how to improve cooperation?
  - Open discussion of barriers which are hindering partner's possibilities.
  - What is the most practical way to secure delivery times and cost efficiency (fulfilling both parties interest)?
  - How to improve information process?
- Meetings together to find improvements and more efficiency?
  - Challenging and questioning each other, practices.
  - Finding new ways for working in different phases.
    - Brainstorming, innovation
    - Setting and agree targets together for improvements



# Real partnership is giving answers beforehand?

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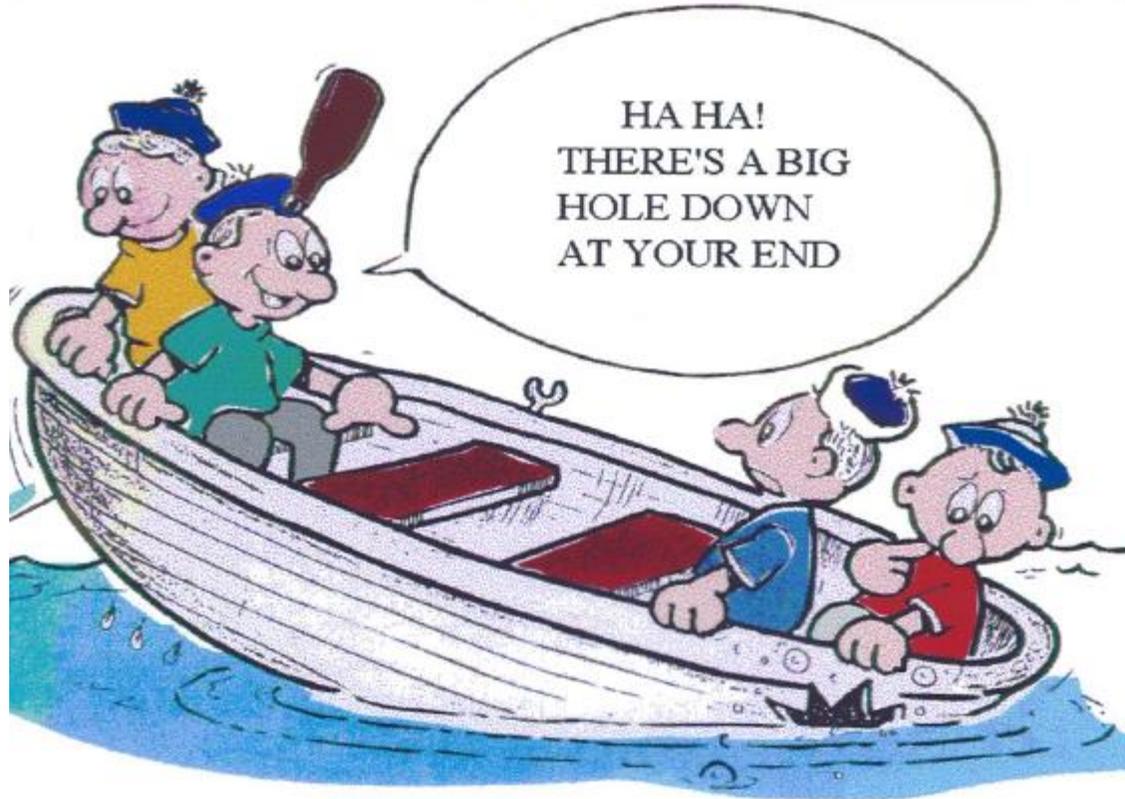
- What kind of documents are needed?
- What kind of safety and quality requirements are related to delivery and also partner and its quality assurance?
- Is it needed for authority inspection and approval during the production and witnessing, hold points?
- Is serial produced products in use? How to verify conformity and required quality assurance?
- How partner is getting to know requirements? What about hole supply chain?
- How is partner establishing control in supply chain?
- How deviations and needed changes are handled and managed through supply chain?



# Is this the way how real partners are working?

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## Do we need “Claim managers”?



# This is the way we like to cooperate !!!

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# Why then Partnership?

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- Both parties are earning more and resources are not bound worthless
- Earnings are sustainable
- Ordering (and selling) processes and procedures are defined -> simpler
- Understanding of both partner's needs are clear
- Deviations' and errors' handling are much easier and quicker
- Common procedures for classify and handle deviations
  
- **What else can make us more successful in our businesses than real partnership?**



# Benefits of cooperation with Skoda JS

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Few examples:

- Load factors have been high, partly because no problems with control rod drive mechanisms supplied by Skoda.
- Outage time saving
  - Life time extension for some inner reactor parts
  - Tightening units support
- Cooperation has been fluent and good with sales, design and planning, project management, manufacturing and QC inspection

The image features a scenic landscape with a rocky shoreline in the foreground, a calm lake in the middle ground, and a forested area with a small red house on the left. In the distance, industrial structures like a power plant and a tall tower are visible against a clear blue sky. The Fortum logo, consisting of a green sphere with a white 'C' shape and the word 'Fortum' in white, is overlaid on the center of the image.

# Fortum