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Cryogenics and Vacuum – lessons learnt and opportunities with F4E

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Bringing
the power
of the sun
to earth



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Content



- **Cryoplant and Fuel Cycle programme**
- **Lessons learnt – how to make F4E contracts a success**
- **Neutral Beam Cryopumps**
- **Isotope Separation System**





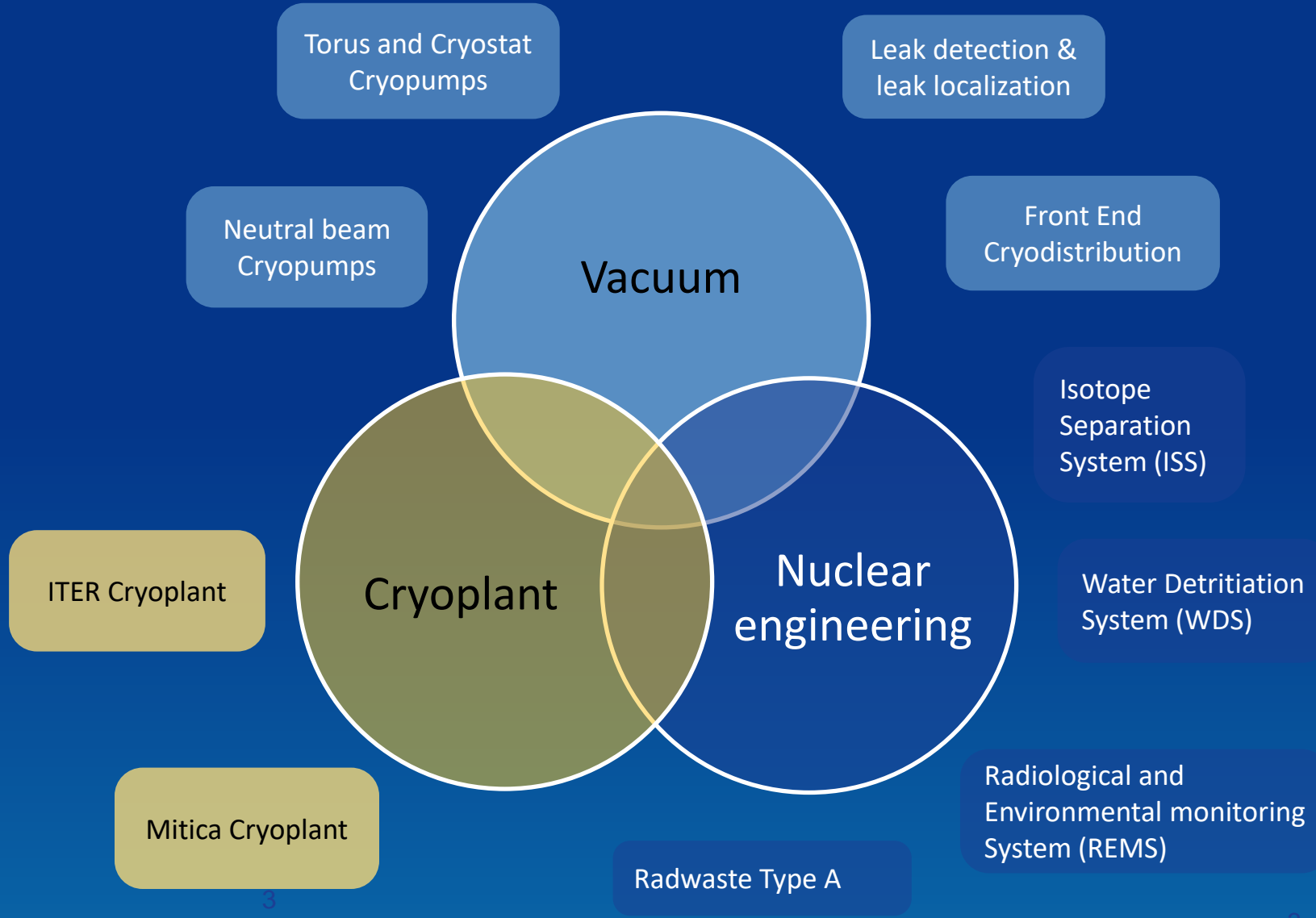
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Since 2009
> 45 contracts placed
Value >150 MEUR



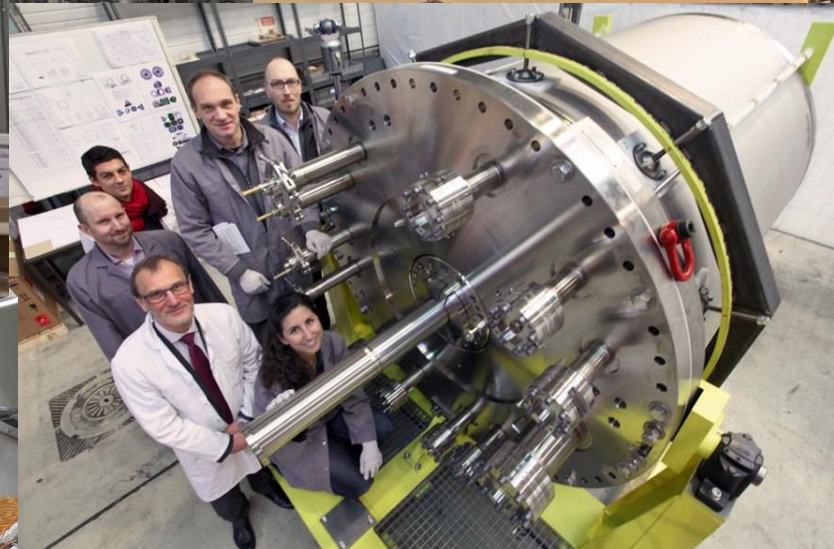
Cryoplant and Fuel Cycle Programme





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Lesson learnt



Early partnership
required



Collaboration

Trust

Commitment



FROM DAY 1



**Industrial
Partners**

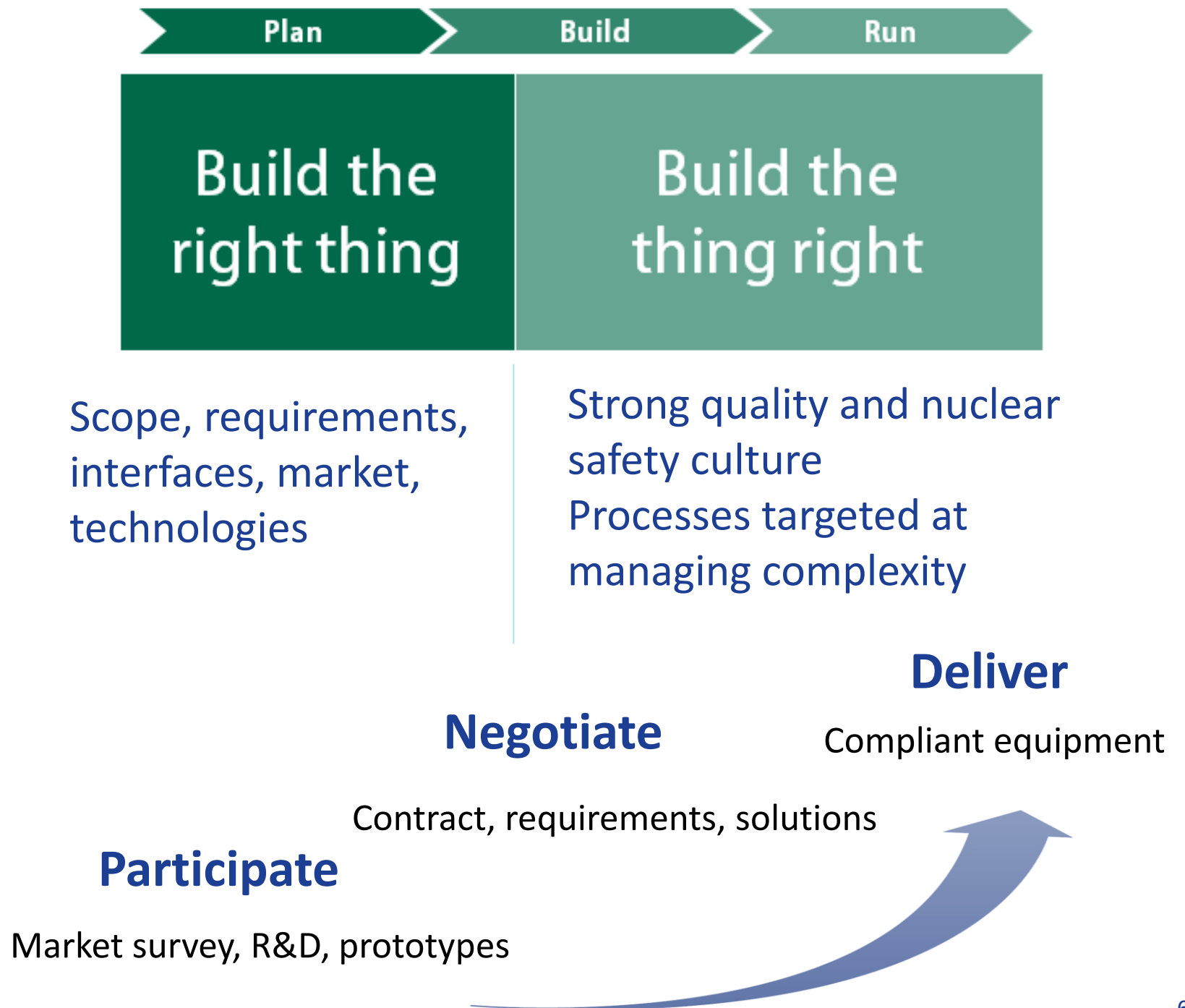
Lesson learnt



Right focus at the
right time



Your involvement =>






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Future opportunities

- A** Item range 300 000 – 2 000 000 EUR
- B** Item range 1 500 000 – 5 000 000 EUR
- C** Item range 4 000 000 – 12 000 000 EUR
- D** Item range above 10 000 000 EUR

Neutral Beam Cryopumps



- 3 cryopumps (2 sides each)
- >100m² pumping surface
- >500 cryopanel
- >650 thermal shield panels
- 1000s of radiography films
- >500 leak tests
- Protection Important Activities
- Tight tolerances
- Est. 1st contract: 2025
- Value: >10MEUR 

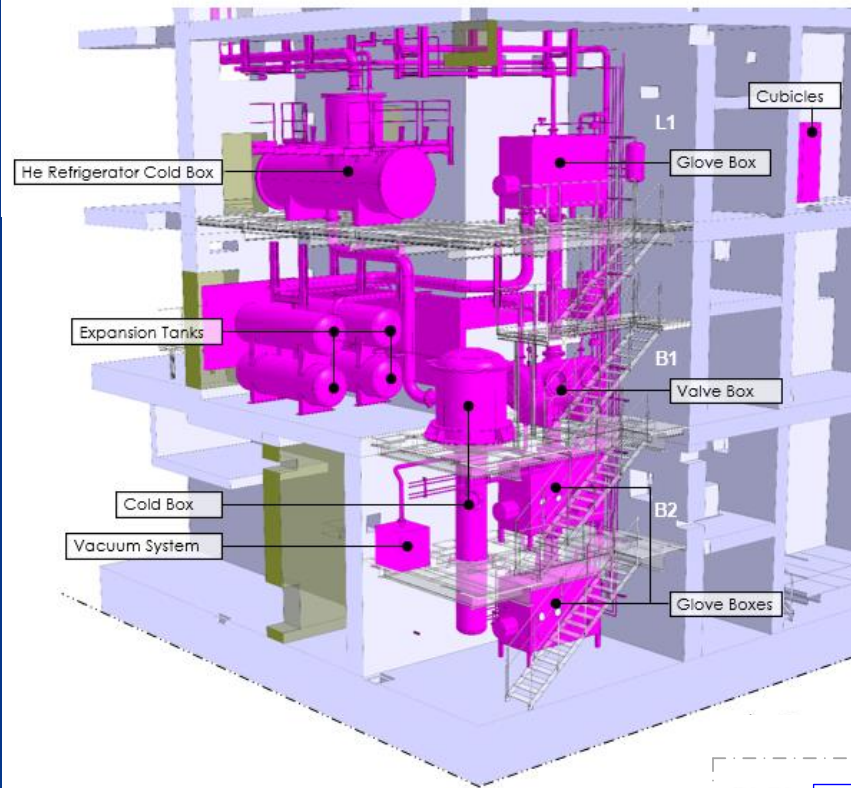


Mitica cryopump – Prototype



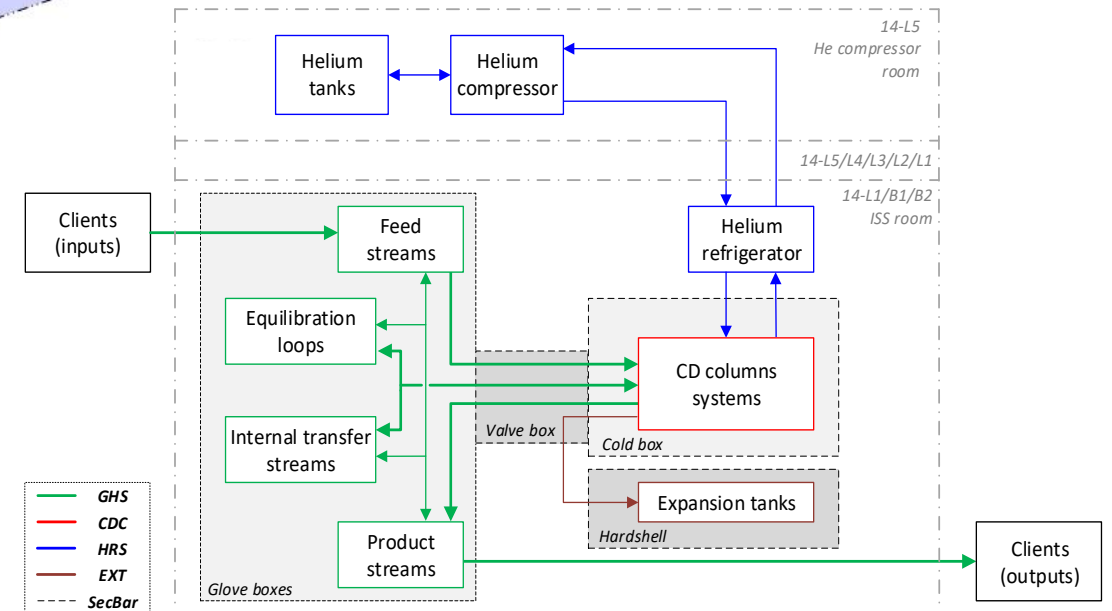
Isotope Separation System

- Cryogenic distillation of D-T
- Ongoing Sizing studies
- Cold box \approx 7.5m high
- He refrigerator \approx 3kW @ 16K
- He tanks \approx 15m³ @ 16K
- Tritium containment function
- Complex qualification scope
- Contracts ongoing with 
- Est. 1st F4E contract: 2026
- Value: >10MEUR 



Opportunities for:

- Integration services
- Final design & procurement
 - Refrigeration system
 - Cold box manufacturing
 - Pressure vessels
 - Piping and structure



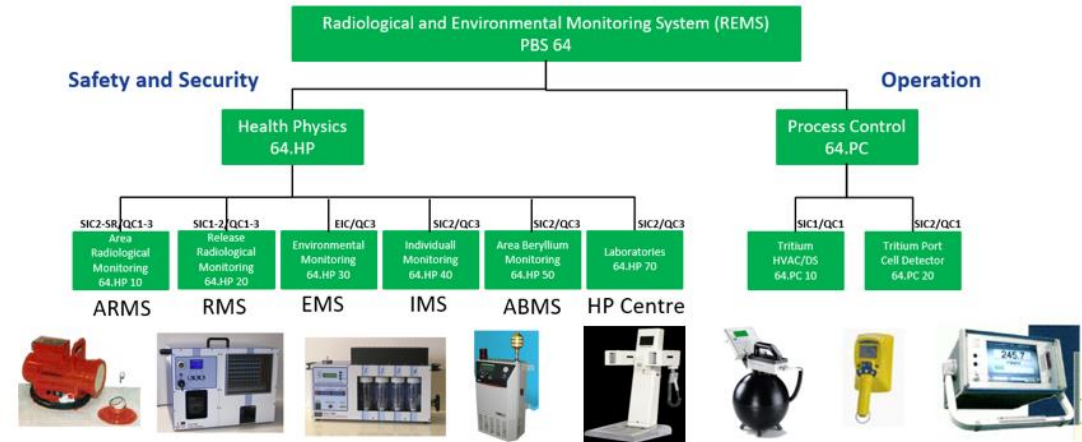


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Other opportunities

Radiological and Environmental Monitoring System

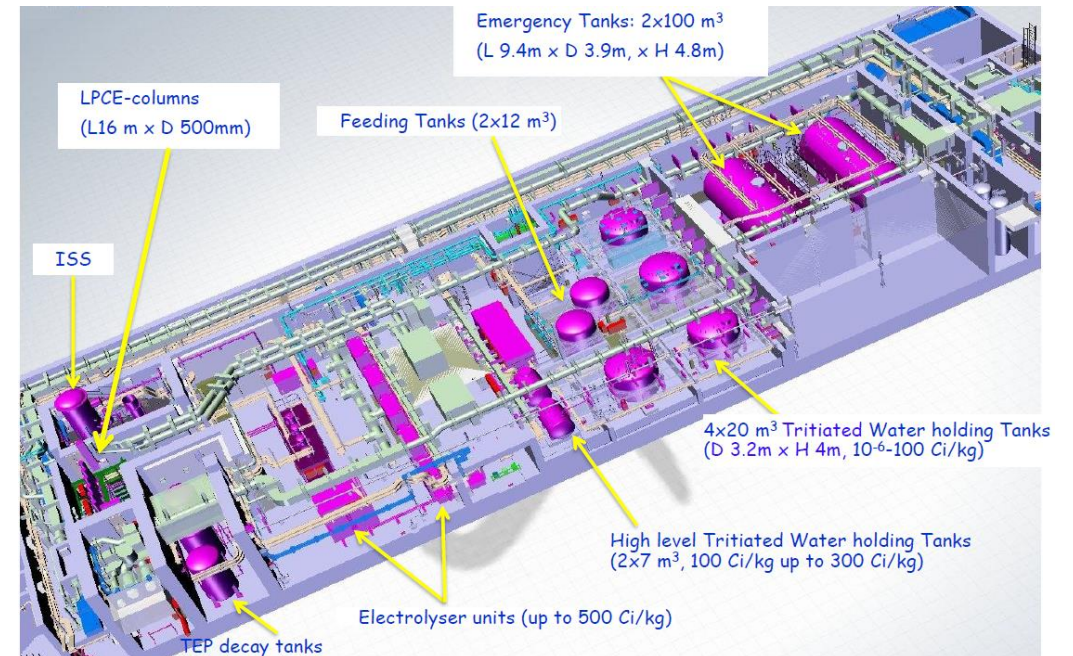


Est. next F4E contract: 2025



Item range above 10 000 000 EUR

Water Detritiation System



Est. 1st F4E contract: 2026



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Thank you for your attention

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