SCANSCOT Technology

At the Frontiers of Structural Engineering

SPE #3 Workshop Mumbai, India, June 30 – July 2, 2010

SCANSCOT TECHNOLOGY
Sweden

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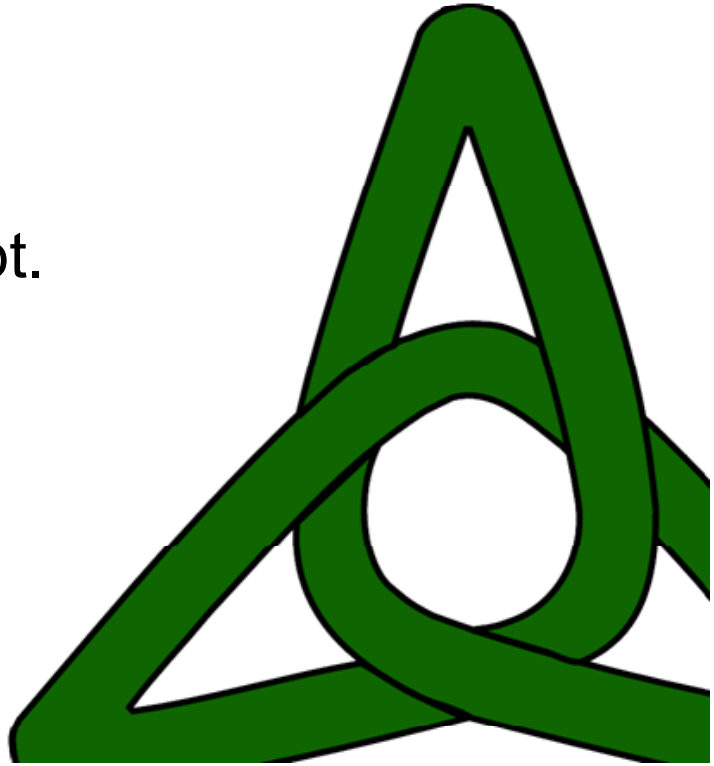

SCANSCOT TECHNOLOGY

Content:

- General Information
- Reference Projects
- SPE-related R&D Work

GENERAL INFORMATION

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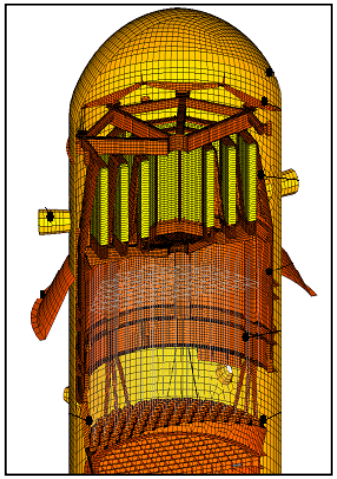
ENGINEERING SERVICES

Nuclear power

- Civil Engineering
- Mechanical Engineering



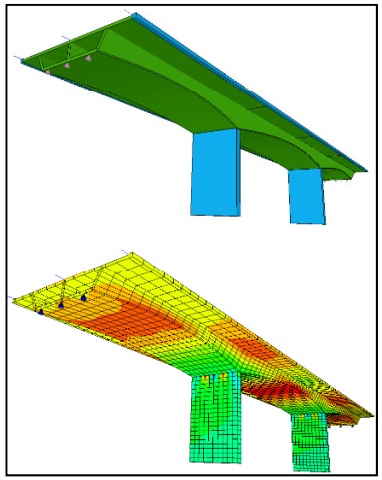
SOFTWARE DEVELOPMENT

Bridge design

- BRIGADE
- FEA Software

ABAQUS Solution Partner

ABAQUS Integrated Technology



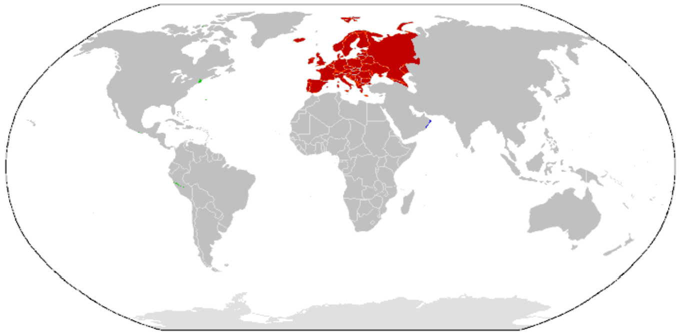
Engineering Services – Nuclear Power

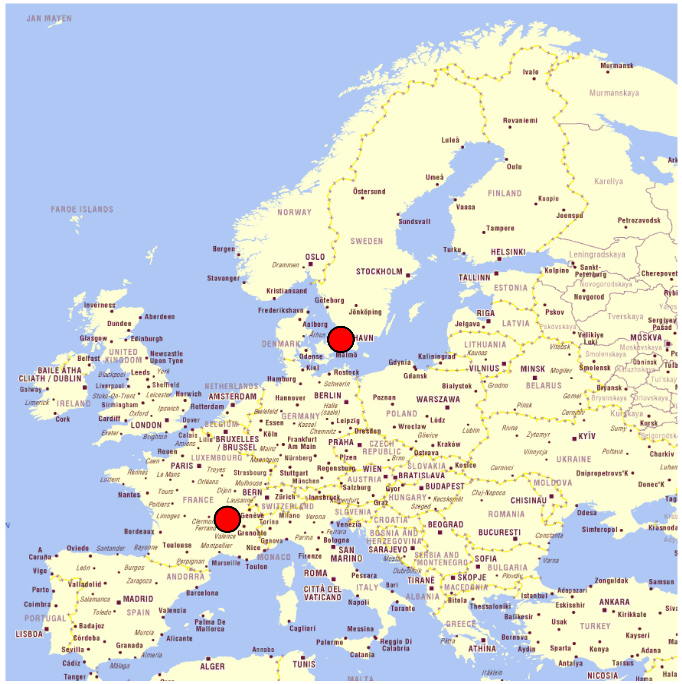
- Advanced numerical simulations
  - Civil structures
  - Mechanical structures
  - Accidental events
- Design calculations
- Technical investigations
- Requirements and Regulations

GENERAL INFORMATION

Location

- Main office: Lund, Sweden
- Subsidiary: Lyon, France



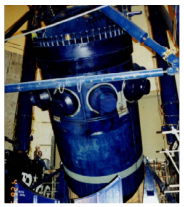


REFERENCE PROJECTS

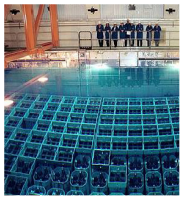
REFERENCE PROJECTS

New Build

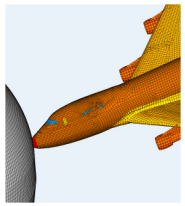
Existing Plants



Decommissioning & Dismantling



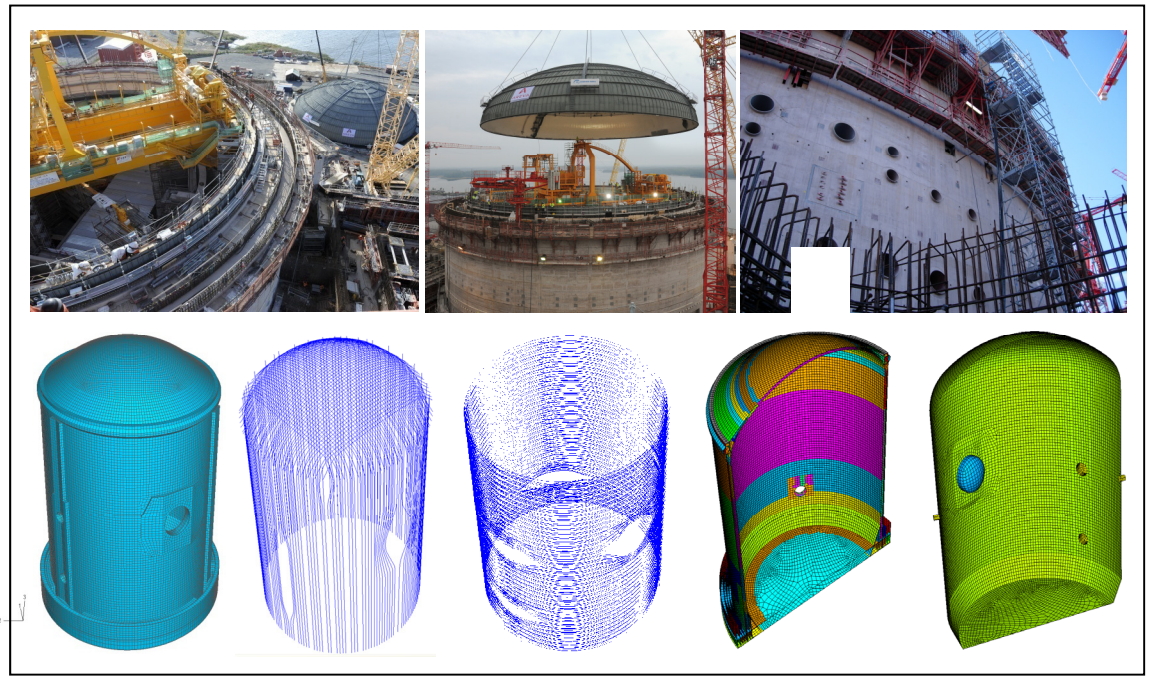
Storage of Spent Fuel & Nuclear Waste

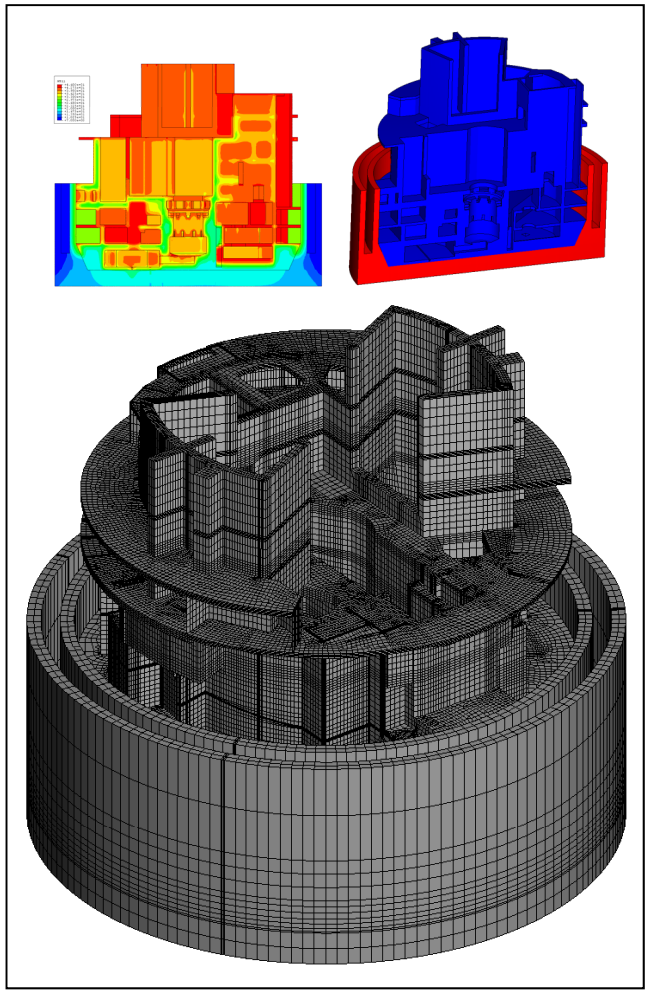


Research & Development

Olkiluoto Unit 3 – New plant in Finland

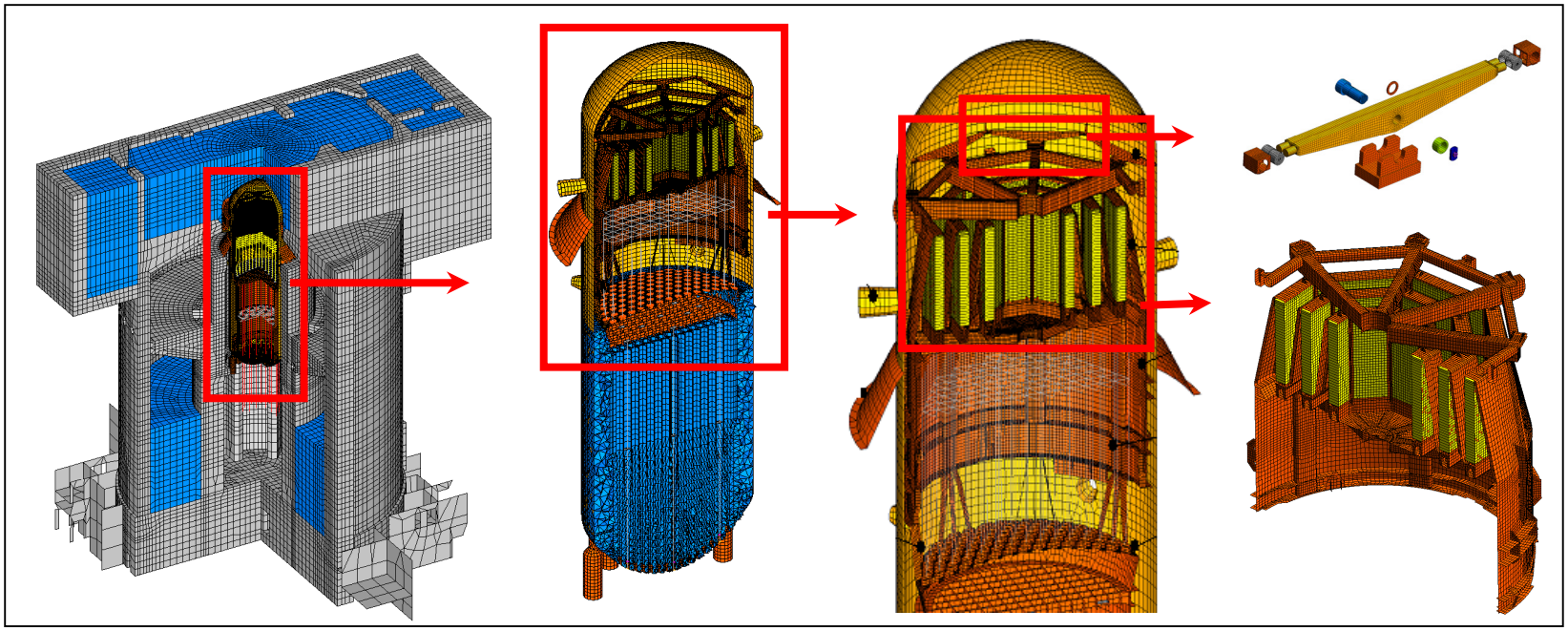
- Structural analysis
  - Reactor containment
  - Containment internal structure





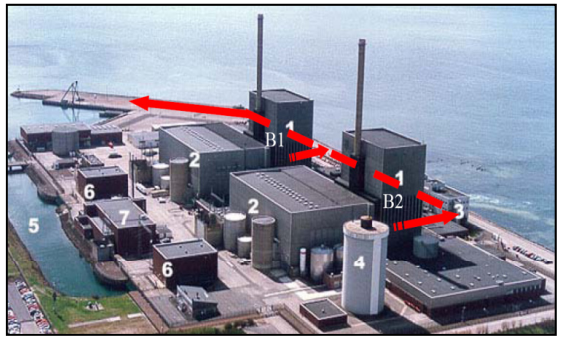
Oskarshamn Unit 2 & 3 – Power uprate of Swedish units

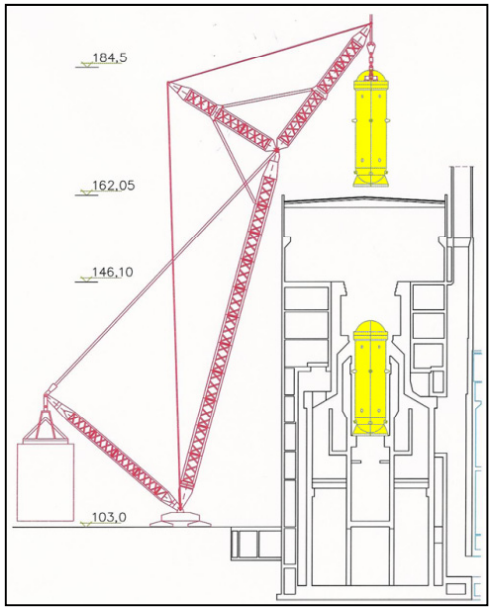
- Reactor pressure vessel
  - Design of new internals
  - Requalification of internals and vessel



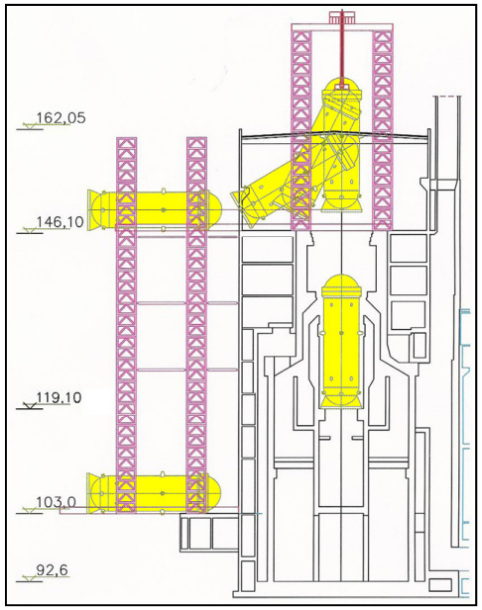
Barsebäck Unit 1 & 2 – Dismantling

- One-piece removal of reactor pressure vessel

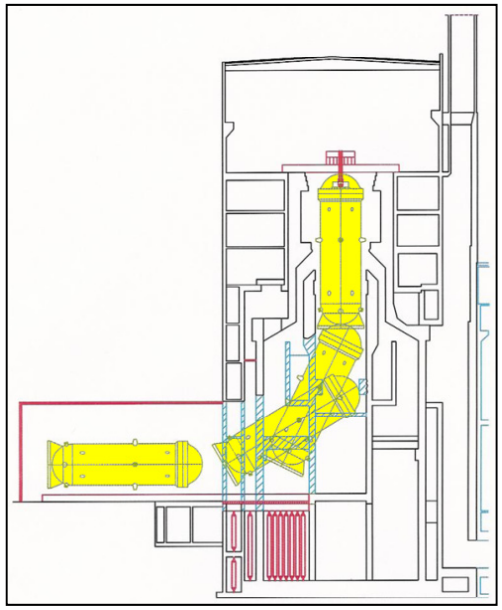




- Large crane



- Jacking and lowering on the outside



- Lowering inside containment

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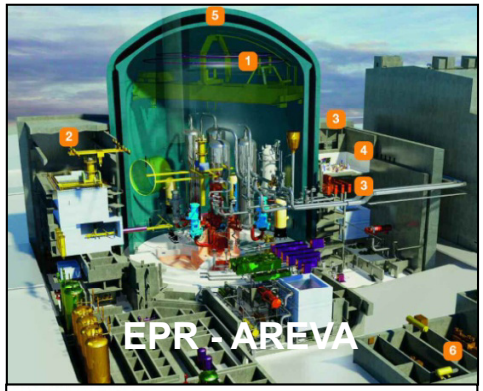
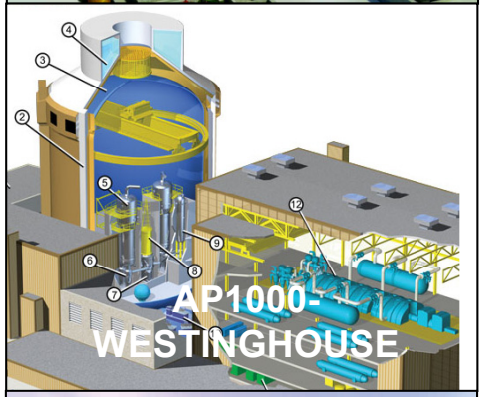
REFERENCE PROJECT #4

Canadian Nuclear Safety Commission

- Standard Review Plans – New NPPs
  - Civil structures
    - Reactor containments
    - Safety-related buildings
  - Compared NPP design concepts
  - Compared reg doc´s / Codes & Standards
  - Review guidance report for “SRPs”
- Similiar work to the Swedish Authorities

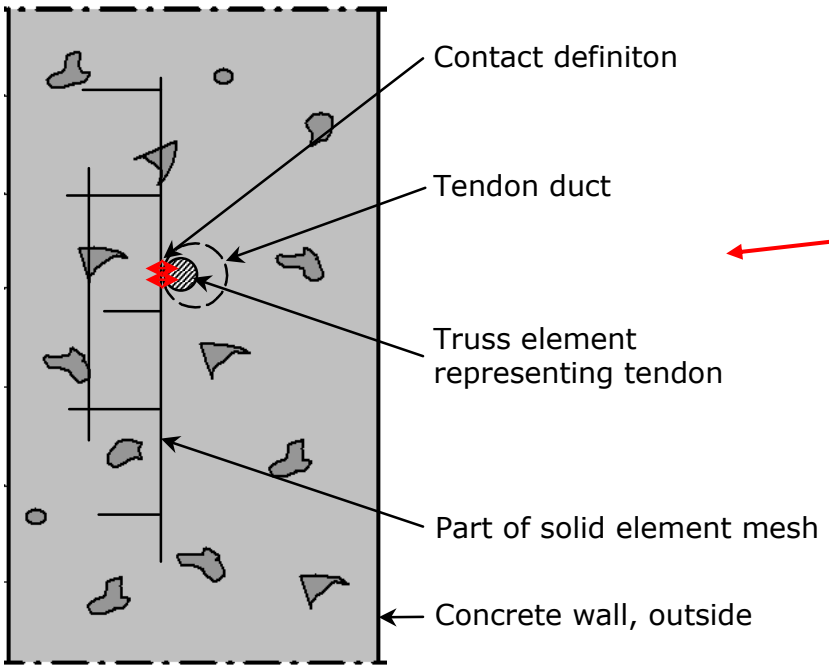


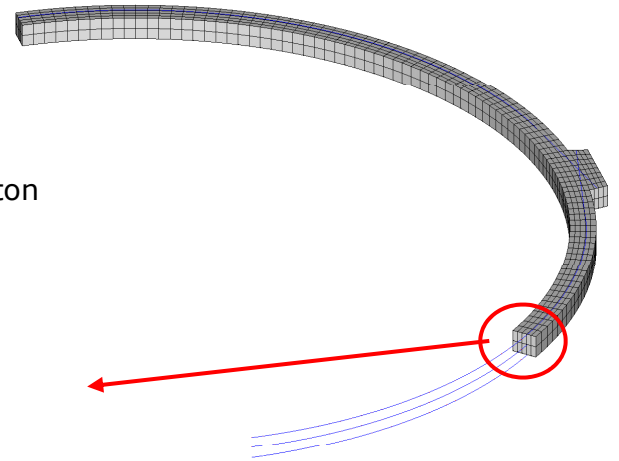


SPE-RELATED R&D WORK

Modeling of Pre-stressing Tendons

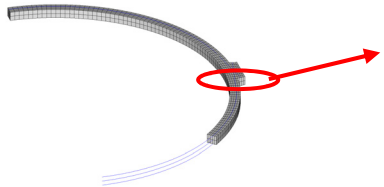
- Interaction tendon / sheet
  - Slippage
  - Friction

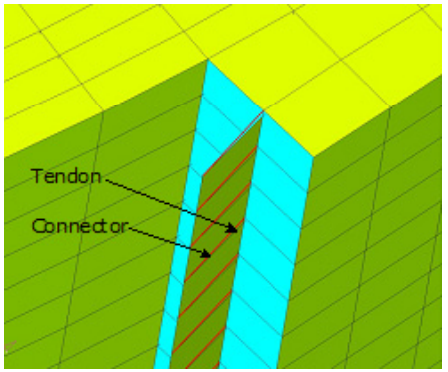


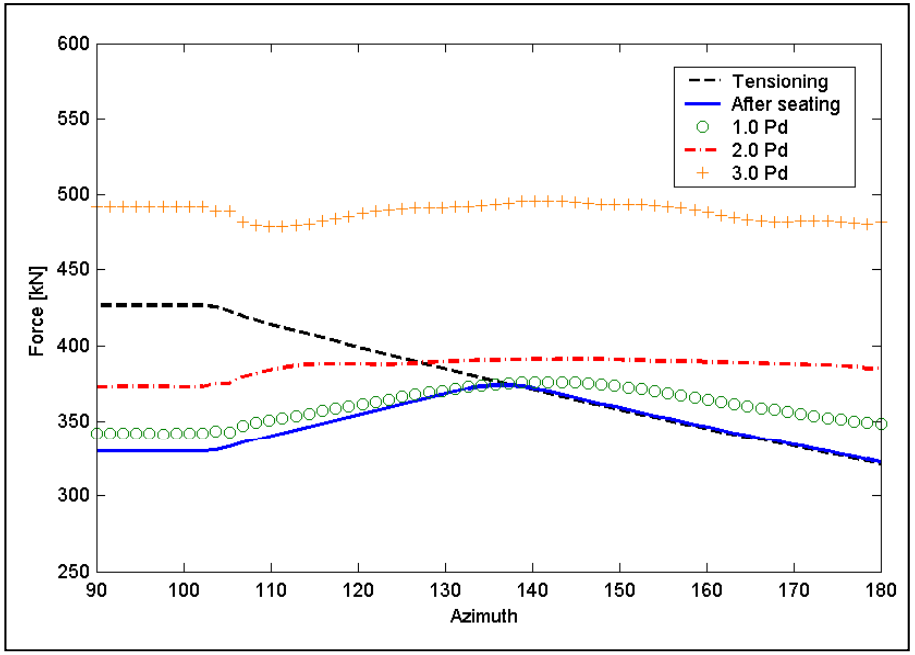


Modeling of Pre-stressing Tendons

- Interaction tendon / sheet
  - Slippage
  - Friction
- Simulation all load steps
  - Stressing of tendons
  - Anchor seating
  - Time-dependent losses
  - Overpressurization

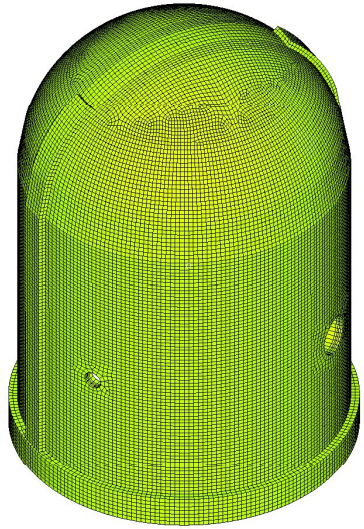


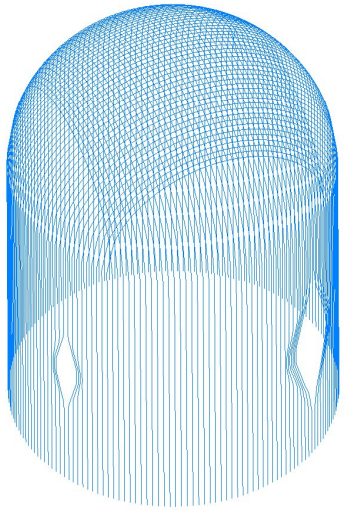


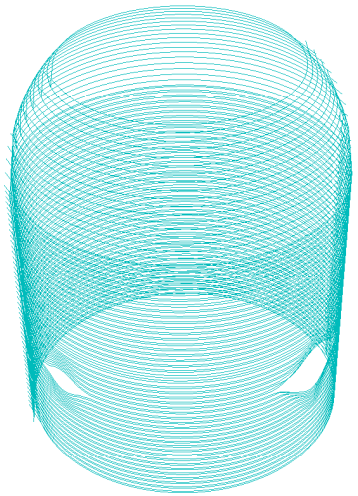


Modeling of Pre-stressing Tendons

- Interaction tendon / sheet
  - Slippage
  - Friction
- Used in ISP 48
- Fully 3D FE-model

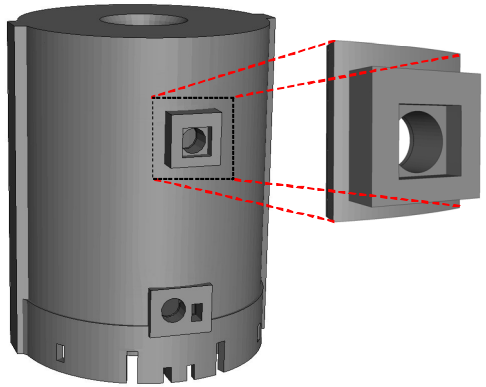


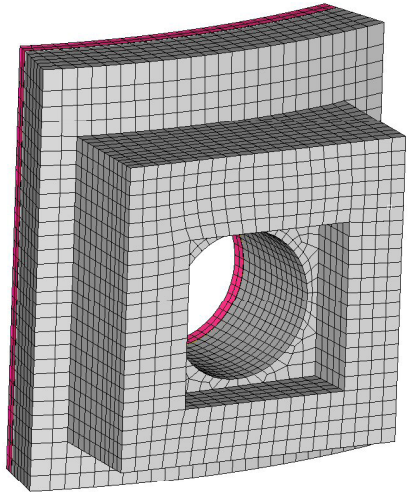




Analysis of Penetrations

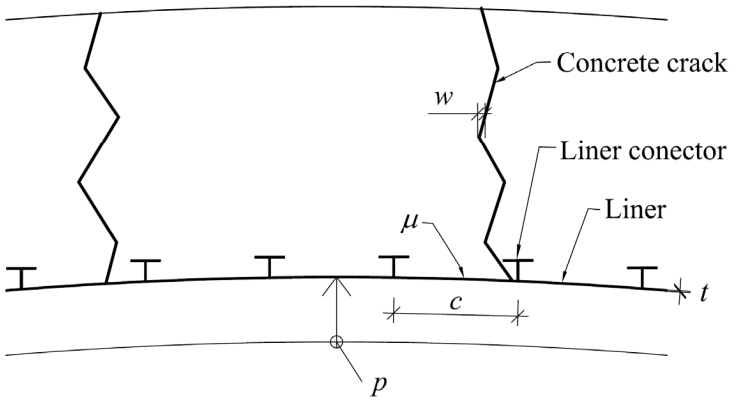
- Interaction casing tube / concrete
  - Contact formulation
  - Separation allowed, penetration not
  - Friction may be modeled
- Interaction liner / concrete
  - Contact / Separation / Friction
- Influence of liner anchoring
  - Non-linear springs

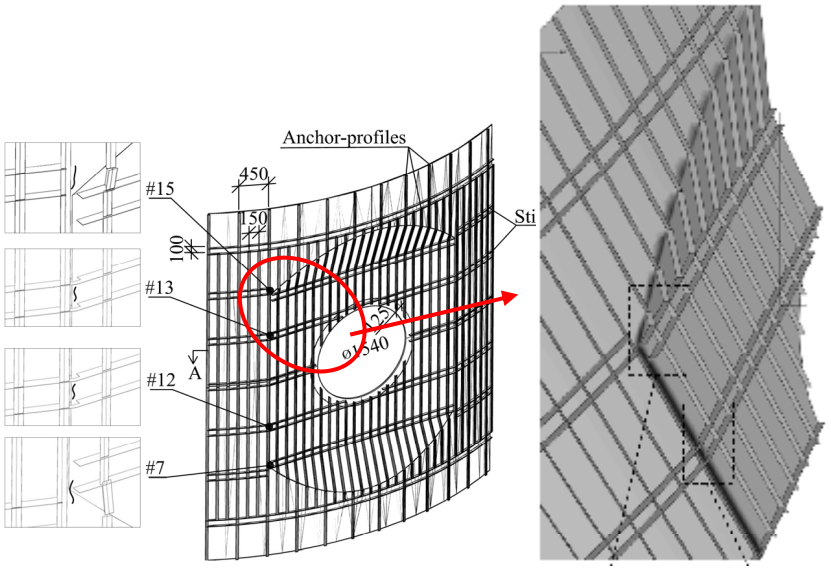




Localised Liner Strains

- Tension liner strain
  - Concrete cracking
  - Interaction liner / concrete
    - Contact / Separation / Friction
  - Detailing at penetrations
  - Influence of anchoring
    - Springs





Some of the R&D results has been published

- ISP 48
- SMiRT Papers
- Ph D Thesis
- ASME Sect III Div 2 Commentary (Draft)