

The logo for Teollisuuden Voima Oyj (TVO) is displayed in white, bold, sans-serif capital letters within a dark blue circular graphic element in the top-left corner of the slide.

TVO

WELLBEING WITH NUCLEAR ELECTRICITY

Swiss media visit to Olkiluoto
August 15, 2014



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Teollisuuden Voima Oyj

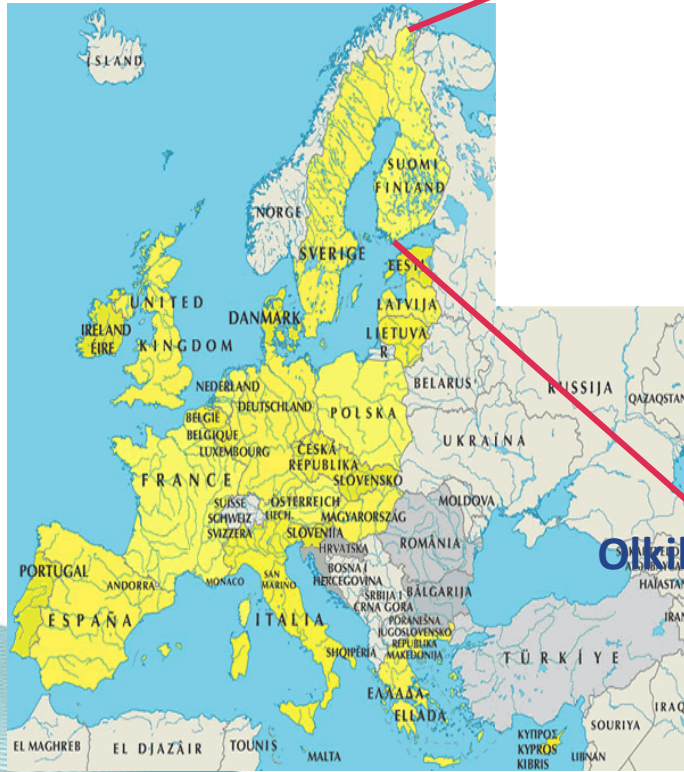
© Teollisuuden Voima Oyj

NUCLEAR POWER PLANTS IN FINLAND

Population 5.4 million

Power Demand 85 TWh/a

Electricity use per capita ca kWh 15000



Fenno-voima

Pyhäjoki

Olkiluoto

Loviisa

Helsinki

● under construction and planning



Olkiluoto, Eurajoki



Owner: Teollisuuden Voima Oyj (TVO)

Type: BWR

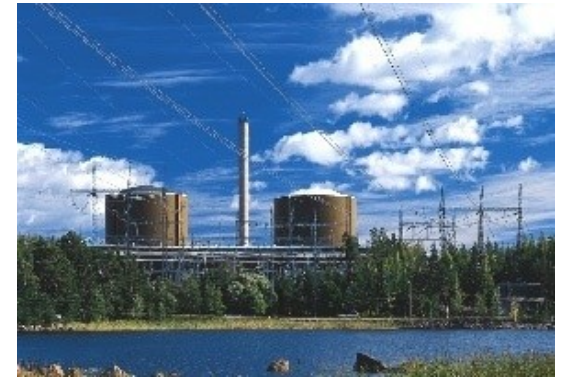
OL1, OL2 Capacity: 2 x 880 MWe

Commercial use: 1979 & 1982

OL3 under construction

OL4 in bidding phase

Loviisa



Owner: Fortum Oyj

Type: PWR

Capacity: 2 x 488 MWe

Commercial use: 1977 & 1981

KEY DRIVERS OF FINNISH ENERGY POLICY

Climate change

- reduction of greenhouse gas emissions

Cost of energy

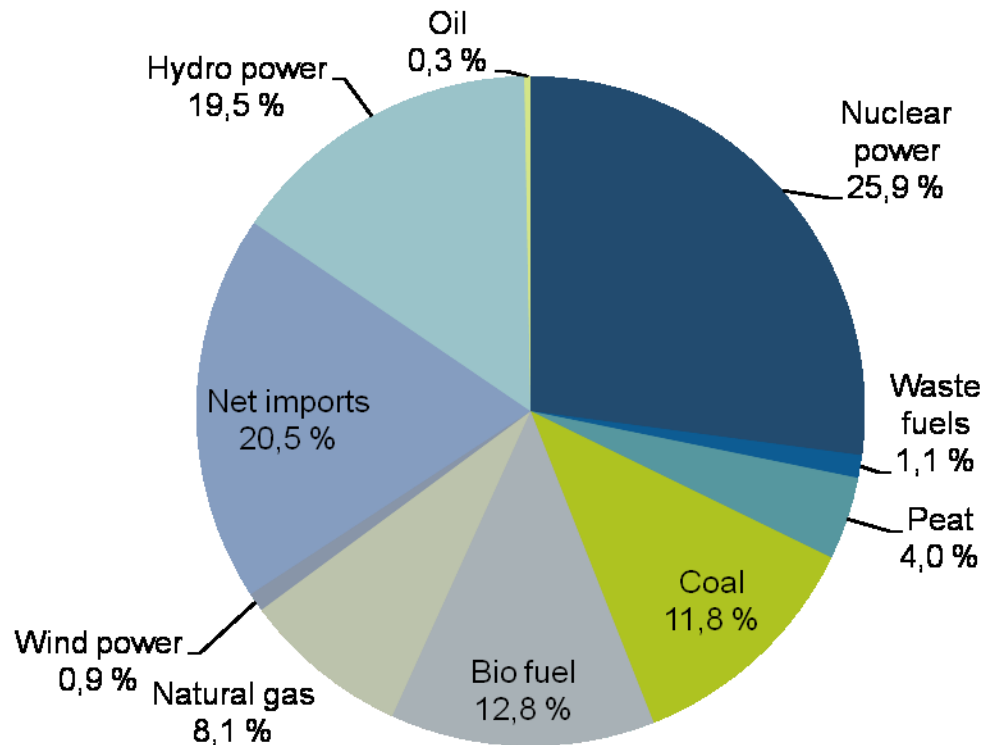
- for industries, services and households

Energy availability

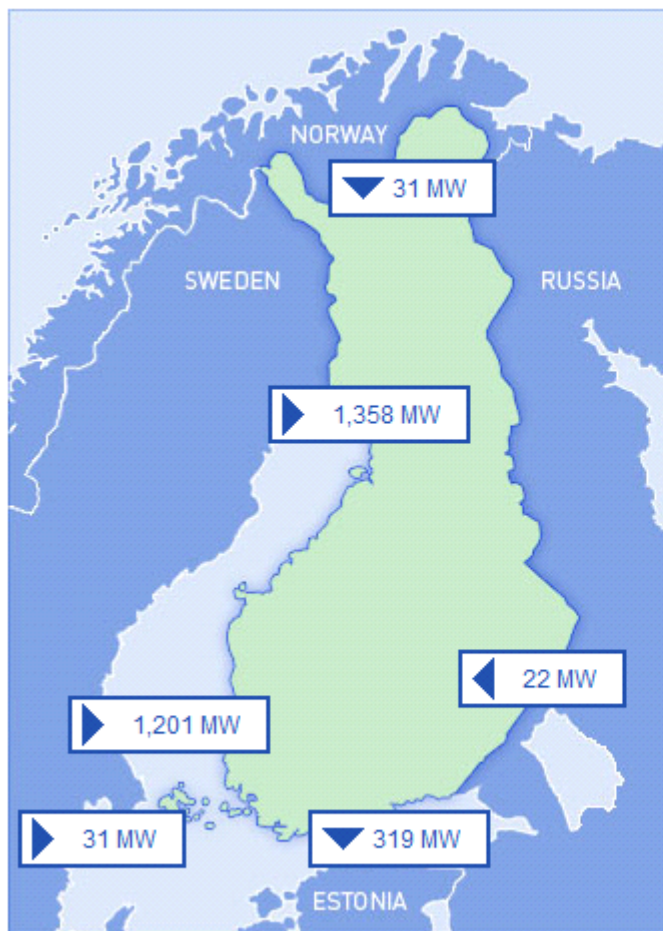
- self-sufficiency, safety and security

Replace fossil fuels with emission free nuclear power and renewable energy.

Electricity Supply by Energy Sources 2013 (83,9 TWh)



State of the power system 15.8.2014 at 10 am



Consumption and production in Finland

[Info](#)

Consumption	9,092 MW
Production	6,798 MW
- Hydro power	1,449 MW
- Nuclear power	2,369 MW
- Condensing power	749 MW
- Cogeneration district heating	817 MW
- Cogeneration industry	1,327 MW
- Wind power (partly estimated)	53 MW
- Other production (estimate)	34 MW
- Peak load power	0 MW
Net import/export	2,294 MW

Power balance

[Info](#)

Production surplus/deficit in Finland	111 MW
Surplus/deficit, cumulative	5 MWh
Instantaneous freq. measurement	49.99 Hz
Time deviation	4.45 s

Electricity price in Finland

[Info](#)

Elspot area price	63.93 EUR/MWh
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BY 2030, NEW ELECTRICITY PRODUCTION CAPACITY WORTH OF 5 OL3 IS NEEDED IN FINLAND

- Two thirds of energy consumed is imported, 70% of that from Russia.
- 20% of electricity consumed is imported
- Self-sufficiency important also during peak consumption
- Energy efficiency increases demand for electricity
- Replace decommissioned production capacity



OL3 28.7.2014



OL3 PROJECT STATUS

OL3 Site

- The Supplier has reduced the number of subcontractors and work staff at the OL3 site as it announced in December 2013. The Supplier informed that it is focusing efforts on urgent and most critical design tasks of the project
- Cladding works of the buildings' exterior walls are nearly completed

Turbine Plant

- Commissioning tests of process and electrical systems continue
- Equipment and plant labeling completed
- First systems handed over from Siemens commissioning organization to the joint commissioning organization of the Consortium and TVO (OIO, Operation Integrated Organization)

Reactor Plant

- Main components have been erected
- Pipeline erection work done to 95%. Remaining piping works engineering work is pending
- Cable pulling (75% completed) continues after cabling design is completed
- Containment pressure and leak-tightness tests completed successfully
- Planning, documentation and licensing of the reactor plant automation in progress. Factory Acceptance Tests started on April 1st, 2014 continue in Erlangen (Germany) test bay
- The Finnish Nuclear Safety Authority STUK's decision dated 10 April 2014 approved the I&C architecture design with some requirements



TVO has not received the required updated overall schedule for OL3 project from the plant supplier AREVA-Siemens Consortium

TVO therefore does not provide an estimate of the start-up time of OL3 nuclear power plant unit at the moment

OL3 – STATE OF THE ART SAFETY FEATURES

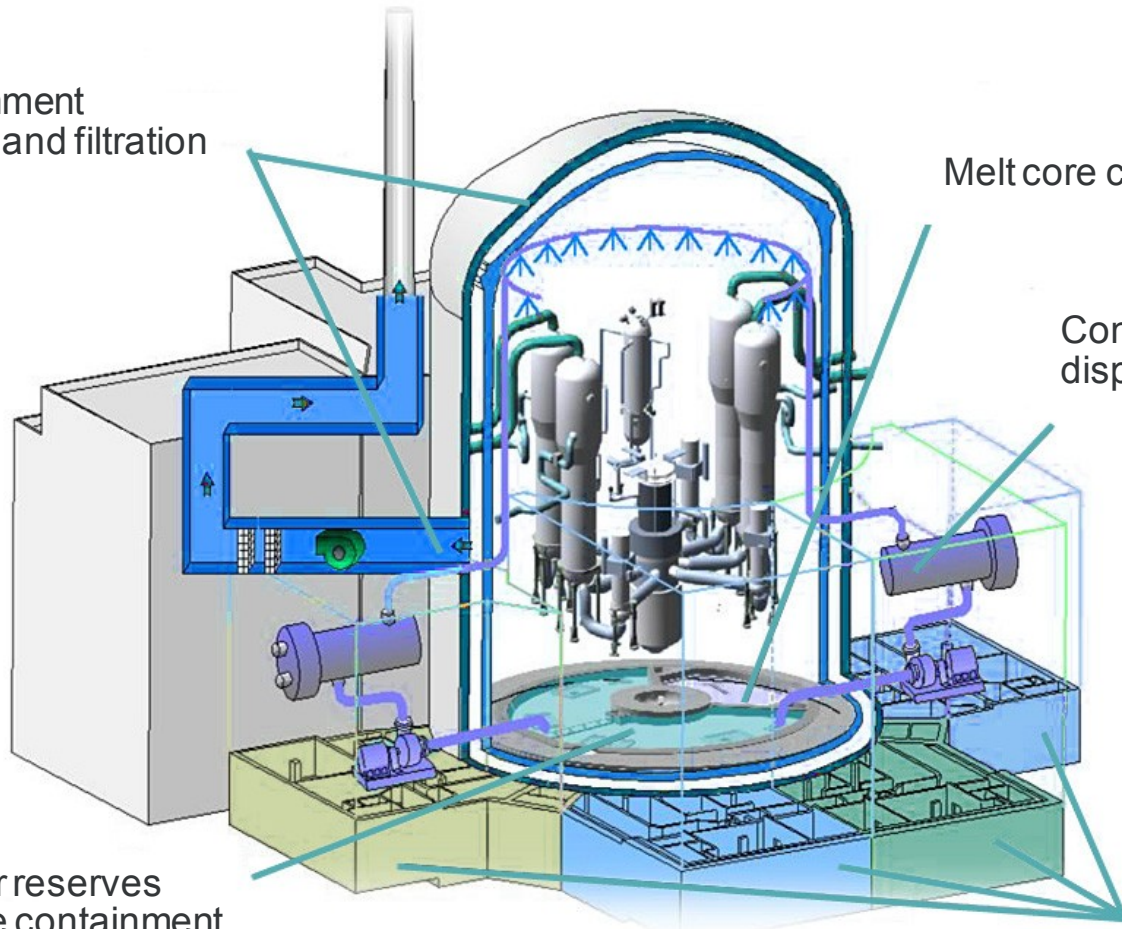
Double containment
with ventilation and filtration

Melt core cooling area

Containment heat
dispersion system

Water reserves
inside containment

Four redundant
safety systems

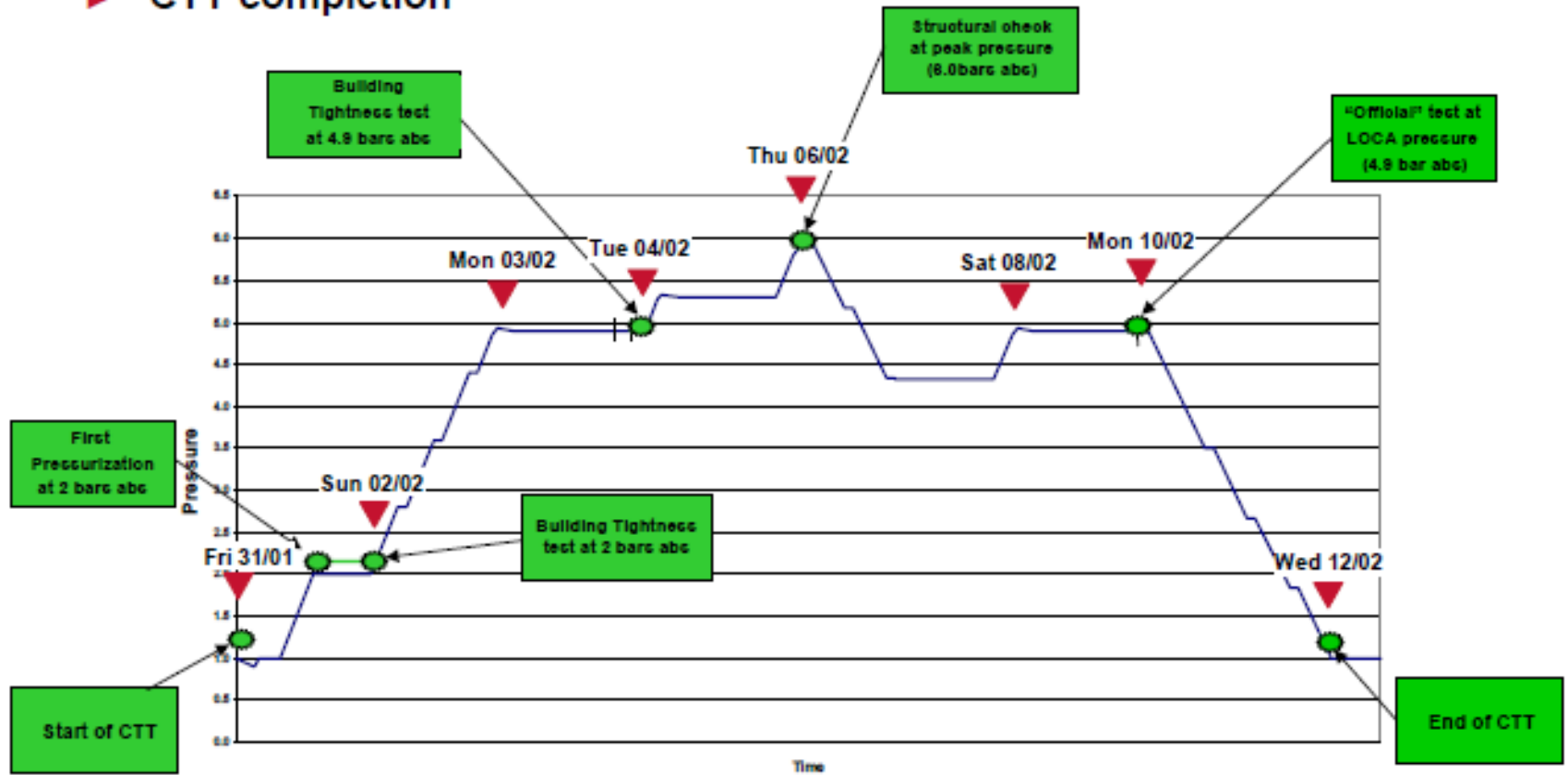


OL3 - CONTAINMENT PRESSURE AND TIGHTNESS TEST

31.1 - 12/2/2014

31.1

▶ CTT completion



REACTOR HALL



PREPARATION FOR CTT – EQUIPMENT HATCH CLOSED



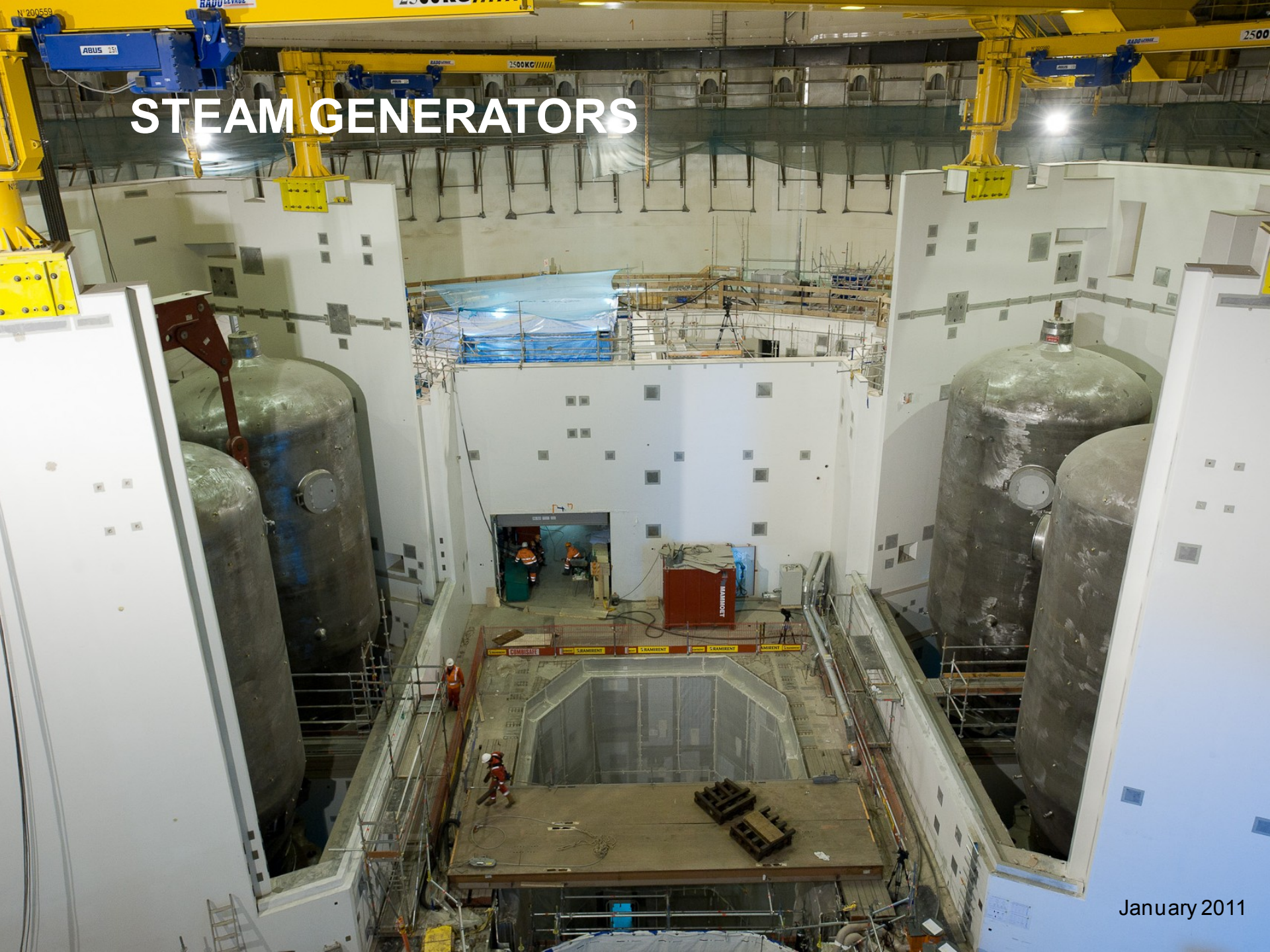
27.1.2014

REACTOR PRESSURE VESSEL



June 2010

STEAM GENERATORS



January 2011

OL3 REACTORHALL



9.12.2013

Fuel building – fuel handling machine



SOLID WASTE PROCESSING SYSTEM



Source: AREVA

MAIN CONTROL ROOM



TURBINE HALL

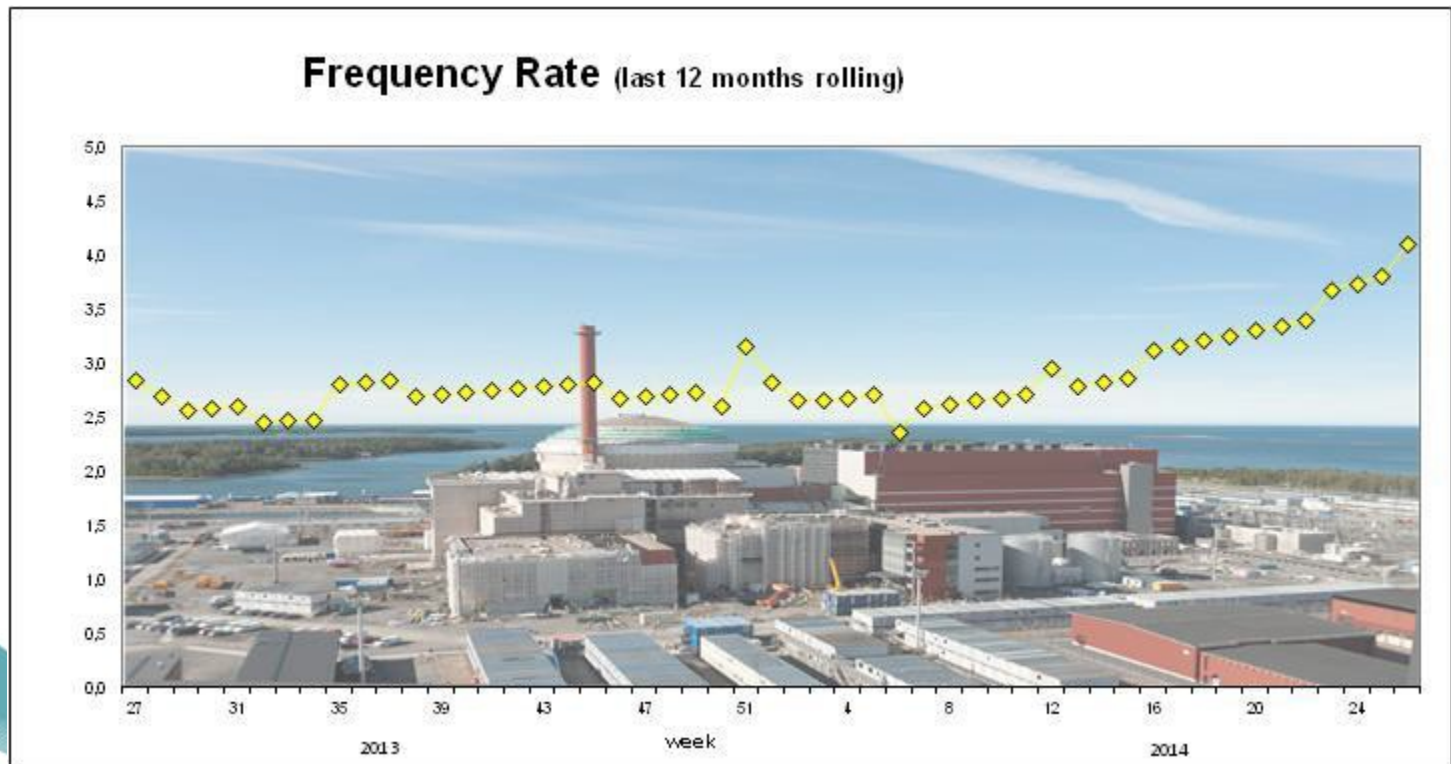


OL3 – FULL-SCALE, PLANT REPLICA TRAINING SIMULATOR



Occupational safety week 27

- The positive development of injury rate has continued
- General occupational safety index has stayed on a good level on the site
- Frequency rate less than 4 injuries per one million working hours.



THANK YOU!

