

Nuclear future in Finland

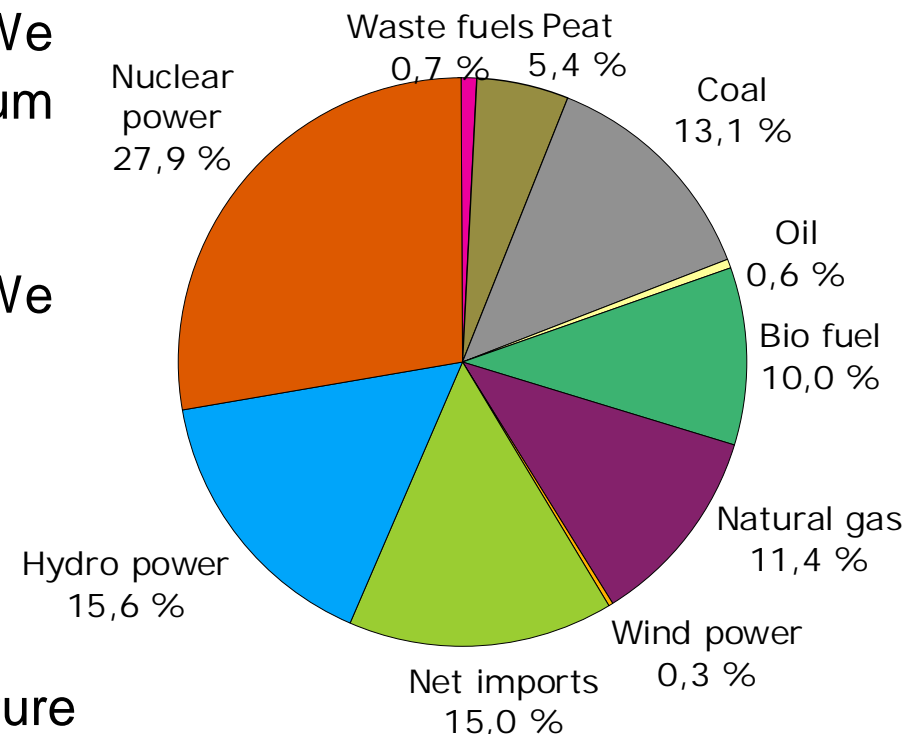
WiN Global 2010, Busan Korea

Dr. Karin Rantamäki

VTT Technical Research Centre of Finland

Current nuclear situation

- Four operating power plant units
 - 2 BWRs of Swedish origin in Olkiluoto, TVO
 - The net capacity of each unit is 860 MWe
 - 2 VVERs of Russian origin in Loviisa, Fortum
 - Some modifications to meet western safety standards
 - The net capacity of each unit is 488 MWe
- One under construction
 - EPR in Olkiluoto, TVO
- Three applications for decision-in-principle
 - Government was in favour of two
- 1 research reactor, Triga Mark II in Otaniemi
 - The principal use is the boron neutron capture therapy (BNCT)



Electricity Supply by Energy Sources 2009 (80.8 TWh)
[Energiateollisuus ry, 2010]

Olkiluoto 3 under construction

- This unit is an EPR (European Pressurized water Reactor)
- The first 3rd generation reactor in the world
- The turn-key supplier is a consortium formed by AREVA and Siemens
- The net electric output will be about 1600 MW
- The commercial operation is planned to begin in 2012

Olkiluoto 3 construction site



Political process for new units

- According to Finnish law, government consideration and parliamentary ratification are required for a new nuclear reactor
- The government made a favourable decision for two out of three applications
- Minister of economic affairs Mauri Pekkarinen will submit the decision to parliament for discussion on May 11, 2010
 - Parliament will vote separately on the two applications
 - Ratification expected in summer 2010
- Favourable proposals for TVO and Fennovoima
 - Olkiluoto 4, net capacity 1000-1800 MWe
 - Simo or Pyhäjoki by Fennovoima, net capacity 1500-2500 MWe
 - Application for construction license in five years
- Fortum's application was rejected

EUROPE



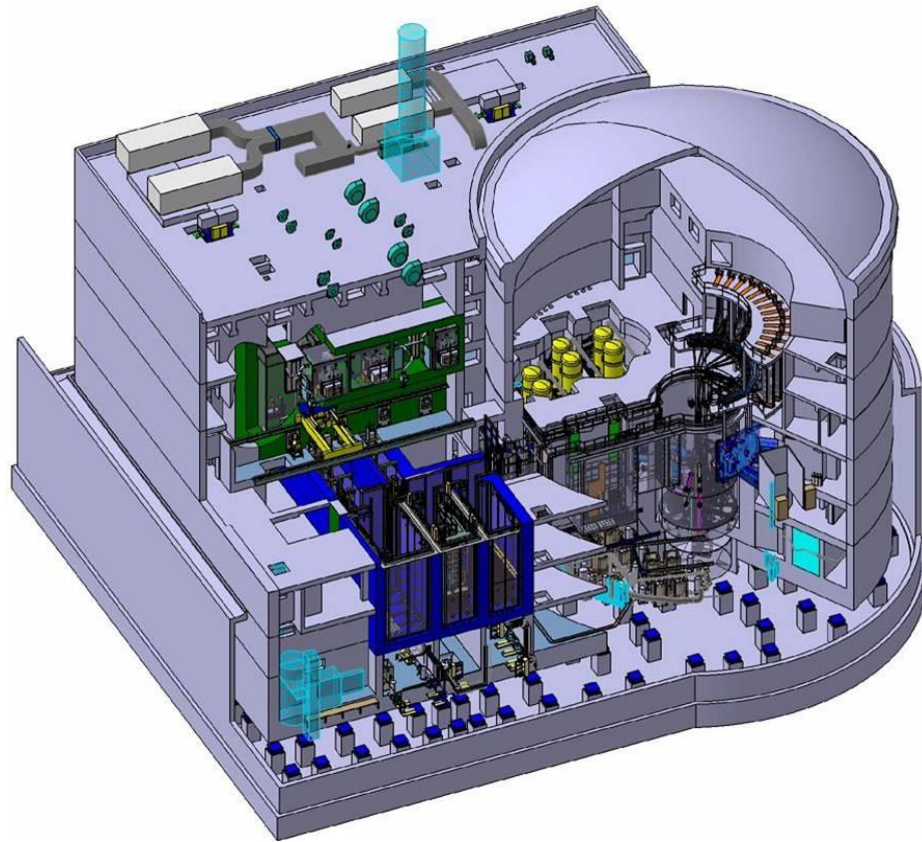
Produced by the Cartographic Research Lab
University of Alabama



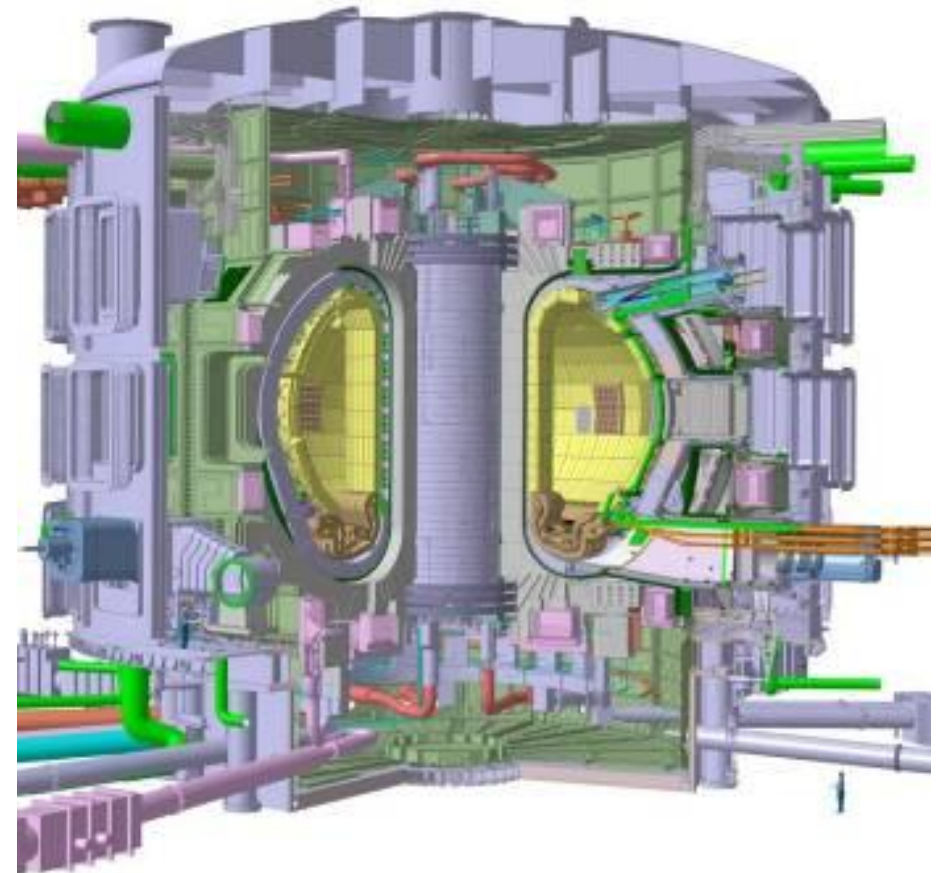
Effects on research

- Nuclear Power Plant Safety, SAFIR2010, 2007-2010
 - Planning for new programme going on
 - Funded by nuclear power companies through the National Nuclear Waste Fund
 - 240 €/MWth/year according to the largest option in the application for decision-in-principle until application filed for construction license
- Public Research Programme on Nuclear Waste Management KYT2010, 2006-2010
 - Will most likely continue with a new programme
 - Funded through section of the National Nuclear Waste Fund
- Euratom-Tekes Fusion Energy Cooperation 2007-2011
 - Funded partly by European Union and Tekes - the Finnish Funding Agency for Technology and Innovation, which is the main public funding organisation for research, development and innovation in Finland

International Research Programmes



Jules Horowitz test reactor
for material research



Fusion test reactor ITER



**VTT creates business from
technology**