

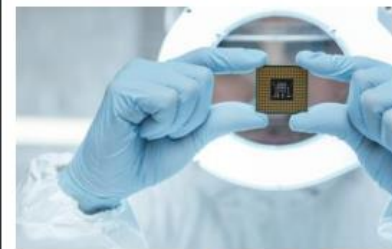
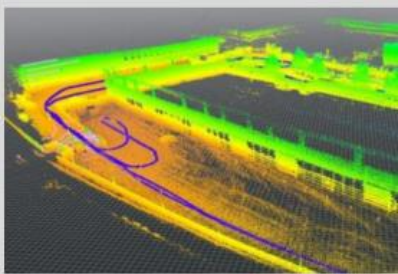
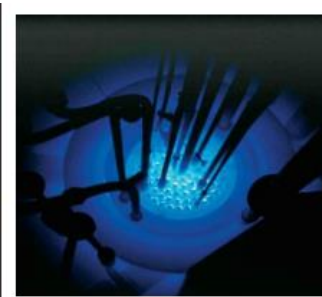


VTT

Non-Electric Applications of Nuclear Energy

Olli Soppela
Customer Account Lead, VTT

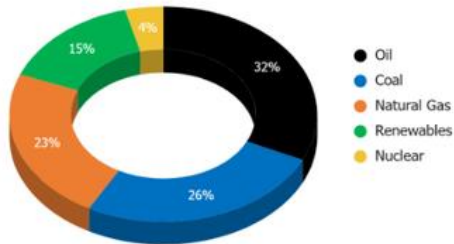
06/10/2025 VTT – beyond the obvious



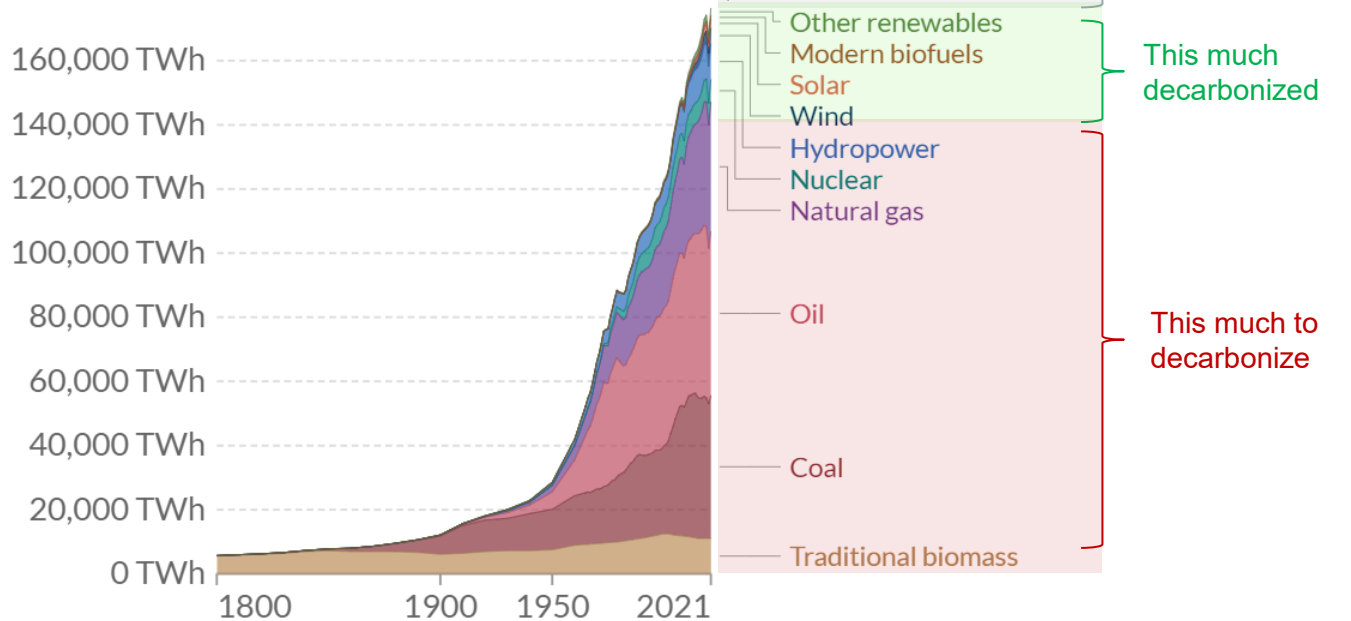
Why non-electric nuclear?

Source: Our World in Data based on Vaclav Smil (2017) and BP Statistical Review of World Energy
 OurWorldInData.org/energy • CC BY










Global Primary Energy Supply (2023)



Source: Statistical Review of World Energy, 73rd edition, 2024



Topical SMR Research in EU

 <p>TANDEM</p> 	 <p>GEMINI</p> 		  <p>PuMMA</p>	 <p>DORADO</p> <p><small>Digital twins and Ontology for Robot Assisted Decommissioning Operations</small></p>	
<p>Future SMR Energy System Scenarios <i>(non-electric nuclear, integration with VRES)</i></p>	<p>SMR Technology readiness reviews <i>(in total over 100 designs available)</i></p>	<p>SMR Construction & Operation Licensing <i>(quality, HOF, PRA, validation)</i></p>	<p>SMR Nuclear Material Behavior and Management <i>(Severe accident prevention, plutonium management)</i></p>	<p>SMR Safe and Efficient Decommissioning <i>(robotic and digital tools in nuclear waste management)</i></p>	<p>SMR Waste Management <i>(criticality management, safeguards and disposal methods)</i></p>

1) Non-electric Applications of Nuclear Energy



District Heat



Desalination



Datacenters



Agriculture



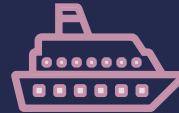
Food Industry



Chemical Industry



Aviation

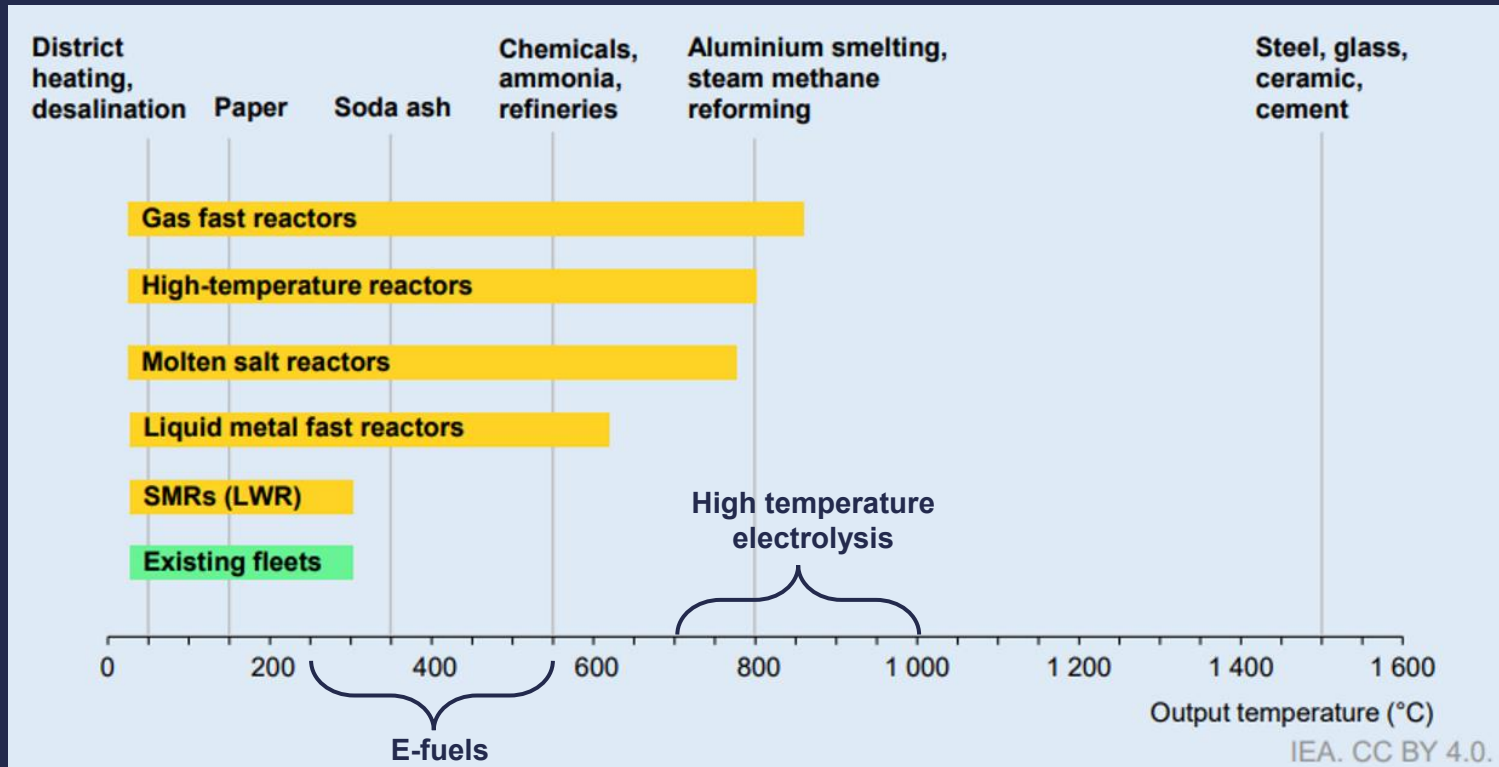


Propulsion



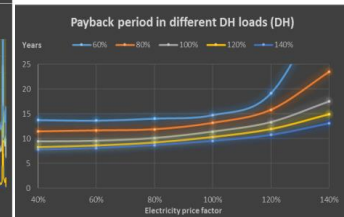
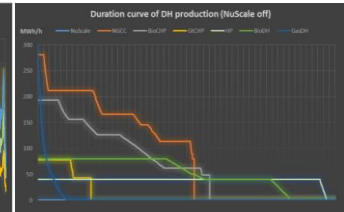
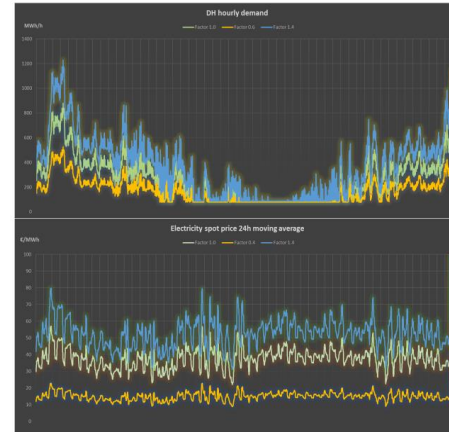
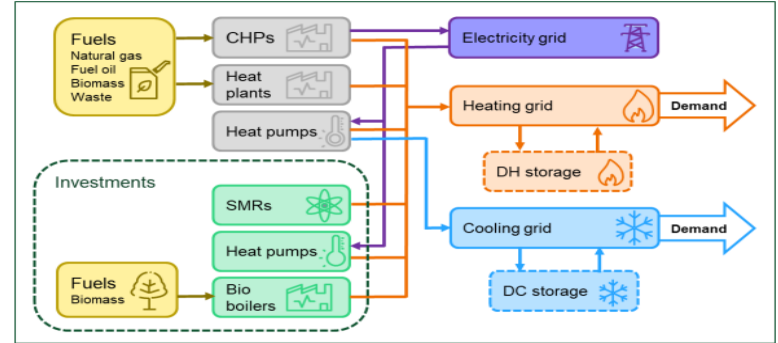
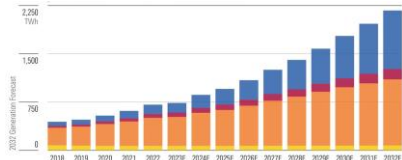
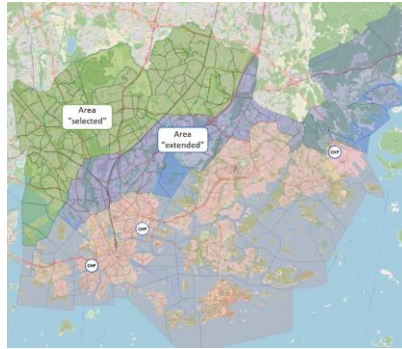
Space

Non-electric applications of Nuclear Energy



IEA. CC BY 4.0.

2) Siting Synergies and System Costs

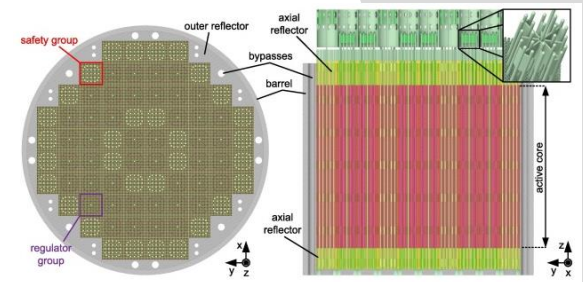
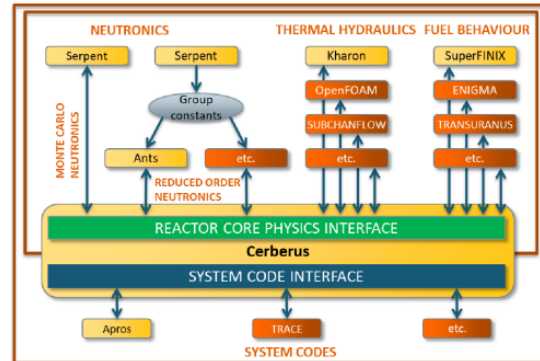
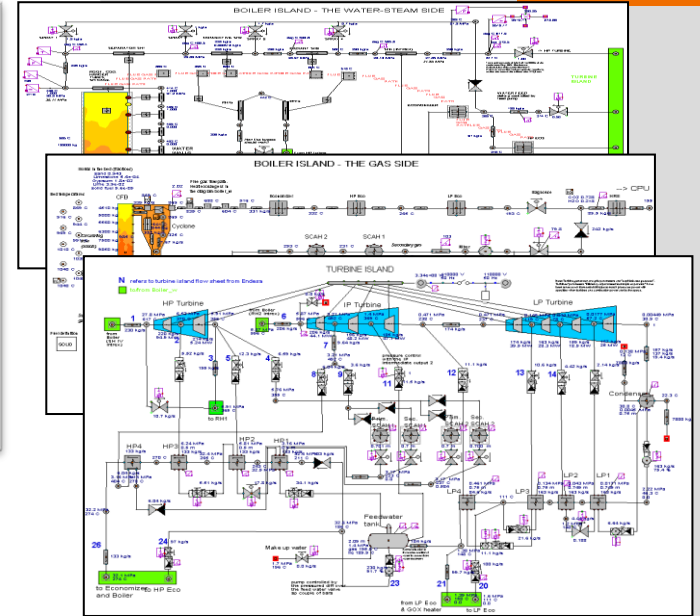
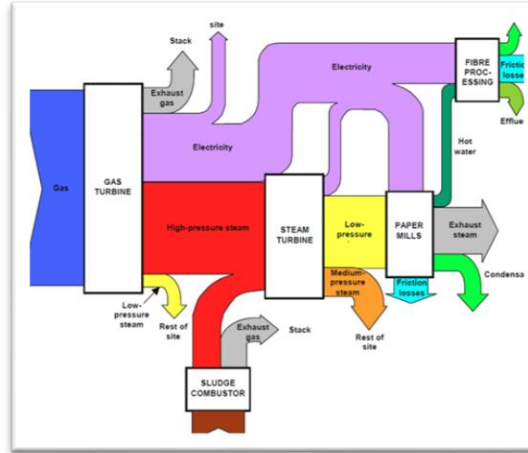


3) Technology Integration

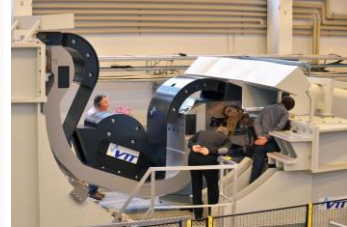
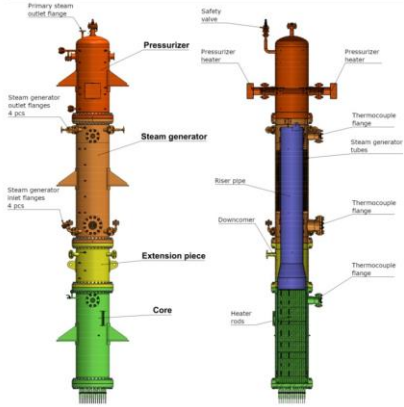
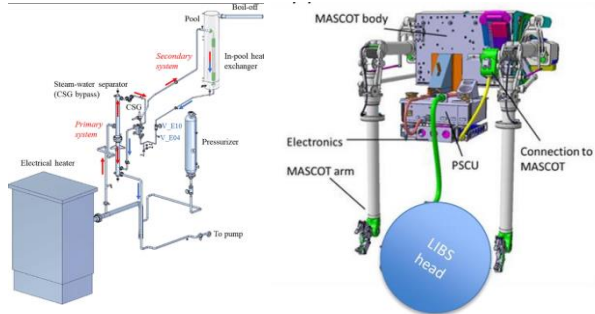
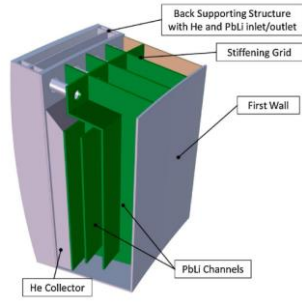
Nuclear Island Modeling

Industrial Process Modeling

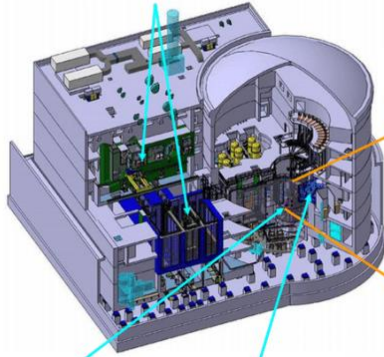
Integration Interfaces



4) Subsystem Designs & Validation

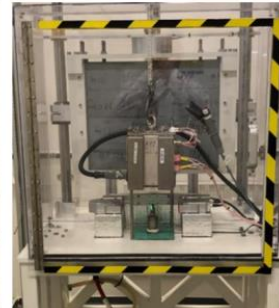
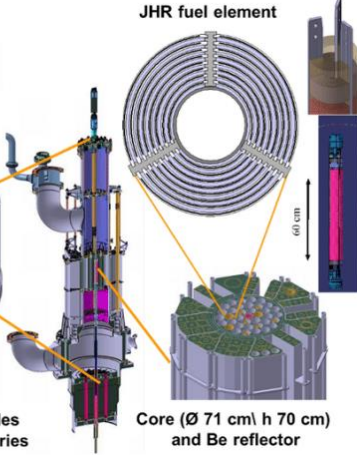


7 Hot cells and 3 storage pools (Non destructive examinations)

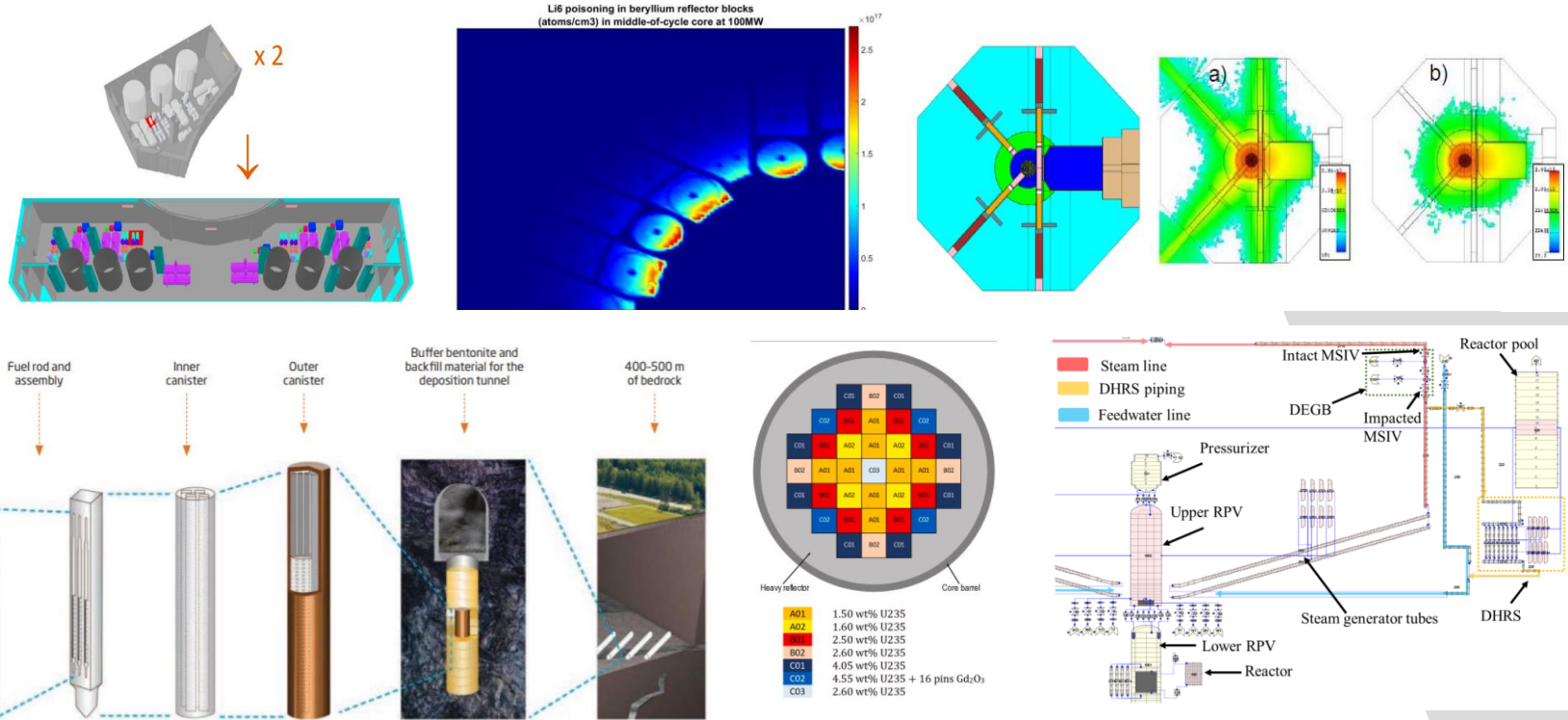


Experimental cubicles and analysis laboratories

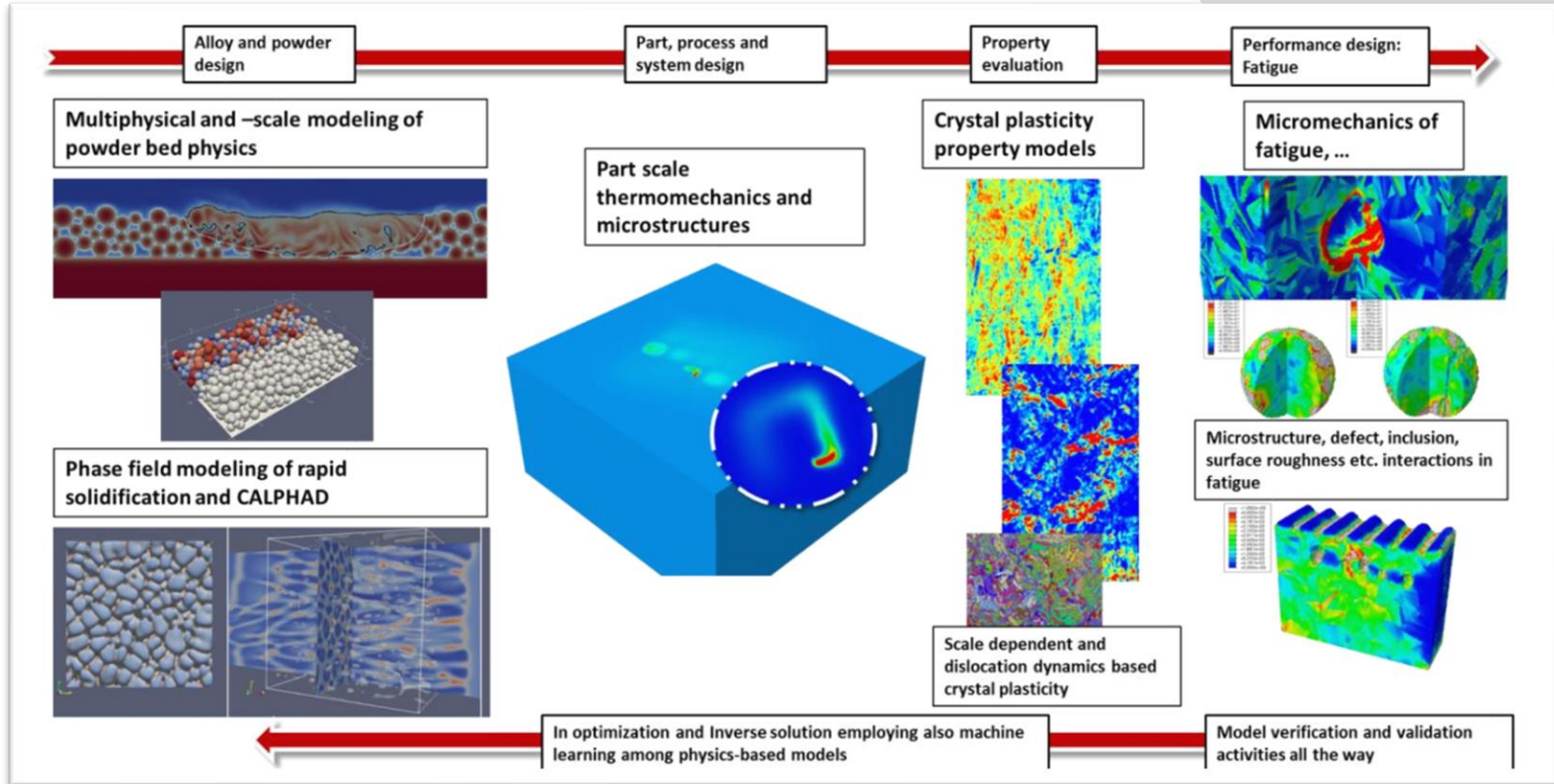
JHR fuel element



5) Safety Assessments

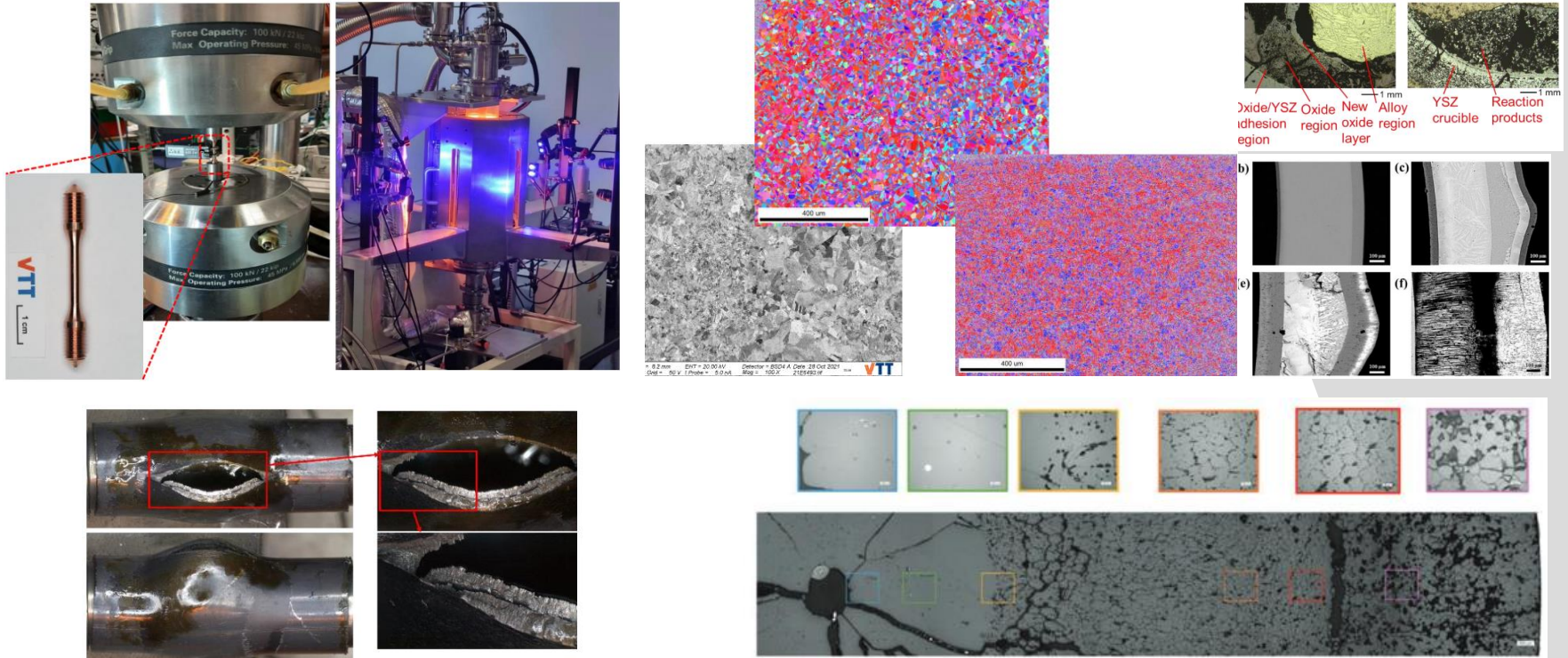


6) Material behaviour studies



nt:

7) Experimental Model Validation



1) Non-electric Applications of Nuclear Energy



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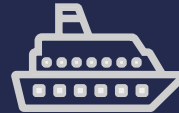
Food Industry



Chemical Industry



Aviation



Propulsion



Space

Contact us

Olli Soppela
Customer Account Lead
Nuclear Energy

+358 50 4764 632
olli.soppela@vtt.fi

VTT
Kivimiehentie 3
02150 Espoo, Finland
<https://www.vttresearch.com/>



<https://www.linkedin.com/in/ollisoppela/>