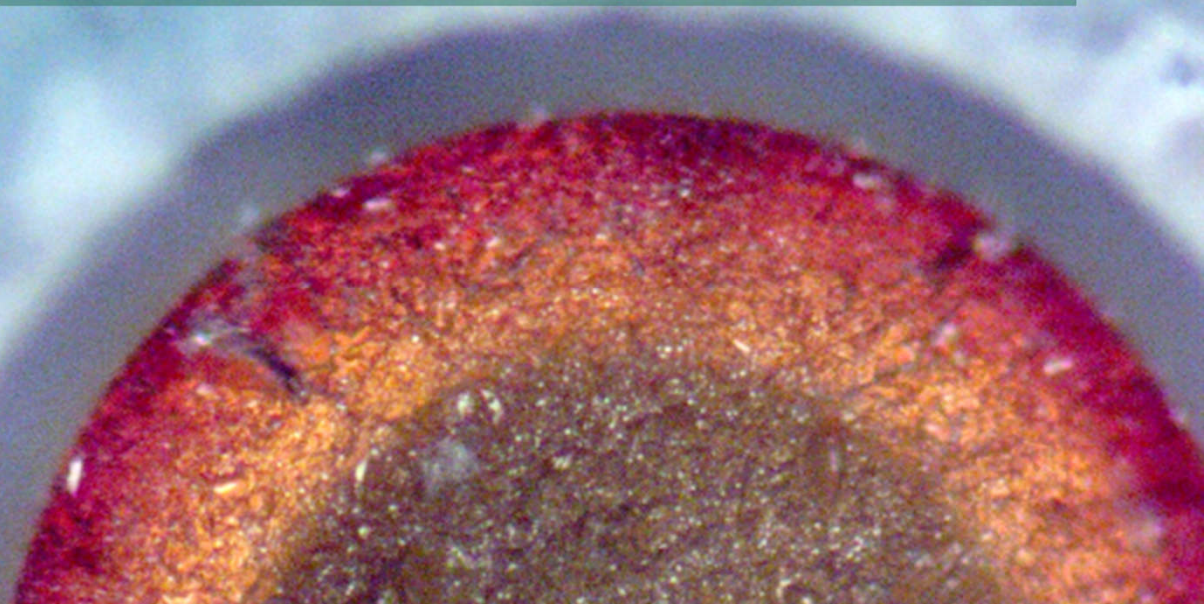
SYP 2019 - Marina Congress Center, Helsinki 30-31 Oct. 2019

Solidification plant
Journey from pre-design to full scale production

Ilkka Ropponen, Manager of solidification plant

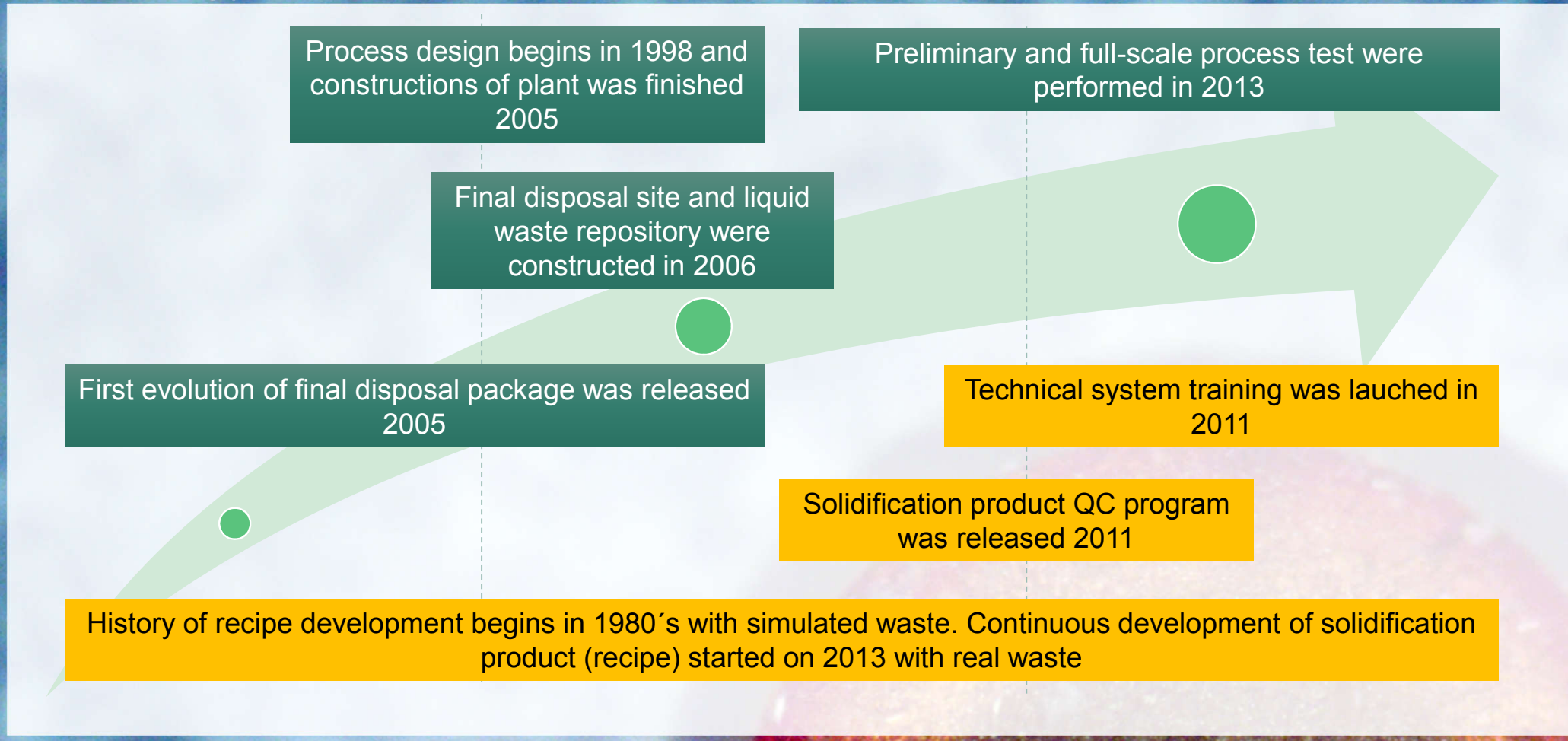
Key-note

Challenging chemical reactions of concrete, over 30-years research and development, failures and successes and final disposal responsibility



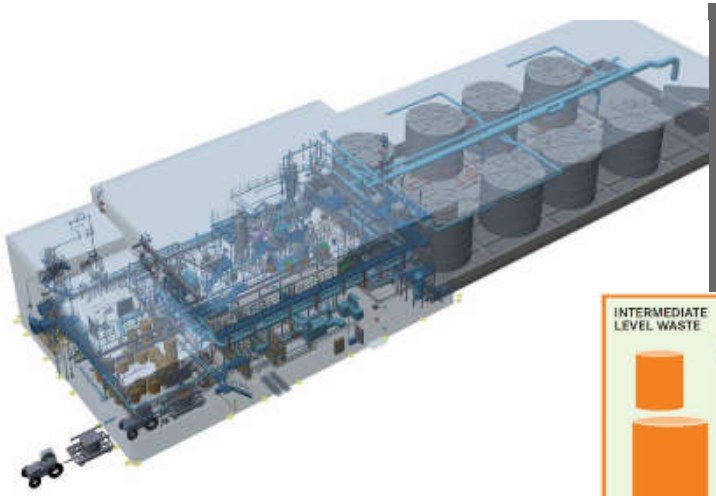
Design and main-steps of development

Technology for radioactive liquid waste treatment and final disposal

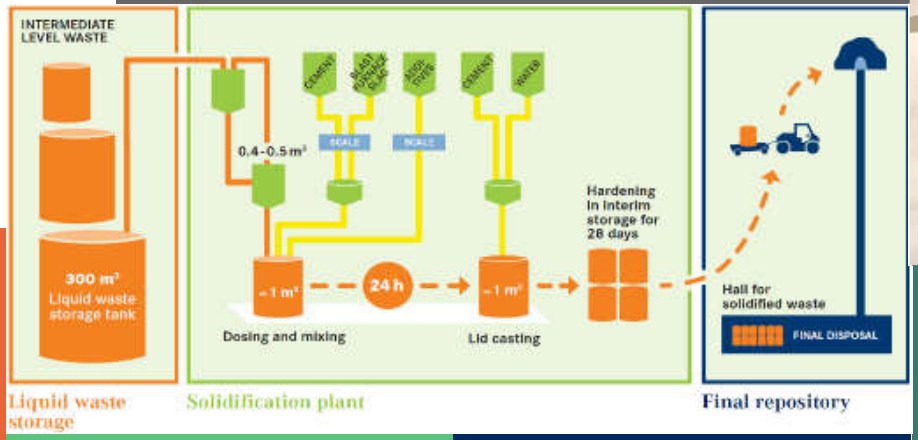


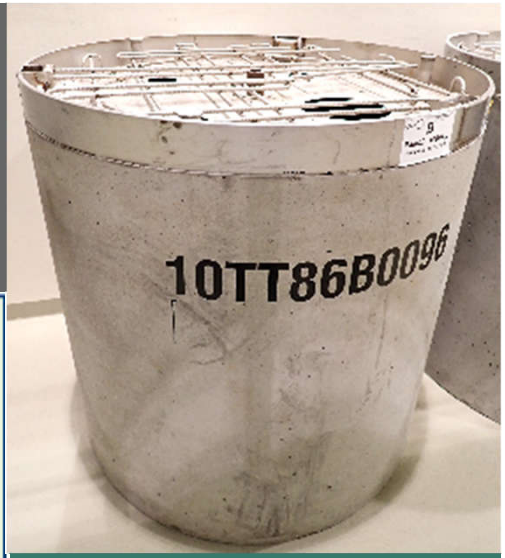
Production

Technology for radioactive liquid waste treatment and final disposal



The process is based on use of cement and blast furnace slags and it is operated from control room. Process control system provides auto, semi-automatic and manual





The plant is an independent unit which is designed to handle all liquid wastes during Loviisa NPP operation, decommissioning and interim storage of spent fuel

Main waste streams are IOEx Resins, evaporator consentrates and sludges

Wastes and binders are dosed and mixed in final disposal package. After the solidification process, package will be sealed by casting a lid on it.

Final disposal container is reinforced concrete package (net volume 1m^3). Waste volume in package is 0,4-0,5 m^3 and container weights over 4 tn.

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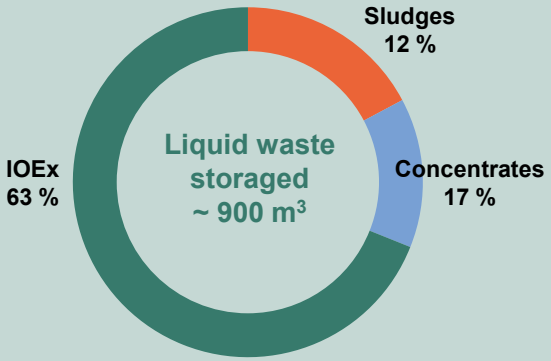
Production

Technology for radioactive liquid waste treatment and final disposal



- over 600 QC test (incl. recipe development)

Responsilibility – continuous R & D and LTM

Functional life-time management

Evaluation of process risks

Development of training tools and methods

e.g simulator

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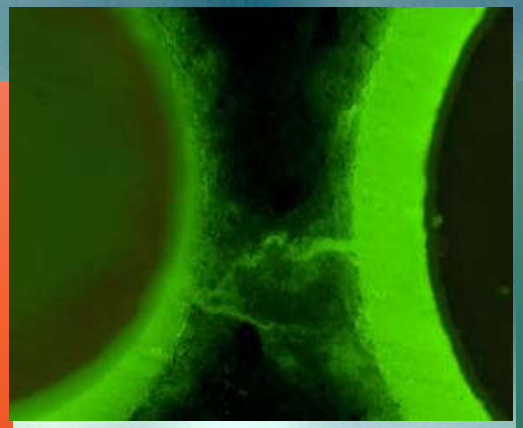
Responsilibility – continuous R & D and LTM

Developing solidification recipes

Including digitalisation in operation e.g. AI



Securing safe long-term disposal

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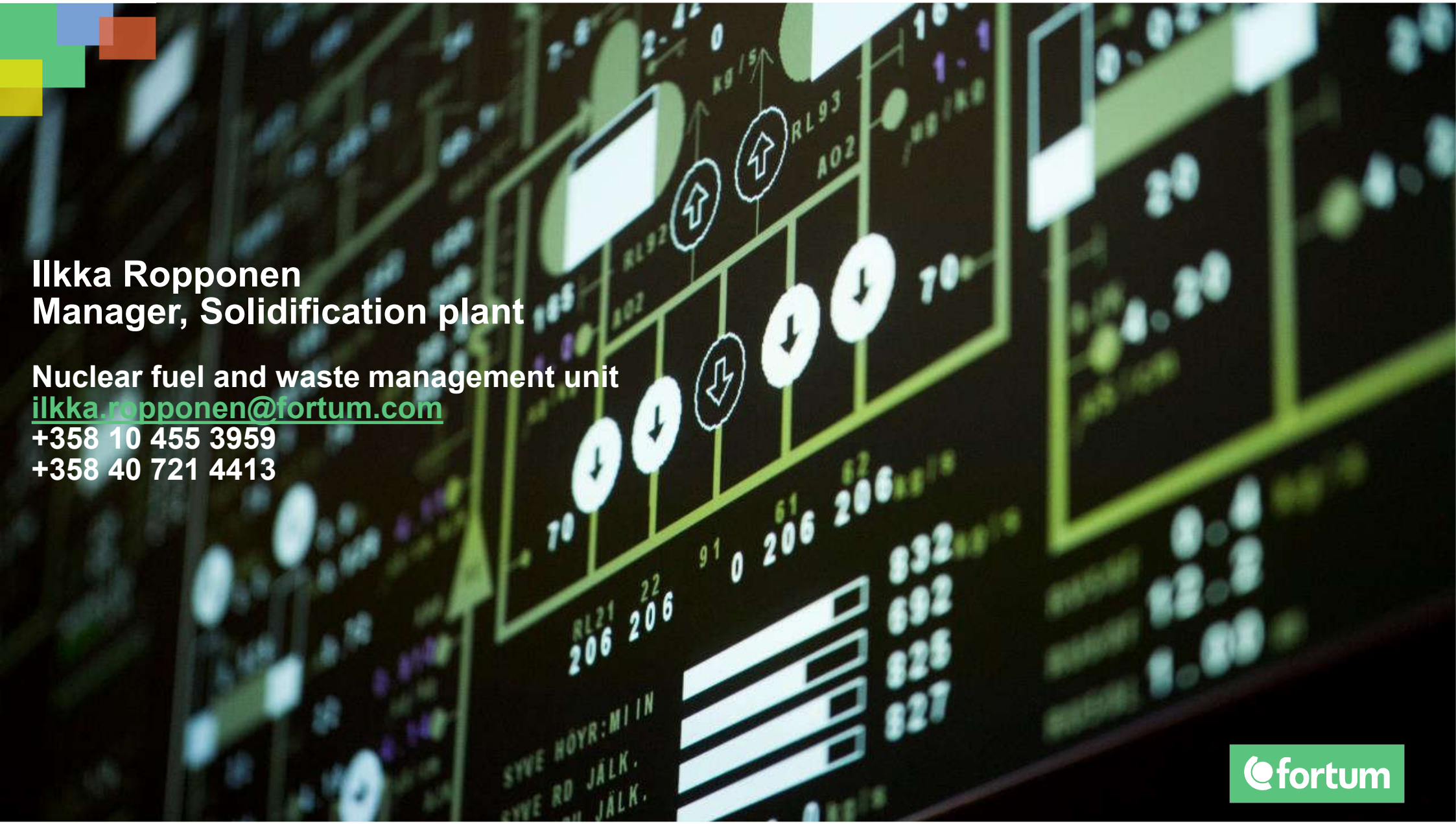

Ilkka Ropponen
Manager, Solidification plant

Nuclear fuel and waste management unit
ilkka.ropponen@fortum.com
+358 10 455 3959
+358 40 721 4413