

Introduction Session Advanced

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Nuclear. For life.

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Fuel & Materials Research and Qualifications, by using Nuclear Infrastructure in Petten:

- High Flux Reactor (HFR)
- Hotcell Laboratory (HCL)
- Workshop

- 20 years of experience at NRG
- Phd Applied Physics/ Materials Science



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Info:

www.ensuringnuclearperformance.com/en/products/irradiation-services

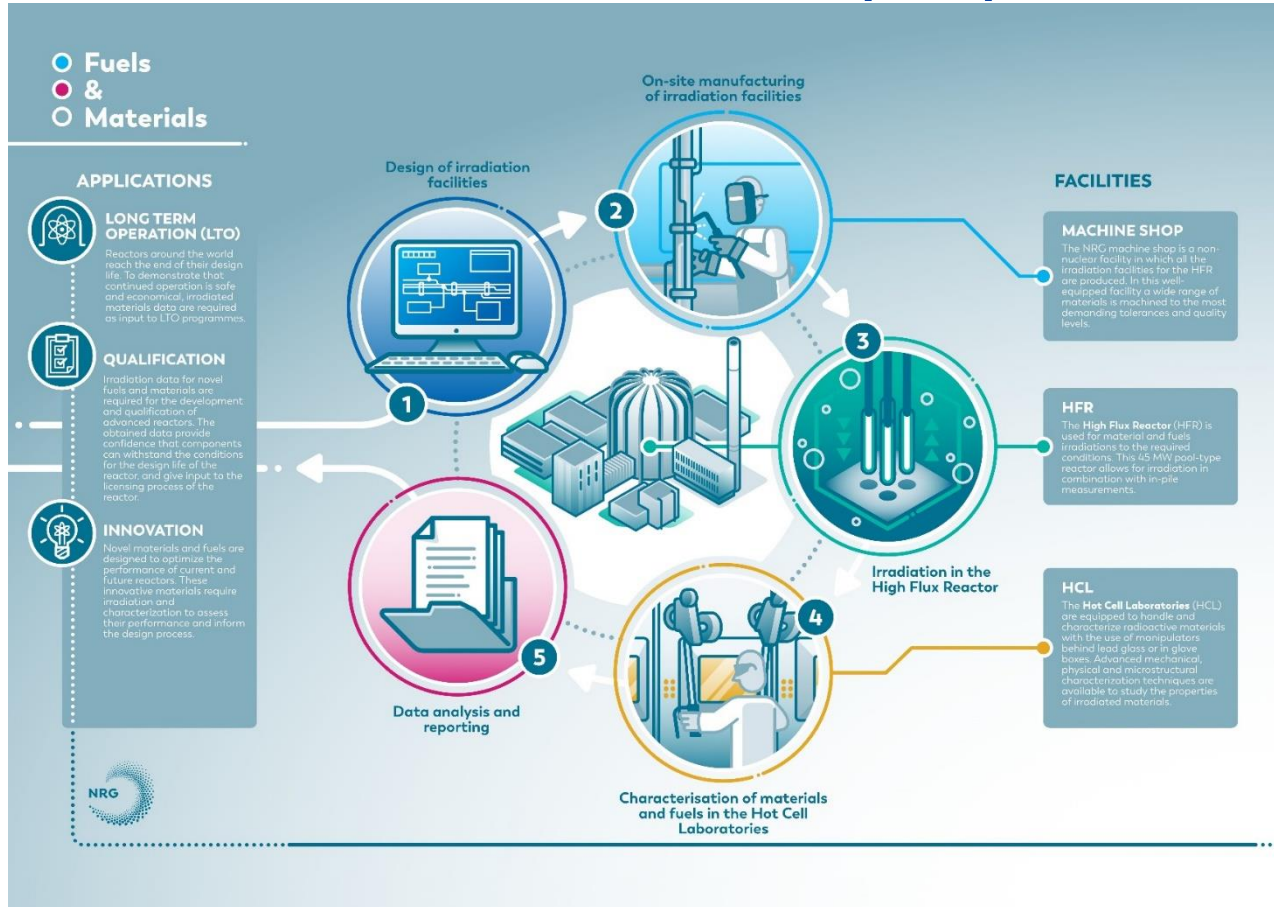


HFR



HCL

Fuel and Materials Irradiations (FMI)



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Features advanced nuclear reactors could have (one or more)

- Advanced nuclear reactors are the cutting edge in nuclear technology, inherently safer by design, therefore without or with less need for safety-related backup systems.
- Reactors will come in a wide range of sizes and power output
- Advanced reactors do not only produce electricity for the grid, but can also produce electricity in remote area's, produce heat for district heating or to decarbonize the industrial and transportation sectors.
- Advanced reactors will use a variety of coolants besides water: molten salt, high temperature gas or liquid metal.
- Advanced nuclear reactors are able to more quickly adjust their electricity output to match demand (Load following)
- Developers are creating simpler designs, incorporating factory construction, and working to lower overall construction and operating costs

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New designs, new challenges. For example:

- Different temperatures & environments: different materials => materials selection and qualification needed
- Different fuel types => development and qualifications needed
- Licensing: both developers and regulatory authorities have to gain knowledge on the new technologies
- Different coolants, or even liquid fuel => thermo-hydraulics, chemistry and/or corrosion studies required
- Financing long and costly development projects. How can we mitigate risks in early phase and accelerate the development process
- New reactor designs, so operational experience will be acquired only during operation

Introduction session Advanced (3/3)

Program of today will touch some of these challenges:

How can we accelerate the developments of Advanced Nuclear Reactors?

- How to develop and built a reactor smoothly: project or product approach?
- Thermo-hydraulics for advanced reactor technology. How can it help?
- Several advanced reactor developers will present their plans. What are the challenges, and how do they deal with them?
- What can we learn form 'historical' Advanced reactors? The Advanced Gas-cooled Reactors from EDF E (UK), in operations since 1976