Reactor Instituut Delft LTO OYSTER



Electrical grid

Nuclear fuel cycle ✓ Safeguards ✓

Nuclear safety

Radiation protection

Nuclear security

Environmental protection

Radioactive waste management

Emergency planning

Legal framework

Regulatory framework

Funding and financing

National position

Stakeholder involvement

Management

Human resource development

Site and supporting facilities

Industrial involvement

Procurement



RID 2005 start of OYSTER

- 42 years of operation experience with 2 MW pool type RR (HOR)
- excellent Reactor and Institute safety and security record
- scientific excellence in:
 - neutron beam instruments Larmor precession
 - positron continuous beam
 - gamma detectors
 - reactor physics (Gen IV)
 - radioisotopes for health
 - Instrumental Neutron Activation Analyses (INAA)
- full support of the Board of Directors of the Delft University of Technology
- ambitious plan:
 - business plan ready, including budget estimate
 - upgrade plan ready, including budget estimate (OYSTER)

These were the pearls to start with





OYSTER Big ideas from small particles





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What is

Oyster

Core

Reflectors around beam tubes → more neutrons to instruments

Cold Neutron Source

Slower neutrons → More easy to focus into beams

Better properties to use in

instruments

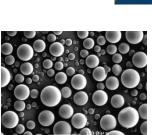


Irradiation facilities

New facilities Improved irradiation conditions



New neutron and positron instruments

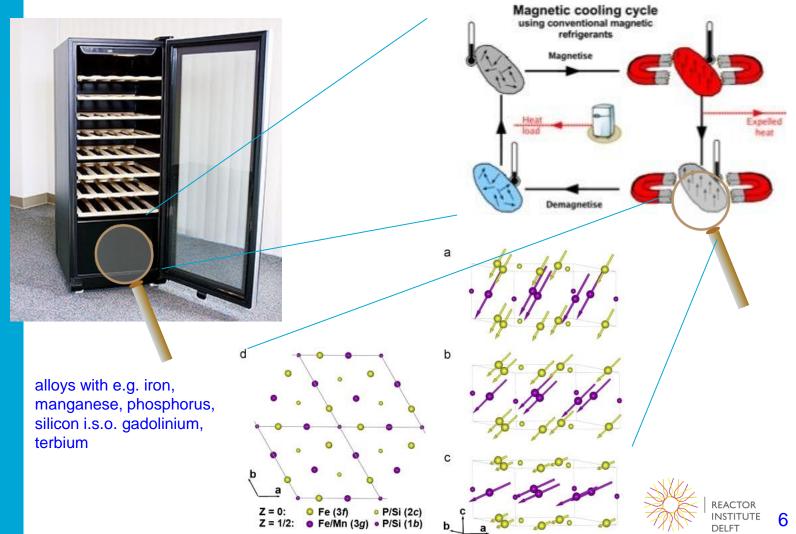








societal relevance: energy development of functional materials magneto-caloric





societal relevance: energy development of functional materials solar luminescence

30m² PowerWindows for new building Rabobank in Eindhoven a demo project by RID spin-off Physee



Start-up PHYSEE wins €500,000

News

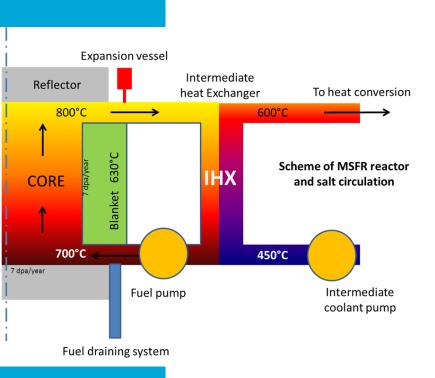
14 September 2016

The Dutch green start-up PHYSEE is the winner of the tenth edition of the Postcode Lottery Green Challenge. Co-founder Willem Kesteloo impressed the international jury during the finals in Amsterdam with his PowerWindow....





societal relevance: energy Molten Salt Fast Reactor Thorium



- no long-term nuclear waste
- virtually unlimited resources
- burns old, long-term nuclear waste
- no high pressures



societal relevance: health



materials research



detector research

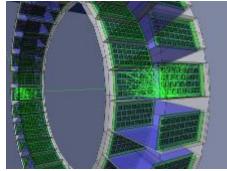


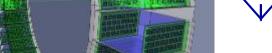
better imaging systems



better scintillators





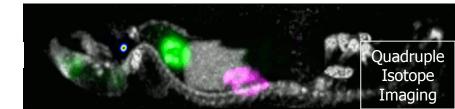






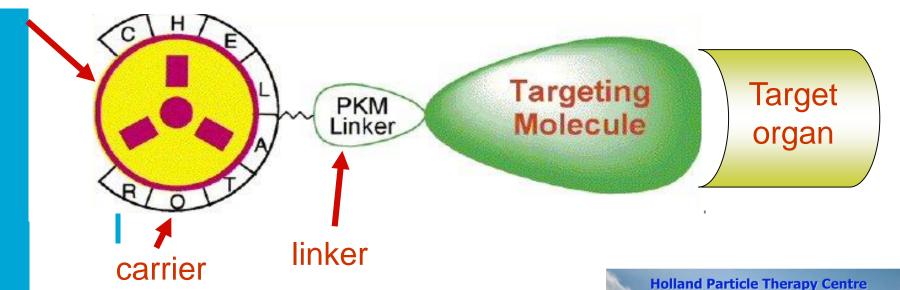
modeling & reconstruction





societal relevance: health new techniques new materials

radionuclide











A joint initiative of the research centres/academical hospitals of Delft, Rotterdam and Leiden

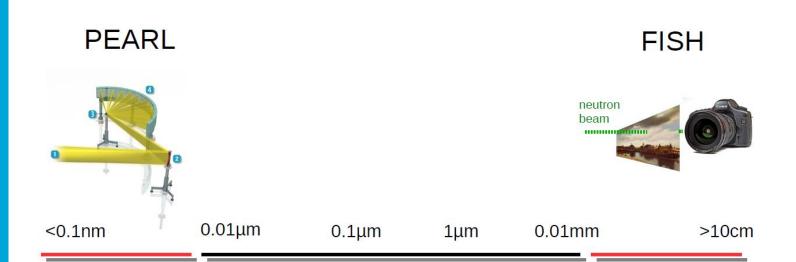


Unique knowledge centre in Northwest Europe





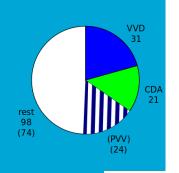
OYSTER neutron instrumentation







OYSTER granted





Nieuwsbericht | 20-01-2012

Het kabinet geeft met 38 miljoen euro een extra impuls aan de Hoger Onderwijs Reactor van de TU Delft. Dat heeft staatssecretaris Zijlstra vrijdag 20 januari bekend gemaakt.

Met deze impuls kan de TU Delft haar investeringsprogramma OYSTER uitvoeren. De huidige reactor wordt naar de laatste stand van wetenschap ingericht en ingezet voor onderzoek, onderwijs en innovatie. Daarmee verzekert Nederland zich van een internationale rol van betekenis op het terrein van nucleaire kennis en expertise en van continuering van zijn vooraanstaande plaats in de mondiale nucleaire gemeenschap.

De totale investering bedraagt over een periode van 10 jaar 117 miljoen, waarvan zo'n 74 miljoen via de TU Delft zelf.



Funding and financing National position Stakeholder involvement

Management Human resource development



Electrical grid
Nuclear fuel cycle

Safeguards

Nuclear safety
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Emergency planning
Legal framework
Regulatory framework

Funding and financing ✓
National position ✓
Stakeholder involvement ✓

Management √
Human resource development √

Site and supporting facilities Industrial involvement Procurement



Developments

- 10EVA → aging management
- 9/11 security upgrade
- decommissioning → 2050
- Fukushima → stresstest
- IAEA Collaborating Centre





aging management

Why we can operate till 2050:

- 2MW reactor = low fluency compared to e.g. the HFR (45MW)
- safe shutdown without emergency systems → choice for run-to-fail strategy only for fail-safe systems
- less redundant systems, which are more complicated to guarantee the availability
- lower temperatures (<40 °C) and pressures(< 3 bar in the cooling systeem) than power reactors
- open pool type with easy access
- low power means less activation

Of course with good aging management





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Human resource development √

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Procurement



- renewal of contract with COVRA
- renewal of regulator ANVS



Electrical grid
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Funding and financing ✓
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Human resource development √

Site and supporting facilities ✓ Industrial involvement ✓ Procurement ✓

- renewal of our license including OYSTER implementing DSR (VOBK)
- renewal of contract with COVRA
- renewal of regulator ANVS

Regulatory framework √







societal relevance: energy development of functional materials

Li-ion batteries

