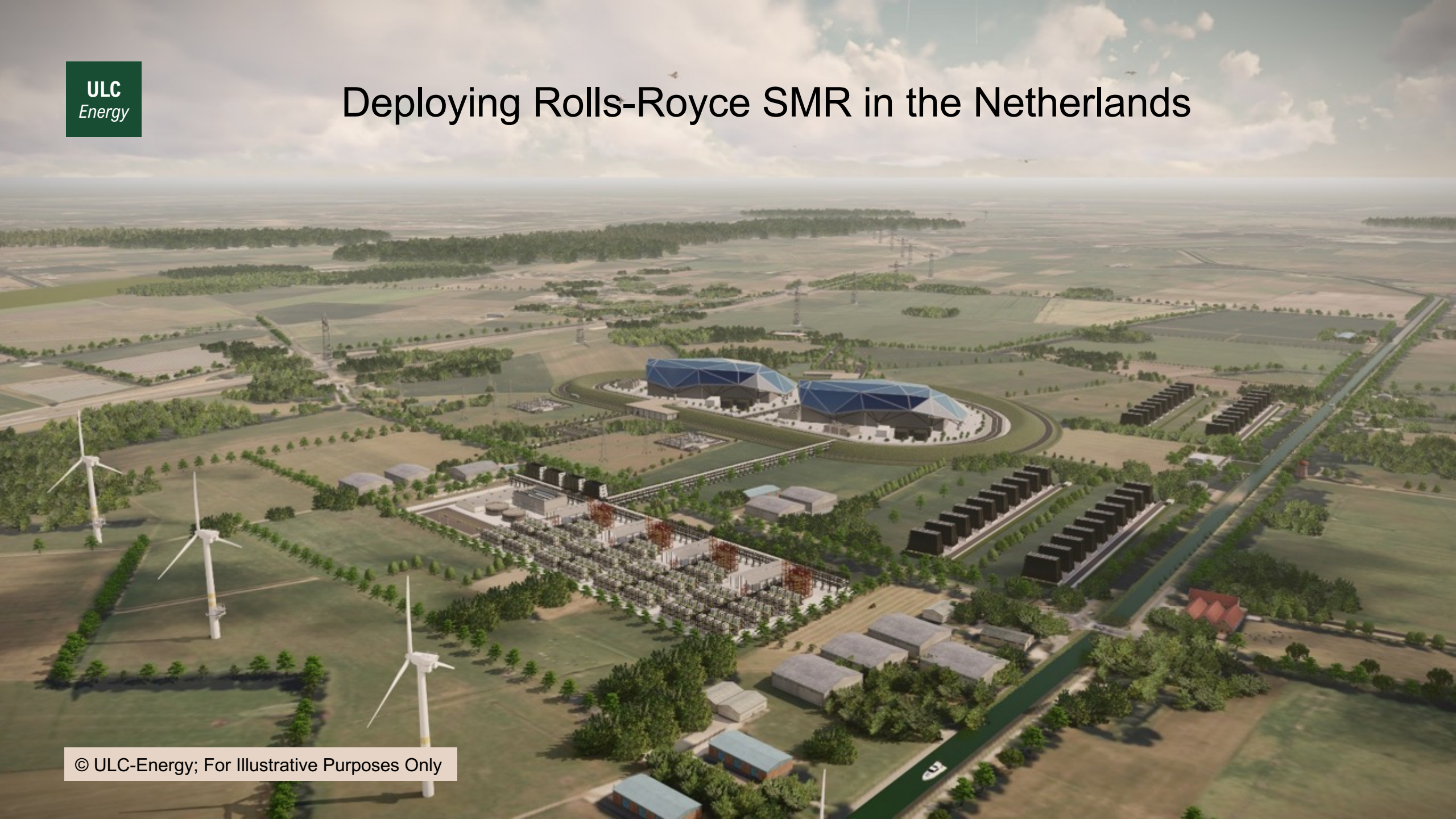




Deploying Rolls-Royce SMR in the Netherlands



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Nice to meet you!

- Topics
 - Introduction to ULC-Energy
 - Why SMRs in The Netherlands
 - How to deploy SMRs



Dirk Rabelink
Chief Executive Officer
ULC-Energy BV

Real impact – deploy proven low carbon solutions now

SMRs can remove up to 3 million tonnes of CO2 each year for 60 years

ULC-Energy

- Nuclear project development company and consultancy in The Netherlands

Clean energy on location

- SMRs can play an important role in the future Dutch energy system
 - Reliable delivery of clean electricity and/or heat 24/7, every hour, locally produced
 - No emissions (CO2, NOX, particulate matter)
 - Safe, affordable, reliable, proven technology

SMRs are preferred

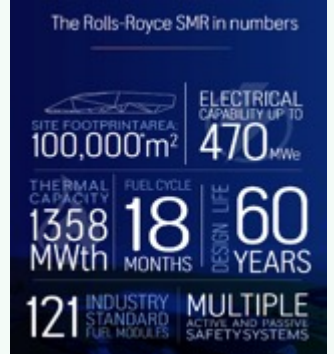
- ULC-Energy focusses on deployment in The Netherlands on SMRs
 - Lower investment, lower complexity, lower risk, lower capex, easier integration
 - Facilitates manufacturing approach

Strategic partnerships with world class industry leaders

Strategic relationships

- Exclusive agreement with Rolls-Royce SMR for deployment in the Netherlands
- Cooperation agreement with Constellation, operator of 23 reactors in the US
- Cooperation agreement with BAM Infra (NL)
- Initiated waste management and recycling

Constellation



BAM Infra

- Largest construction company in NL
- Cooperation on project development – site preparation, local infrastructure



ULC-Energy adopted a logical approach to selecting its preferred SMR technology

Starting Point

Safety

Threshold
Criteria

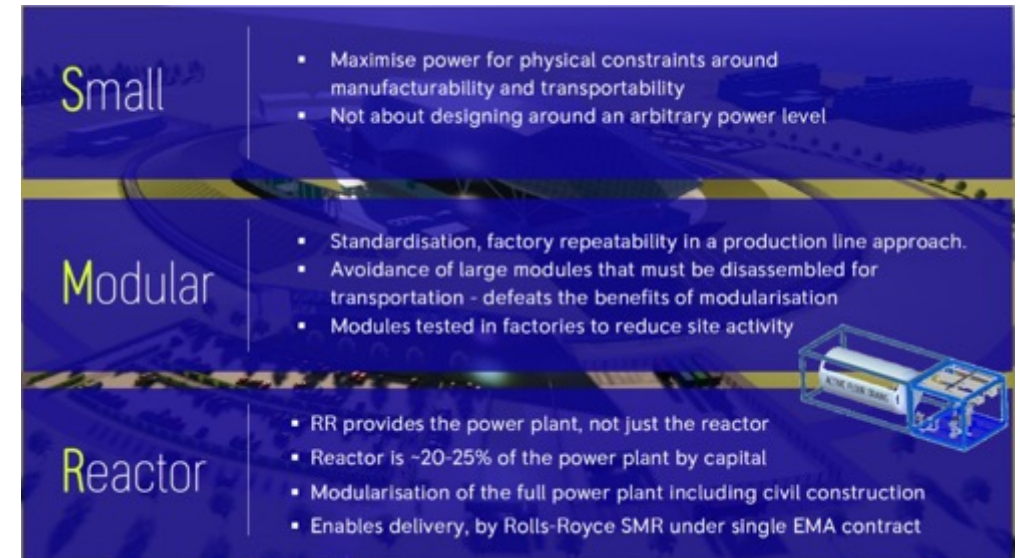
- Proven technology
- Existing fuel design
- Credibility vendor

Additional
Selection
Criteria

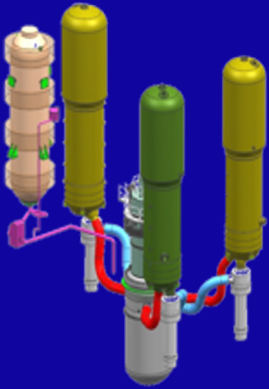
- Modular
- Economics
- Size (MWe)
- Concept readiness
- Organisational priority
- Ease of licencing
- Turnkey contract

The Rolls-Royce SMR: proven technology, optimal size

- It's big: 50% larger than the next largest SMR resulting in lower cost per unit of production than smaller designs or ASMRs.
- It is a completely modular design where all complex components are manufactured off-site
- PWR technology is proven. Uses standard 17x17 fuel assemblies and common enrichment assays.
- Technology familiar to Dutch regulator.
- Rolls-Royce SMR offers a turnkey contract for the entire power plant.




Proven technology, low deployment risk, designed to excel in safety, cost and performance



NUCLEAR PLANT

- **Traditional Pressurised Water Reactor technology** used in 3/4 of the world's current operating reactors (including Borssele)
- **Up to 470 Mwe and 1,358 MWt output**
- **60+ years design life**
- **Up to 95% availability factor**



FUEL

- **Industry standard Uranium Dioxide fuel**
- **Standard enrichment <4.95% enriched**
- **Existing fuel supply chain**
- **18-24 month re-fuelling cycle**
- **Adaptable to utilise MOX fuel**





SAFETY

- **Multiple active and passive safety systems** with internal redundancy
- **72-hour walkaway safety** with no human interaction required.
- **Best in class core damage frequency** 10^{-7} /yr

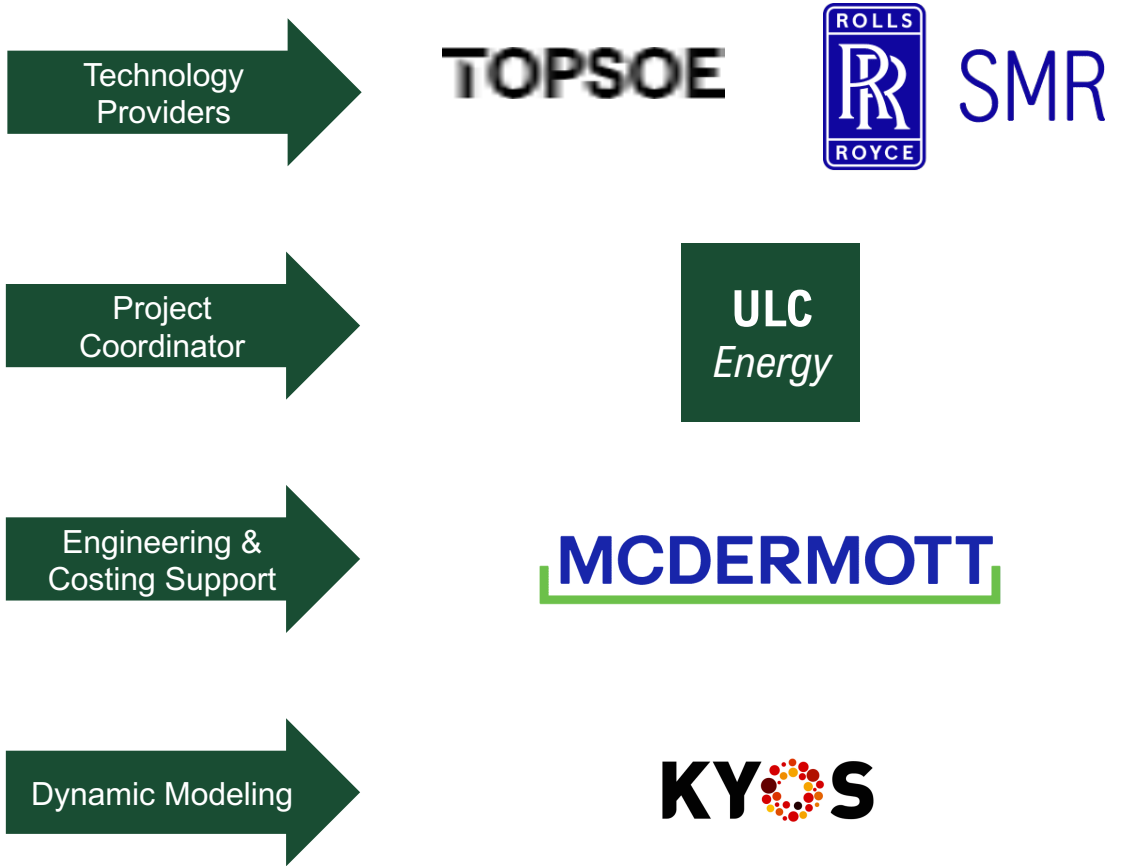
Industrial decarbonisation at scale with a regional electricity and heat supply role



 5 main industry clusters
 Energy transition / new demand

- Industrial businesses require reliable, affordable, often 24/7 and increasingly clean energy to enable long term business case
- SMRs can deliver a complete energy solution locally
- SMRs can be configured to:
 - Provide backup services to the grid in times of need, avoiding expensive alternatives
 - Defer or reduce the need for grid infrastructure investments

Production of H2 from nuclear



The theory: low cost baseload H₂, & even lower cost H₂ with opportunistic electricity sales

Optimise baseload H₂ production

- Capacity factor up to 95%
- Co-location allows for off-grid solution
- Up to 30% less electricity use in electrolysis
- Steam can be supplied by the nuclear power plant directly

Opportunistic Electricity Supply

- Electricity supply will increasingly be variable with increasing penetration of wind and solar
- This will result in increased price volatility
- The SMR – SOEC can opportunistically curtail H₂ production to sell electricity

Clean, locally produced, modular and scalable, continuous production, off-grid capable, lowest cost H₂

- Project Rose confirms
 - SMR-SOEC is lowest cost baseload clean H₂ solution **Less than € 3.50/kg (2024)**
 - Cost can be further reduced by dynamic operation **Less than € 2.00/kg (2024)**
- Rolls-Royce SMR and Topsoe are extensively modularised and factory delivered technologies
- SMR-SOEC can be deployed at scale and smoothly integrated in existing and developing energy systems
- SMR-SOEC structurally relieves grid congestion
- Optimised heat integration – confirmed no significant benefit of having access to higher temperature heat



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