



CHALMERS

Sustainable Nuclear Energy Centre



Background

- **Long history** of research and education in “nuclear engineering” at Chalmers.
- “Nuclear engineering” = **multi-disciplinary** research area.



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Background

- Establishment of the Sustainable Nuclear Energy Centre (SNEC) on January 31, 2012.



Prof. Christophe Demaziere
SNEC director



Prof. Christian Ekberg
SNEC Scientific leader

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Features of SNEC

- Bringing together all relevant areas related to “nuclear “activities at Chalmers (and GU).
- Leading to an **Academic centre** with a wide range of research/teaching areas, from fundamental to applied subjects.
- Standing solidly on three main legs: Research, M. Sc. education and PhD education.
- Ensuring that the education and research are relevant by a close collaboration with industrial actors and stake holders.



SNEC

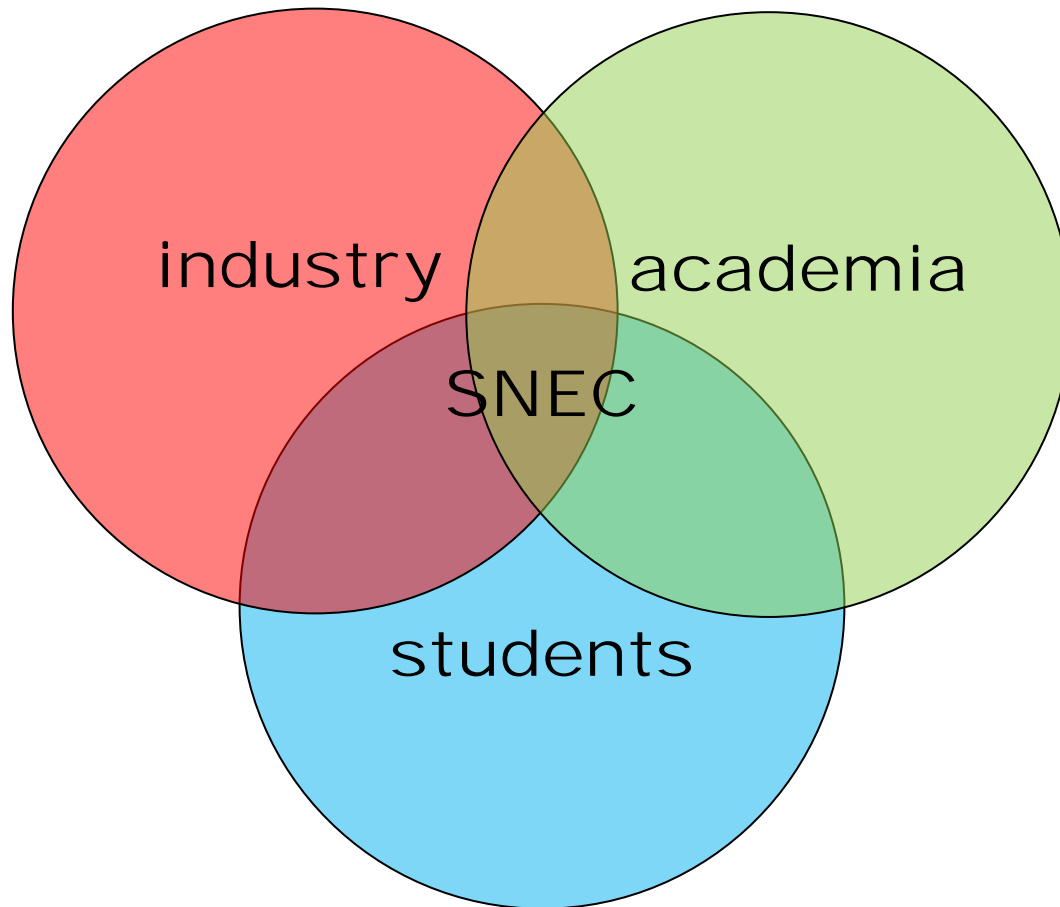
- **Specificities** of the centre:
 - Today a Centre dealing with **Gen-II/III/III+, Gen-IV systems**, as well **fusion/hybrid systems**.
 - In the future widening to more general nuclear activities such as nuclear medicine and radio ecology.
- Chalmers together with GU is one of the very few technical entities, both nationally and internationally, being an **independent actor** dealing with **all aspects** of nuclear energy systems for **today** and **tomorrow**.



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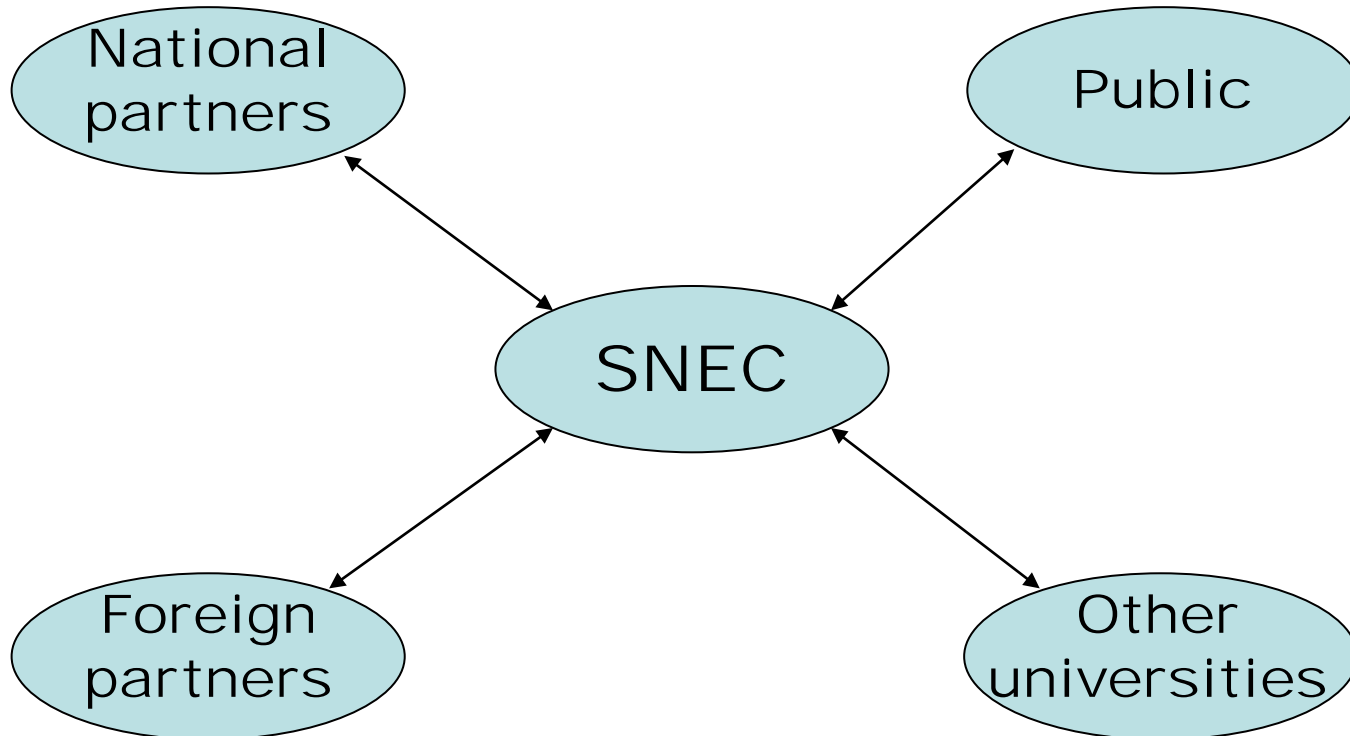
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Chalmers visions





Chalmers visions

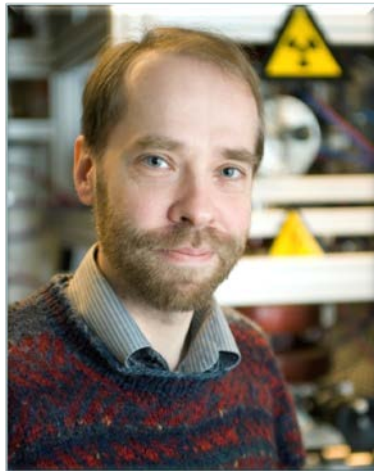




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Sustainable Nuclear Energy Centre

Master Programme in Nuclear Engineering



Coordinator

Anders Nordlund



Vice coordinator

Teodora Retegan

Number of students at present:

- ✓ 24 second year students
- ✓ 12 first year students



Master Programme in Nuclear Engineering

- A broad education with Nuclear Engineering with high relevance both for industry and academy.
- Collaboration with E.ON, SKC, KSU, ENEN (European Nuclear Education Network) and many companies (including consultants) for education in specialized areas, such as PSA, CFD, materials ...
- Guest lecturers from industry and WANO.
- Continued financial support from E.ON.



Master Programme in Nuclear Engineering

- New course in Nuclear Materials starting January 2013.
- Many study trips, including laboratory exercise within the French-Swedish collaboration framework.
- Keeping contact with the former students - build-up of a Alumni network.
- Fewer students this year (only 12, compared to 24 last year).



Master Programme in Nuclear Engineering

- Coupling education – research (reactor physics, separation chemistry).
- Engineering aspects emphasized.
- Set of courses with minimum overlap, an education with a story to tell.



PhD education in Nuclear Engineering

- Cross-disciplinary graduate school in Nuclear Engineering.
- Leading to Licentiate and PhD in Nuclear Engineering.
- Currently: 11 students enrolled.





SNEC

- Core of the centre = the **Forum** (under start-up phase):
 - **Direct contact** between researchers, industry members, students, Alumni.
 - **2 meetings/month** to discuss technical subjects, present on-going research, etc.
 - Meetings **web-broadcasted** and also **available off-line**.
 - Communication within the centre handled by a **web-based management software**.



Research areas

Gen II + III

- [Nuclear techniques](#)
- [Degradation Nuclear Materials](#)
- [Multi physics modelling](#)
- [Severe nuclear accidents](#)
- [Non destructive testing](#)
- [Technology assessment of nuclear expansion](#)
- [Radiation protection](#)
- [Nuclear Safeguards](#)

Gen IV

- Nuclear techniques
- [Separation/transmutation](#)
- Multi physics modelling
- Technology assessment of nuclear expansion
- Radiation protection
- Nuclear Safeguards
- [Novel nuclear fuel production](#)
- [Safety \(fuel coolant interactions\)](#)

Fuel cycle

- [Final repository](#)
- Separation/transmutation
- Radiation protection
- Politic of spent nuclear fuel
- Novel nuclear fuel production



The third task

Having questions about nuclear related matters??

- Send them by e-mail or call:
 - Prof. Christophe Demazière (demaz@chalmers.se)
 - Prof. Christian Ekberg (che@chalmers.se)

If we can not answer, we will relay the question to the **Forum**.



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Thank you for your attention

