



# EUREC Masters Starting Day System Innovation Management (SIM) Prof. dr. ir. J.J. Aue

HYDROGEN VALUE CHAIN

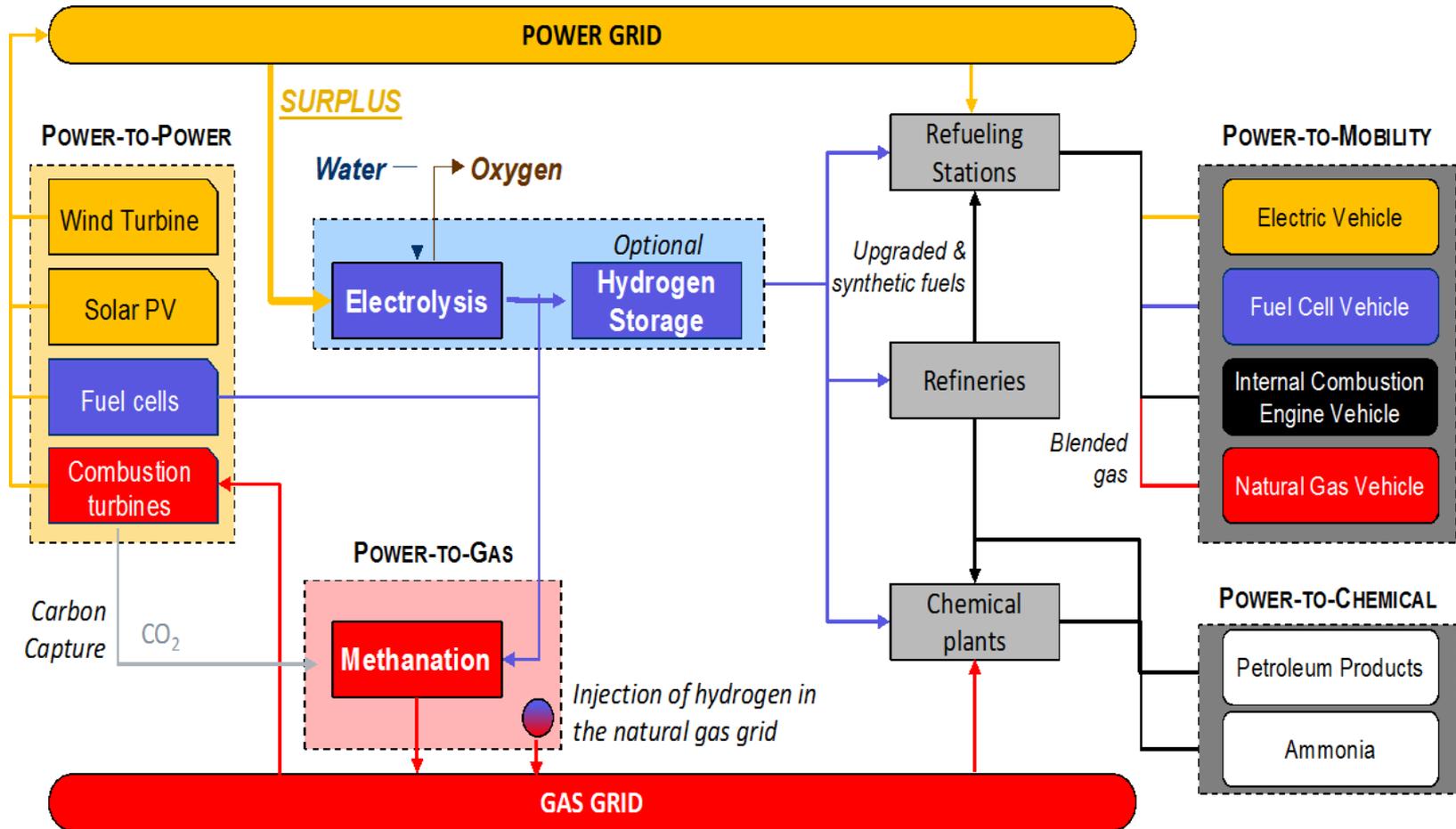
# Hanze Research @ EnTranCe

## Energy Academy Europe in Groningen/NL

- Two (old) universities: Hanze and RUG
- Vibrant & lively student life (> 80.000 students)
- International surroundings
- Focus on Energy Business and Research



# Main Focus System Approach SIM: Research & Design/Development of a Hydrogen and Bio Based Economy



# Main Curriculum Structure SIM

CONTENT	TOTAL HOURS Lectures+Tutorials+ Lab/ visits	ECTS
1- Energy System Models Applications (SMA)	50	5
2- Energy Infrastructures and Renewables (EIR)	50	5
3- Sustainable Business Case economics and law (SBC)	50	5
4-Intelligent Information Services (IIS)	50	5
5- Energy Business Plan Development (EBPD)	50	5
6- Applied Research Energy System (ARES)	50	5
	300	30

# Topics Curriculum

1. SMA: How should we use social cost-benefit analysis to determine the feasibility of projects that contribute to the changes in the energy system?
2. EIR: How future infrastructures, smart grids, governance and sustainability aspects of energy systems look like  
How can we deal with risks, management of risks and risk mitigation?
3. SBC: How can we develop/design sustainable business cases using multiple criteria (e.g. socio economic, law, regulatory) in the various stages of the business case?
4. IIS: How can we develop/design Intelligent Information Services in the Energy System (such as Flexibility, Transactional & Information Services)?  
How can we model services as business objects & processes with appropriate tools (e.g. UML)?
5. EBPD: How can we assess & improve Energy Business Plans of sustainable energy management activities of a business organization?  
How can we identify and formulate improvement and innovation options, by integrating knowledge from previous modules and operationalize one of more options in attractive business plans (roadmaps)?
6. ARES: How can we develop innovative business ideas by applied research  
How can we apply theoretical constructs and principles in applied research activities (e.g. from design research, community research, back casting and forecasting techniques & tools (e.g. life cycle analysis (LCA))?

# Specialization Delivery

**SIM Specialization will be delivered in close cooperation with the New Energy Coalition and the Hanze Energy Transition Centre (EnTranCe)**

**New  
Energy  
Coalition**

**EnTranCe**  
ENERGY TRANSITION CENTRE

# Examples Thesis Titles and Thesis Hosts

**Thesis Title: Feasibility of offshore CCS options**

CO<sub>2</sub> capture from on- or offshore steam methane reforming and storage in depleted gas fields offshore

Company/Research Centre: **NEC (Groningen, NL)**

Academic Year: 2016-2017

**Thesis Title: Offshore Green Hydrogen Production**

A Pre-Feasibility Study of System Synergy Effects of a Cooperating Offshore Gas and Wind Sector in the North Sea

Company/Research Centre: **NEC (Groningen NL)**

Academic Year: 2016-2017

**Thesis Title: Analysis of the future deployment of renewable energy in Tunisia**

Company/Research Centre: **RES4MED (Rome Italy)**

Academic Year: 2015-2016

**Thesis Title: A system modelling perspective on investment decisions in decentralized energy storage concepts**

Company/Research Centre **Next Energy (Oldenburg Germany)**

Academic Year: 2015-2016

**Thesis Title: Towards a roadmap: guide to a prosperous, self-sufficient Georgia by combining power of water and digital intelligence**

Company/Research Centre **Landsvirkjun Power (Reijkjavik Iceland)**

Academic Year: 2016-2017

**Thesis Title: The contribution of housing associations to Sustainable Energy Systems. A case study of Himmerland Housing Association in Aalborg East.**

Company/Research Centre: **University of Aalborg (Aalborg, Denmark)**

Academic Year: 2015-2016

# Future jobs and careers

**SIM prepares students for their career by participating in real life applied research, venture labs and feasibility projects**

**From innovative business idea->business case->business plan -> implementation.**



## Professional Roles/Career opportunities:

Energy transition:

- system business(case) developer/designer
- system innovator
- System business analyst
- system integrator
- project leader/manager
- system planner
- system business consultant
- system designer
- system services manager
- system venturing

# Practical information



- Visa
  - Contact International Service Desk (@ [isd@org.hanze.nl](mailto:isd@org.hanze.nl))
  - Non-EU: start arranging early; need financial guarantee
  - [www.hanze.nl/eng/study-at-hanze/practical-information/immigration](http://www.hanze.nl/eng/study-at-hanze/practical-information/immigration)
- Accommodation
  - Contact Service Desk Housing (@ [housing@org.hanze.nl](mailto:housing@org.hanze.nl))
  - Register at [www.sshxnl.nl](http://www.sshxnl.nl)
  - Start arranging early



# Testimonials SIM Students

## **Marro Mijnans**

*My reason for starting the European Master in Sustainable Energy System Management (SESyM) was very simple: I think energy transition works as long as there is money to be made. So when you figure out how to do so, you can 'steer' the transition.*

## **Marc Schot**

*My graduation project was all about integrating a centralized battery storage system for becoming self-sufficient. The objective of the study was to analyze the current and future cost situation of using battery storage together with renewable electricity generation. In order to produce accurate numbers, island Ameland was used as main example of the study*

## **Gert Jan Kok**

*I wanted to do something that makes a difference – something new and out of the ordinary. After my Bachelor's in Industrial Engineering, I could have opted for a career as a project leader in a large company or joined the construction and engineering company my family runs. I didn't want to do either of those things, though – I wanted to stay in school and learn more first. I've been interested in sustainable energy ever since the family business started experimenting with upgrading by-products, such as roadside grass. So far, these efforts have not yet been successful. With a Master's qualification in Sustainable Energy System Management, I hope to acquire more in-depth understanding of these types of projects, and thereby increase the chance of their success.*



EUROPEAN  
MASTER IN  
RENEWABLE  
ENERGY

Coordinated by EUREC

Energy Academy Europe

EnTranCe  
ENERGY TRANSITION CENTRE



HanzeResearch  
University of Applied Sciences

Energy

# Contact details and info

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Partnering-Universities for SIM Hanze-  
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