“If we want things to stay as they are, things will have to change.”

Dr. Ir. Jan-jaap Aué
Dean Centre of Expertise Energy
Professor Energy Transition

share your talent. move the world.
Hanze University of Applied Sciences

• Established in 1798
• Professionally oriented higher education
  - 28,500 students
  - 3300 employees
• 55+ bachelor programs, 18 master programs
  – 22 studies with an energy route
  – 3 energy master programs (one under development)
  – 8 professorships with topic energy
  – Energy testing ground EnTranCe

share your talent. move the world.
Bron:
http://www.deltawerken.com/
Voor-de-ramp-van-
1953/24.html
https://geoneer.files.wordpress.com/2015/04/pga_contouren.png
Blueprints for at least 5 sustainable & regional villages

Researching and testing of hybrid energy systems

1500 energy students

25 energy startups per year

Research capacity: € 10 million per year

€ 25 million regional investments

20,000 visitors to EnTranCe
October 2015: Opening by King Willem Alexander
Why?
Versterken regionale economie en werkgelegenheid en onderwijs. Veilig en gezond.

How?
laagdrempelig
dynamisch
open
multidisciplinair
micro – macro = meso
kracht van digitalisering
verbonden met de samenleving
een broedplaats waar veel kan en mag

What?
duurzame energiehuishouding
vitale economie
vitaal leven
veilig wonen
voedsel veiligheid
duurzame mobiliteit
New Energy Coalition – (Energy Academy Europe)

• International centre of excellence
• Bringing together initiatives, partners and networks to work on energy transition
• 3 pillars: education, research and innovation
Governing the “knowledge triangle’:

New Energy Coalition (since 2017)
Greep uit New Energy Coalition projecten

- EnTranCe – proeftuin voor toegepast energie onderzoek
- Energysense – langjarig onderzoeksprogramma naar houding en gedrag in energiegebruik. Opzetten van een databank met gegevens van 10.000 huishoudens
- ESTRAC – Energy Systems Transition Centre. Innovatiecentrum voor interdisciplinair en vraaggestuurd onderzoek - unieke samenwerking van private, publieke en maatschappelijke partners (EAE, TNO, ECN, RUG en Hanzehogeschool)
- T-shape learning: ondersteuning bieden bij het beter verankeren van hoger energieonderwijs bij RUG en Hanze, organiseren van aanvullende leeractiviteiten en ontwikkelen van een multidisciplinair en organisatie-overkoepelend Energy Certificate
- Ontwikkelen van een Summer School voor PhD studenten
- UNIDO training – organiseren en faciliteren van de training “Sustainable Energy Solutions” voor beleidsmakers uit 24 ontwikkelingslanden
- Executive Energy Courses
- Company Networks
Position: Bridging two Worlds

Decentral when possible, central when necessary

CoE Energy
Speeding up Innovation

At the Centre of Expertise Energy, we speed up innovations needed for the transition towards a sustainable energy society. We contribute by applied research and education.

HOW?
• An interdisciplinary and multilevel approach
• The establishment of co-ownership from Society
• Involving young people
• Showing options and their impact
• In dialogue with stakeholders
hybrid energy sources: sustainable replacing fossil

hybrid energy carriers: conversion of gas, power and heat

hybrid energy market: prosumers meeting large suppliers
Applied Research on EnTranCe

At the Centre of Expertise Energy we focus on **FIVE** main topics

1. Hybrid energy system design & management
2. Alternative gasses & hybrid fuels
3. Energy interventions & behaviour, public support & communication
4. New economic realities, labour market, governance & legal aspects in the energy sector
5. Sustainable communities & local initiatives
Bio-P2G

Research about the technical and economical feasibility of Bio-P2G
Bio-P2G

Biogas (CH₄ + CO₂)

Digester

Biomass

Manure

Digestate

O₂

H₂O

H₂

Complex biopolymers
(proteins, polysaccharides, fats/oils)

Fermentative bacteria

Broken down monomers and oligomers
(Sugars, amino acids, peptides)

Fermentative bacteria

Propionate Butyrate, etc.
(short-chain volatile organic acids)

Fermentative bacteria

Acetogens (H₂ producing)

Acetogens (H₂ consuming)

CO₂ reducing methanogens

Acetoclastic methanogens

Acetate

H₂ + CO₂

CH₄ + CO₂

Share your talent. Move the world.
Flexigrow

Determining the ideal circumstances for two new energy systems at a neighborhood level

1. Micro-CHP
2. Electric heat pumps
Identify the Energy Guzzler (Speur de energieslurper)

Stimulate home owners to check how much each appliance uses
We Energy Game

Creating the ideal sustainable energy mix and make villages and towns energy neutral
Example: Clean Energy Design Model
Example: Clean Energy Design Model
Source: Prof Ad van Wijk, green Hydrogen Economy
Centre of Expertise Energy

Hanze University of Applied Sciences
Groningen

Energy Academy Europe

Education

Applied Research

Business Partners

Society

share your talent. move the world.
2. Educational programs

- Energy Routes in 22 schools leading to EAE certification
- Learning Community * (Energy Transition Community EnTranCe)
- Master (MSc) portfolio
  - European Master Renewable Energy
  - Master Sustainable Energy System Management
  - Master Energy 4 Society
  - Master International Communication (specialisation Energy)
3. Partners

[Logos of various partners]
4. Society

- Knowledge & Support
- Liberalization & Decentralization of the Energy Market
- People in Power
- Public events
For you

- Extensive network
- Access to knowledge and experience
- Support local communities
- Experimental facilities
- Office- and workspace
- Collective Intelligence
- Energy related events
- Access to launching customers
- Awareness creation
- Students
Roadmap 2022

- Blueprints for at least 5 sustainable & regional villages
- Researching and testing of hybrid energy systems
- 1500 energy students
- 25 energy startups per year
- Research capacity: € 10 million per year
- € 25 million regional investments
- 20,000 visitors to EnTranCe
Ameland in Transition

short video on EnTranCe and the island of Ameland