“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
Who?

- https://twitter.com/janjaapaue
- https://www.linkedin.com/pub/jan-jaap-au%C3%A9/0/43b/102
- Applied Physics
- PhD Materials Sciences
- KPN Research, New (internet) services
- TNO ICT
- Hanze University of Applied Sciences
  - Life Sciences, Engineering, Centre of Expertise Energy
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

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Why ? : Times they are a changin’

Global agenda is changing rapidly: many agenda’s to serve
- Climate Change & Paris Agreement
- Sustainability vs security of supply
- Empowerment of general public
- Jobs
- Geo-political developments

New Innovation-models needed
(a) Source IPCC
RCP2.6
Change in average surface temperature (1986–2005 to 2081–2100)

(b) Change in average precipitation (1986–2005 to 2081–2100)
Bron:
http://www.deltawerken.com/
Voor-de-ramp-van-
1953/24.html
October 2015: Opening by King Willem Alexander

EnTranCe is open

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**Why?**
Versterken regionale economie en werkgelegenheid en onderwijs. Veilig en gezond.

**How?**
laagdrempelig
dynamisch
open
multidisciplair
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

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**INNOVATION HUBS**
TRANSITION CENTRE NORTH

**ENTRANCE**

**ZAP (1 & 2)**

**Digital Society Hub**

**BuildinG**

**Health hub Roden**
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
Position: Bridging two Worlds

CoE Energy

Decentral when possible, central when necessary

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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
UNIDO Capacity building programme on sustainable energy solutions in Groningen
NICHE capacity building project Mozambique

- 10 PhD’s
- Master training for staff
- Master programme Renewable Energy development
- Short Courses (vocational and bachelor level) on energy technology
Centre of Expertise Energy

Applied Research

Hanze University of Applied Sciences
Groningen

Energy Academy Europe

Education

Business Partners

Society

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Applied Research on EnTranCe

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

1. Hybrid energy system design & management
2. Alternative gases & 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
We Energy Game

Creating the ideal sustainable energy mix and make villages and towns energy neutral
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)
Earn an Energy Certificate from the Energy Academy Europe by completing this energy route in combination with learning activities. This prepares you for your next step: an energy Master or a career in the field of energy!
3. Partners
**MONITOR**

To gain insight into your energy, the first step is becoming aware of what is happening in your home. Do you know how much energy you are using today? And what collective impact our behavior has?

The Envitron system monitors your own energy production, consumption and storage in real-time so you can make more informed energy choices. Some of the insights the Envitron system offers are:

**SHARE**

When you are producing energy and not using it, why not sell it directly to your neighbor? When you are not producing energy, why not buy it directly from your neighbor? You set the price for which you want to buy and sell your local energy. Envitron develops the Envitron platform-based solution to do just that: buy and sell energy directly from your local environment. This network works in parallel with the existing infrastructure to ensure you are never out of power.

**CONTROL**

Dig deeper into your energy system and balance your own energy production, consumption, and storage. Envitron is currently developing technology to let several of your appliances ‘talk’ to each other. This way, you can use all of your energy as efficiently as possible.

*share your talent. move the world.*
TNO innovation for life

share your talent. move the world.
4. Society

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

Collective Intelligence
Energy related events
Access to launching customers
Awareness creation
Students

Extensive network
Access to knowledge and experience
Support local communities
Experimental facilities
Office- and workspace

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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
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