

EU H2020 Projects AWESCO & REACH

Advancing Airborne Wind Energy Technologies
by Systematic Research and Development

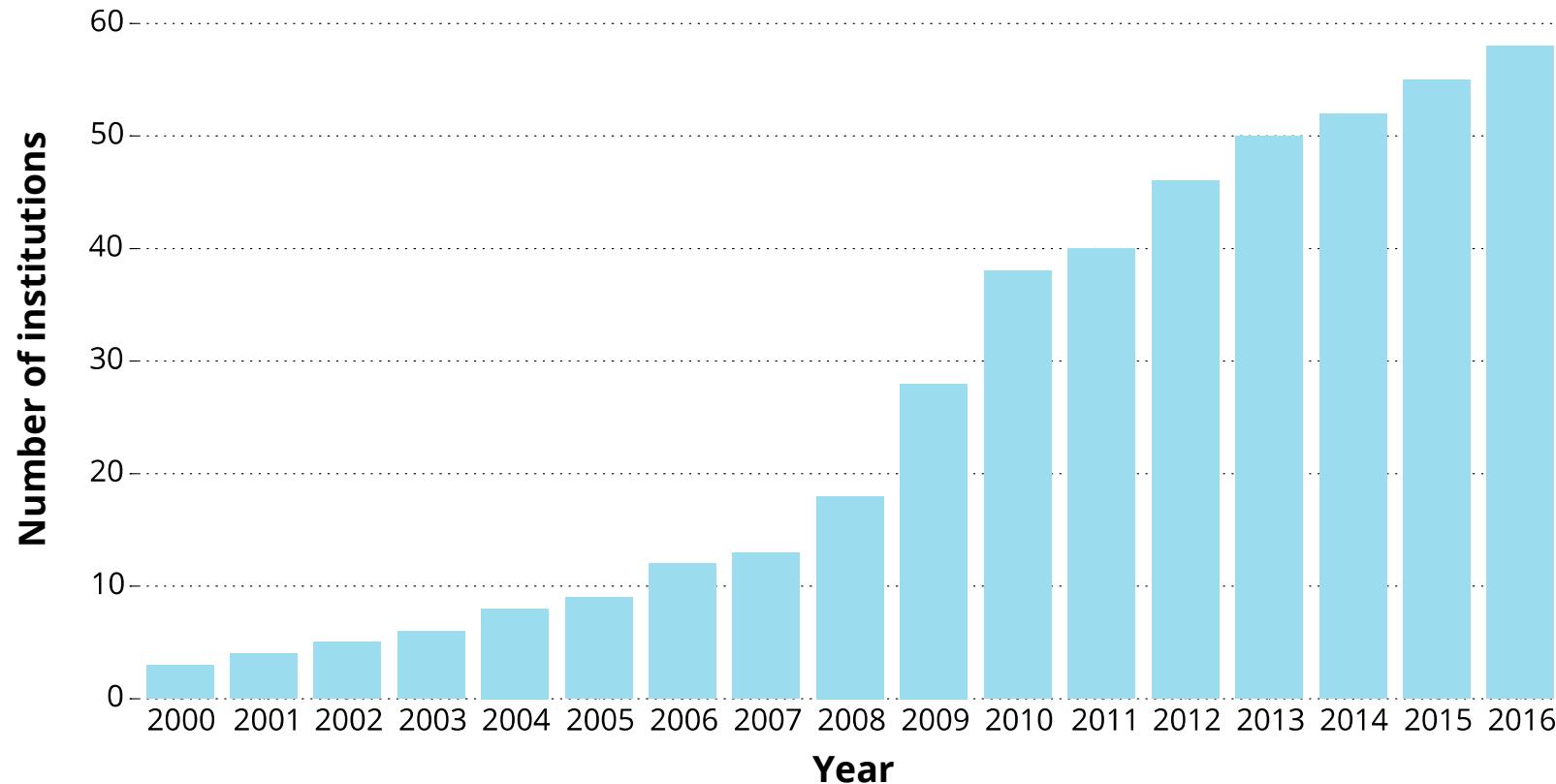
Roland Schmehl



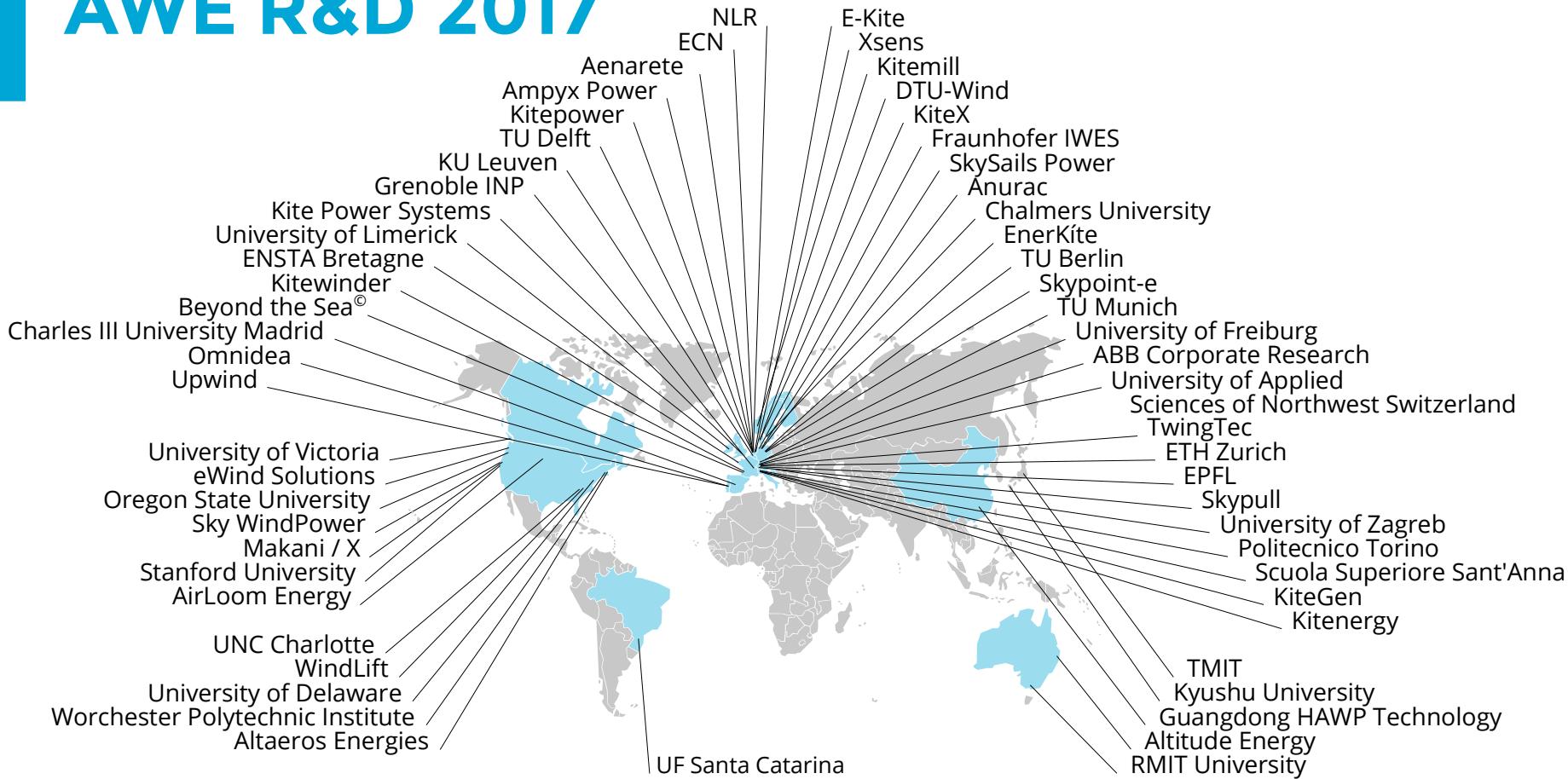
Outline

- Context and objective
- Doctoral training network AWESCO
- Fast Track to Innovation project REACH
- Lessons learned

Technology development since 2000



AWE R&D 2017



Objective

- Role of public R&D funding

Current EU H2020 funding



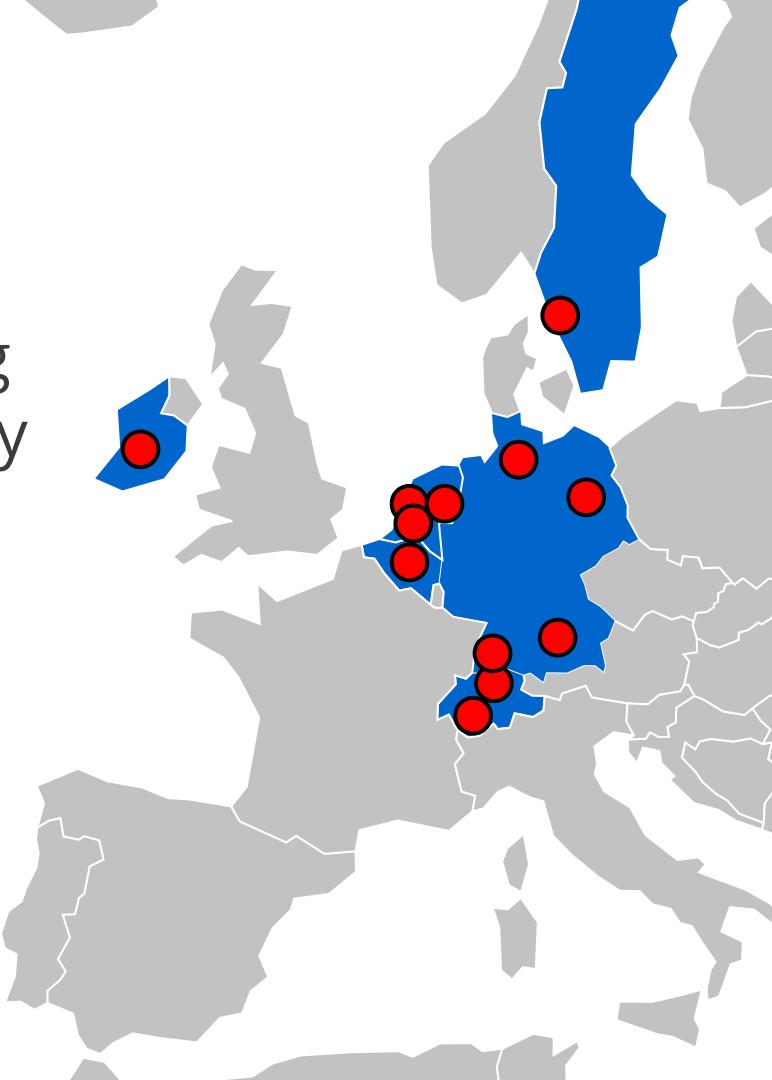
- AWESCO, H2020-**ITN**-642682: €3,400,000
- REACH, H2020-**FTIPilot**-691173: €3,665,744
- AMPYXAP3, H2020-**SMEINST-2**-666793: €3,701,937
- EK200-AWESOME, H2020-**SMEINST-1**-736399: €71,429
- NextWind, H2020-**SMEINST-1**-774974: €71,429
- TwingPower, **Eurostars**-11105: €1,504,180



- Marie Skłodowska-Curie Initial Training Network
- 4 work packages focussing on scientific challenges:
 - **Modelling and Simulation** (WP lead: TUD)
 - **System Design and Optimisation** (WP lead: ALU-FR)
 - **Sensors and Estimation** (WP lead: Xsens)
 - **Control Systems** (WP lead: TUM)



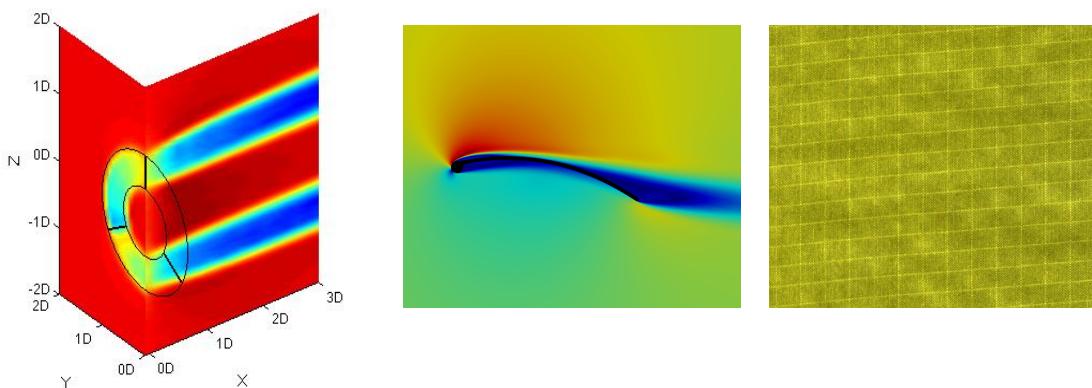
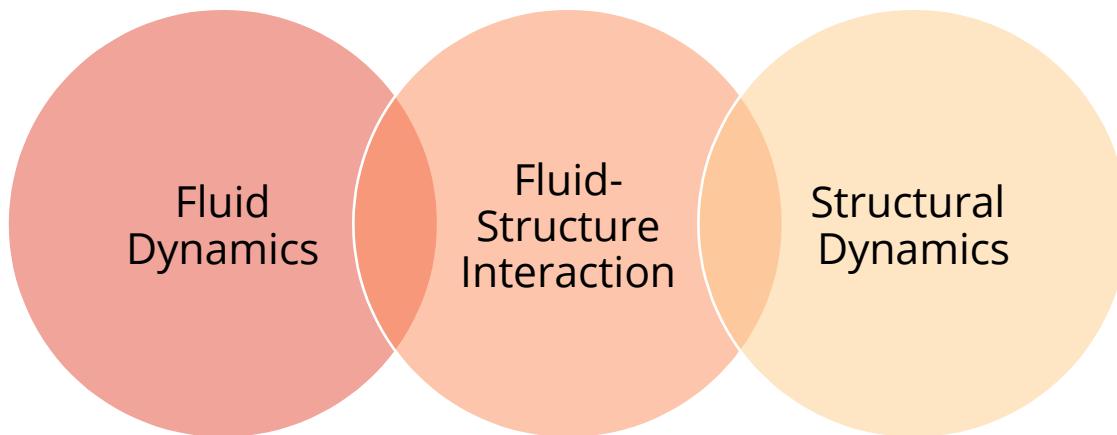
- 14 PhD projects, all contributing to relevant questions of industry
- 4 PhD projects supervised by TU Delft
- 10 EU-funded partners
- 2 CH-funded partners
- **3.4 M€ total budget (2015-18)**





Photos: Per Rutquist

Thomas Haas Mikko Folkersma Paul Thedens



Rachel Leuthold Ashwin Candade Mahdi Ebrahimi
Salari

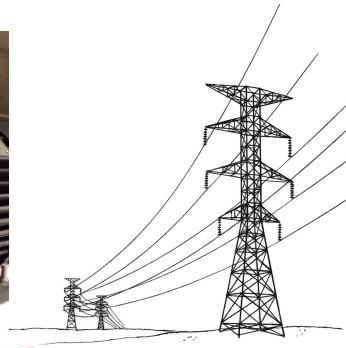
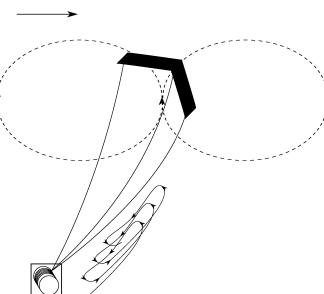
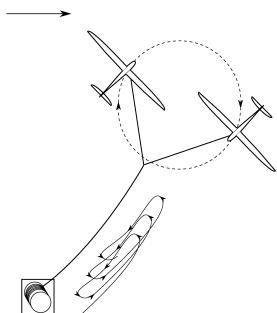
Elena Malz

Shape &
Topology
Optimisation

Multi-Disciplinary Optimisation

Ground Station Design & Operation

Electro-Mechanical & Grid Interaction



Andrea Zanelli

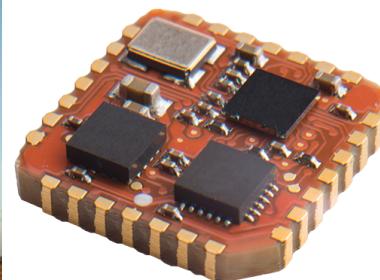
Peter Listov

Fabian Girrbach

Fault
Identification &
Handling

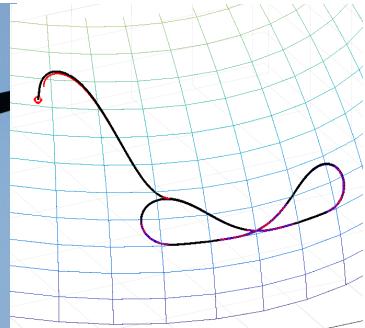
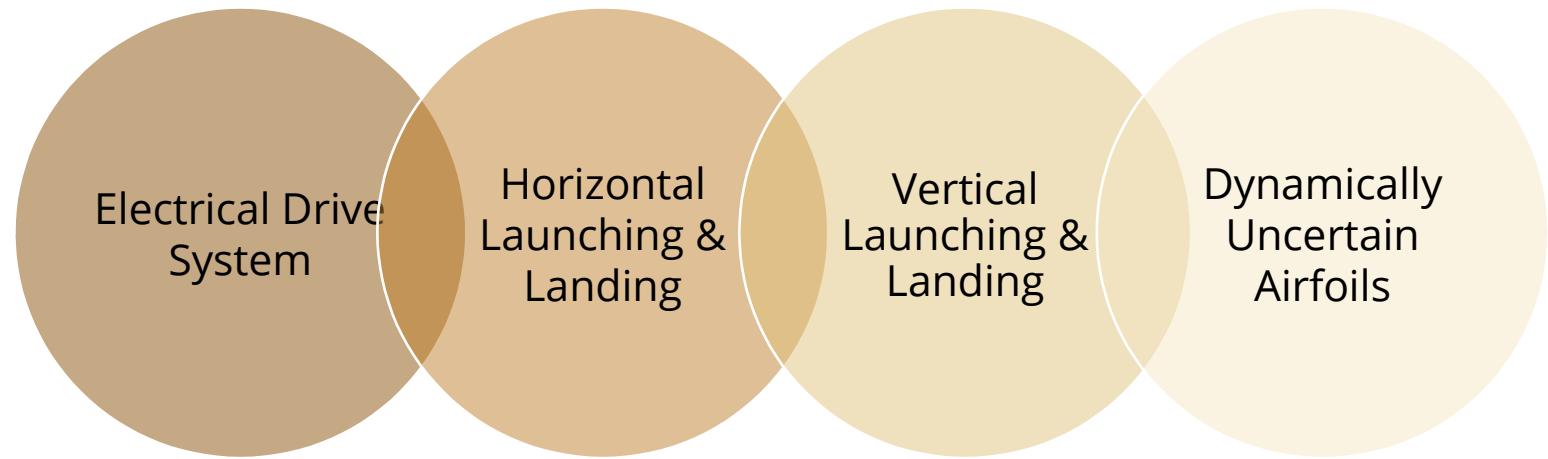
Orbit Control
& Estimation

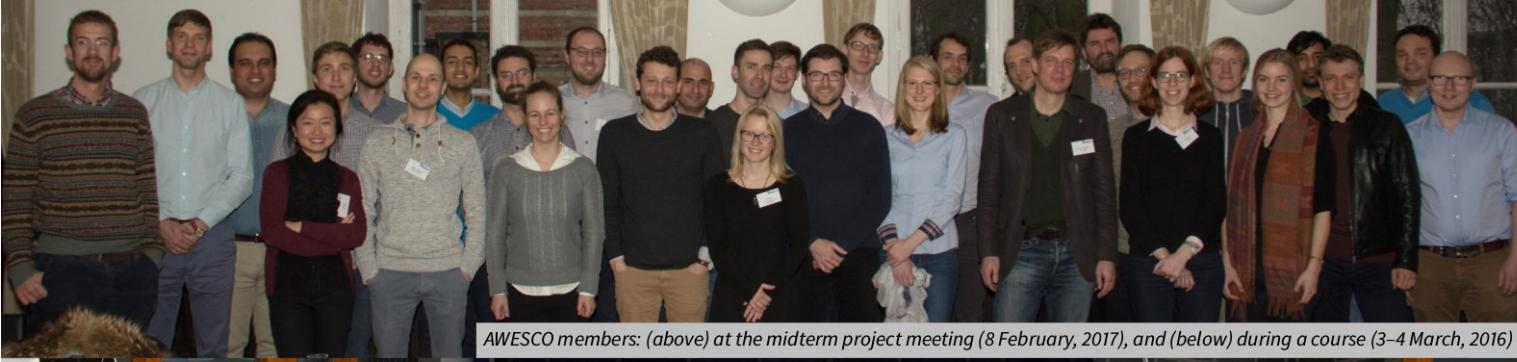
State &
Parameters
Estimation



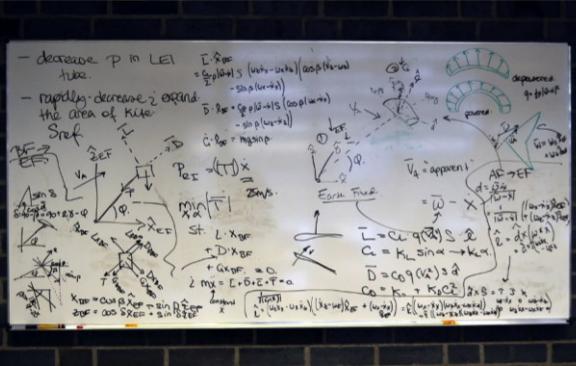
Hisham Eldeeb Jonas Koenemann Sebastian Rapp

Eva Ahbe





AWESCO members: (above) at the midterm project meeting (8 February, 2017), and (below) during a course (3-4 March, 2016)





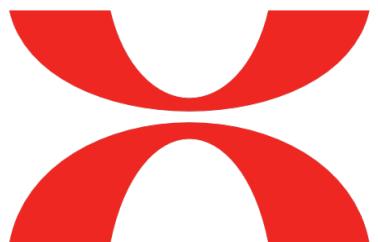
- Active partner organisations
 - Kitemill (Norway)
 - University of Victoria (Canada)
 - Kitepower (Netherlands)
 - Skysails Power (Germany)
 - Kiteswarms (UK & Germany)



- Fast Track to Innovation
- Launched end 2015
- Call: H2020-FTIPilot-2015-1
- Coordinator: TU Delft
- Startup: Enevate BV
- Partners: Dromec, Maxon Motor, Genetrix
- Commercial development of 100 kW system
- **3.7 M€ total budget (2016-19)**

REACH

TU Delft

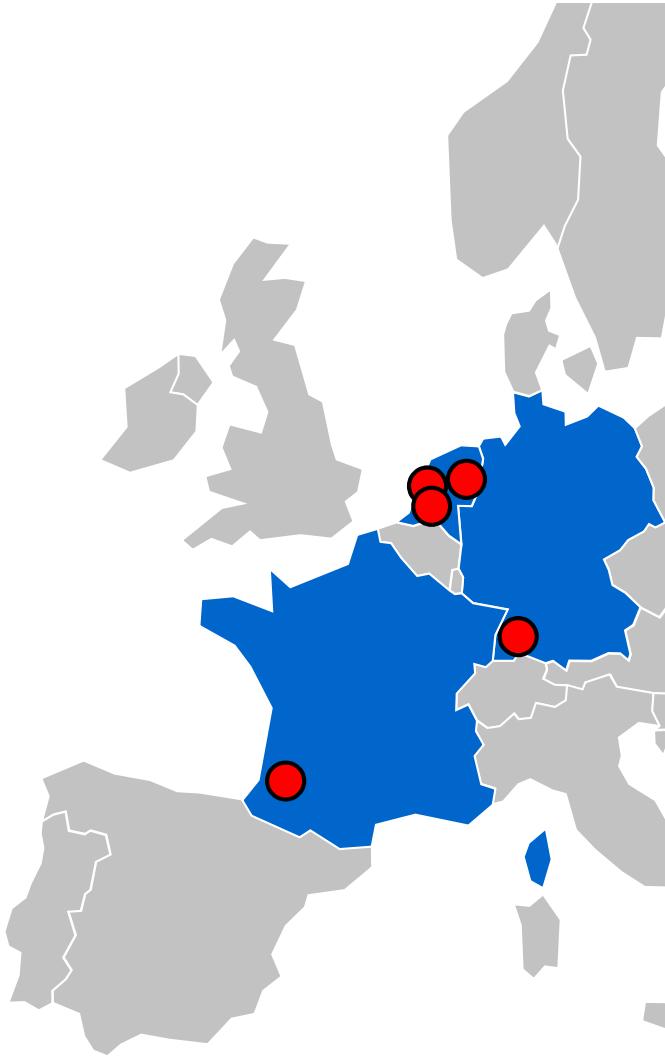


GENETRIX
- KITEBOARDING -

airborne wind energy
KITEPOWER

DROMEC
drives en winches

maxon motor



20 kW technology demonstrator

