Harmonisation of training for the Offshore Wind Energy Industry

Academic Training

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Pushing Offshore Wind Energy Regions (POWER)

Training and Education needed

- Assumption:12000 MW realised in NW Europe in 2020
  (at present around 1000 MW)
- Dutch share in labour is estimated at 7800 new jobs

Source WE@Sea

Training and Education needed

academic ⟷ vocational

Area of education	Academic (B Sc & M Sc)	Higher education (incl.poly-technics)	MBO (BOL & BBL)	VMBO & VBO
Site development and legislation	xx	xx		
Financing and insurance	x	xx		
Logistics	x	xx	x	
Production and assembly		x	xx	xx
Transport and installation		xx	xxx	xx
Maintenance and repair		xx	xx	xxx
Monitoring and operation	x	xx	xx	
Safety and risk analysis	xx	xx		
Production and sales	x	xx		

Source WE@Sea

← Foundation degree

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Added skills needed

- Project management
- International law
- Quality assurance

- Safety and health care
- English language
- Offshore training

Source Power Project Qualification Requirement Analysis

Trainings assessed

- Academic curricula
- Polytechnic curricula
- “Professional” curricula
- “Professional” courses

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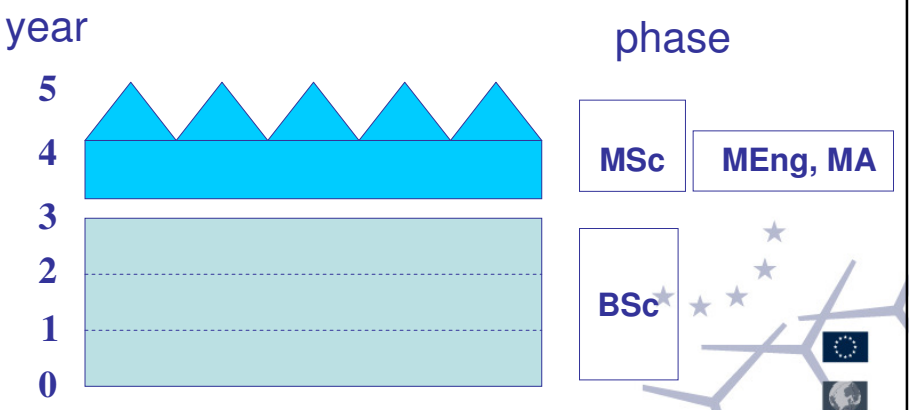
Present situation: academic curricula

- Organisation
- Content

Organisation of academic education



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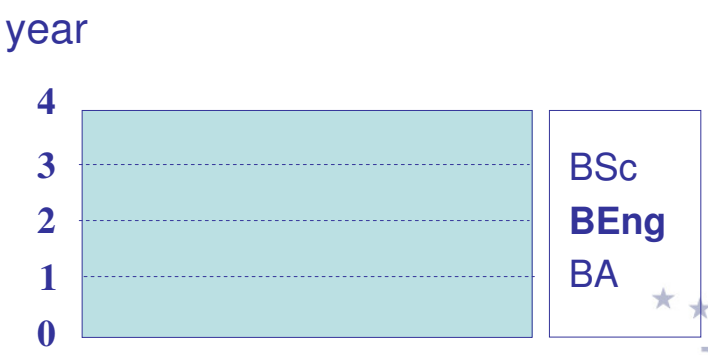
Present situation: academic curricula

- **Wind Energy Technology MSc** at different universities (e.g. DTU Denmark, Uni. Stuttgart, Uni. Oldenburg, TU Delft, …)
- **Renewable Energy Technology**:
  - **European MEng** harmonised through EUREC agency(e.g. Loughborough UK, Uni Oldenburg DE, Univ.Zaragosa ES, Ecole des Mines Paris FR) with Wind Energy specialisation .
  - **Various other SET/RET MSc curricula**
- **No academic curriculum for offshore wind energy technology**

Present situation Polytechnic curricula: (Universities of Applied Sciences)

- Organisation
- Content

Organisation of polytechnic education



Present situation polytechnic curricula: (Universities of Applied Sciences)

- Wind Energy Technology modules at different polytechnics/ universities of applied sciences (e.g. in various DE, DK, UK, ES …..)
- Some offer a Renewable Energy Technology curriculum

- **No polytechnic curriculum for offshore wind energy technology**

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Present situation "professional" curricula:

- Typical duration 1 year, part time
- Offered by both universities and polytechnics
- Targeted audience: people having jobs already
- Usually more generally targeted

- Some dedicated to (Renewable) Energy Technology and Management
- One dedicated to Wind Energy and Management ("Windstudium" Uni Oldenburg/Forwind)
- Unaccredited diploma: "University Certificate" or MBE

Professional courses: training modules on academic and polytechnic level

- Most educational institutes offer wind energy courses
- As well as a lot of technical research institutes (e.g.DEWI, ISET, ECN, RISØ)
- Typical duration 1 to 5 days
- **Some are offshore wind energy dedicated**

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Examples of Wind Energy Seminars

Type	Duration (days)
General Wind Energy Information	1, 2
Basic Courses	3, 5
Wind Turbine Techniques	1, 2
Power Curve, Noise, Guarantees	1
Reduction of Financial Risques	1
Wind Farm Economics	1
Grid Integration	1
Fatigue of Rotor Blades	1

Source DEWI

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Typical “professional” offshore wind energy course contents:

- Introduction to offshore wind energy
- Offshore wind resources
- Wind and wave loading
- Offshore support structures
- Dynamics of Offshore Wind Turbines
- Operation & maintenance
- Large scale Grid integration
- Environmental impact
- Economics
- Power production and forecasting

Source DUWind TU Delft

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Present situation other educational curricula:

- Foundation degree
- Vocational degrees
- ……

No consistency in structure in EU

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Tools for harmonisation of academic and polytechnic curricula:

- EU's Bologna Treaty (ECTS system)
- UPWind FP 6 programme
  (development of modules for wind energy curricula)
- ReKnowNet
  (German renewabe energy equivalent with international focus)

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Need for harmonisation of academic and polytechnic curricula:

- **Harmonisation of diploma's**
- **Harmonisation of course content**
  (though keeping local flavour))
- **Harmonisation of attainment targets**
- **Harmonisation of certificates !!**

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Offshore Summer School Concept:

- Comply with needs identified in the POWER Qualification Requirement Analysis
- Both specific theoretical courses and practical training
- Aimed at international exchange of engineers and technicians
- International team of lecturers and coaches
- Duration one week
- Professional course type

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Aims:

Prepare technical personnel for offshore wind energy:

- Technical issues of offshore wind farms
- Interaction between planners, engineers and technicians
- Work in international and interdisciplinary teams
- Technical English
- Safety and rescue procedures

Target groups:

- Trainees and technicians
- Students of science and engineering
- Professionals from wind energy industry

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Results first Power Summer school

- Interaction of different disciplines very valuable
- Experience of practical offshore training important for “white collars”
- Technical English needs more attention
- Basic knowledge of wind technology insufficient

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Consistent European qualifications and training

Proposed Approach

- Select certified and accredited vocational training providers across the regions
- Specify the regional requirements (QRS)
- Support and organize the development of harmonized training material for the regional offshore wind energy market
- Execute vocational training and summer schools
- Evaluate and improve training so that the harmonized curriculum is developed in the several regions