

Hvad gør vi for at uddanne
fremtidens ingeniører til den
grønne omstilling?

Industrivinklen – kontakten til
erhvervslivet gennem studierne

Claus Leth Bak, CIGRE generalforsamling 2024



Studies at AAU Energy <https://www.energy.aau.dk/education>

Diplom-engineer – 3.5 years (7 semesters)

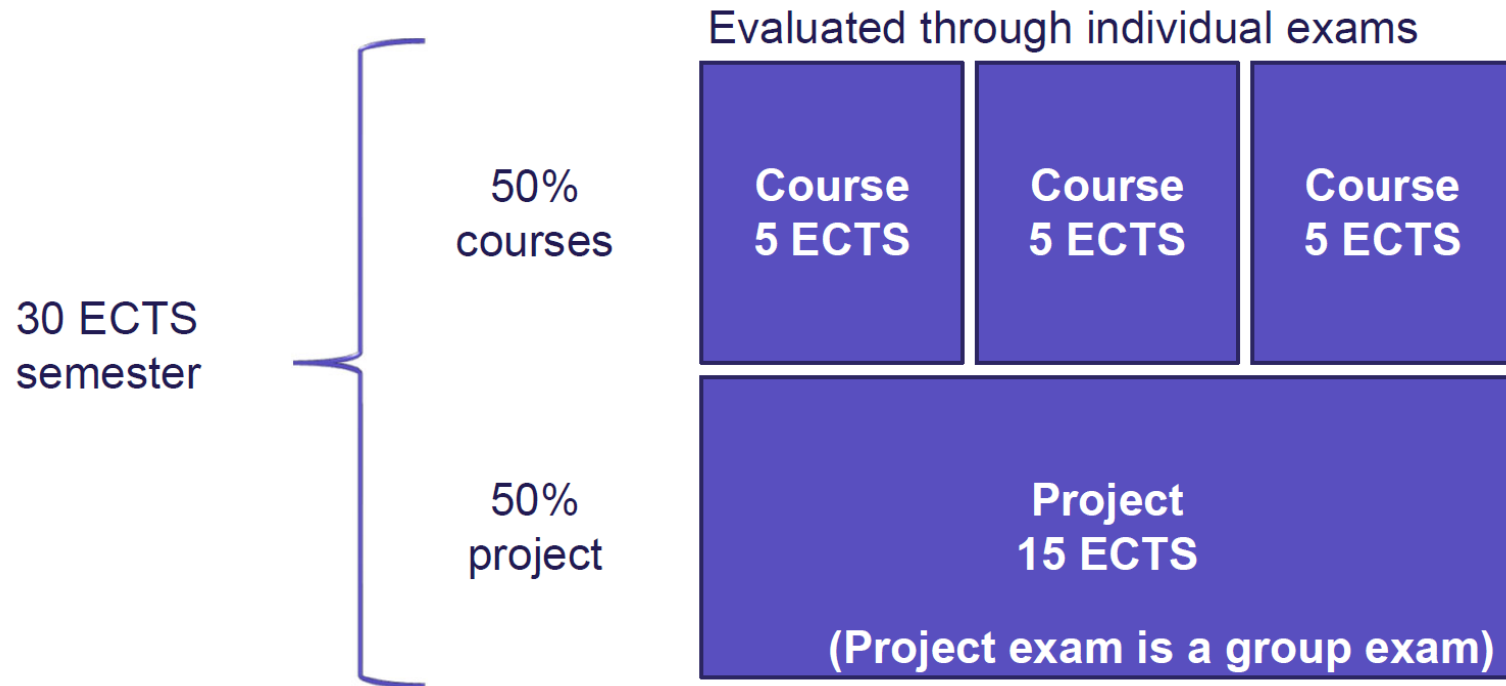
Bachelor of science – 3 years (6 semesters)

Master of science – 2 years (4 semesters)

Teaching on the bachelor's degree is in Danish, though sometimes it is in English from the 5th semester, to allow visiting students from foreign partner universities.

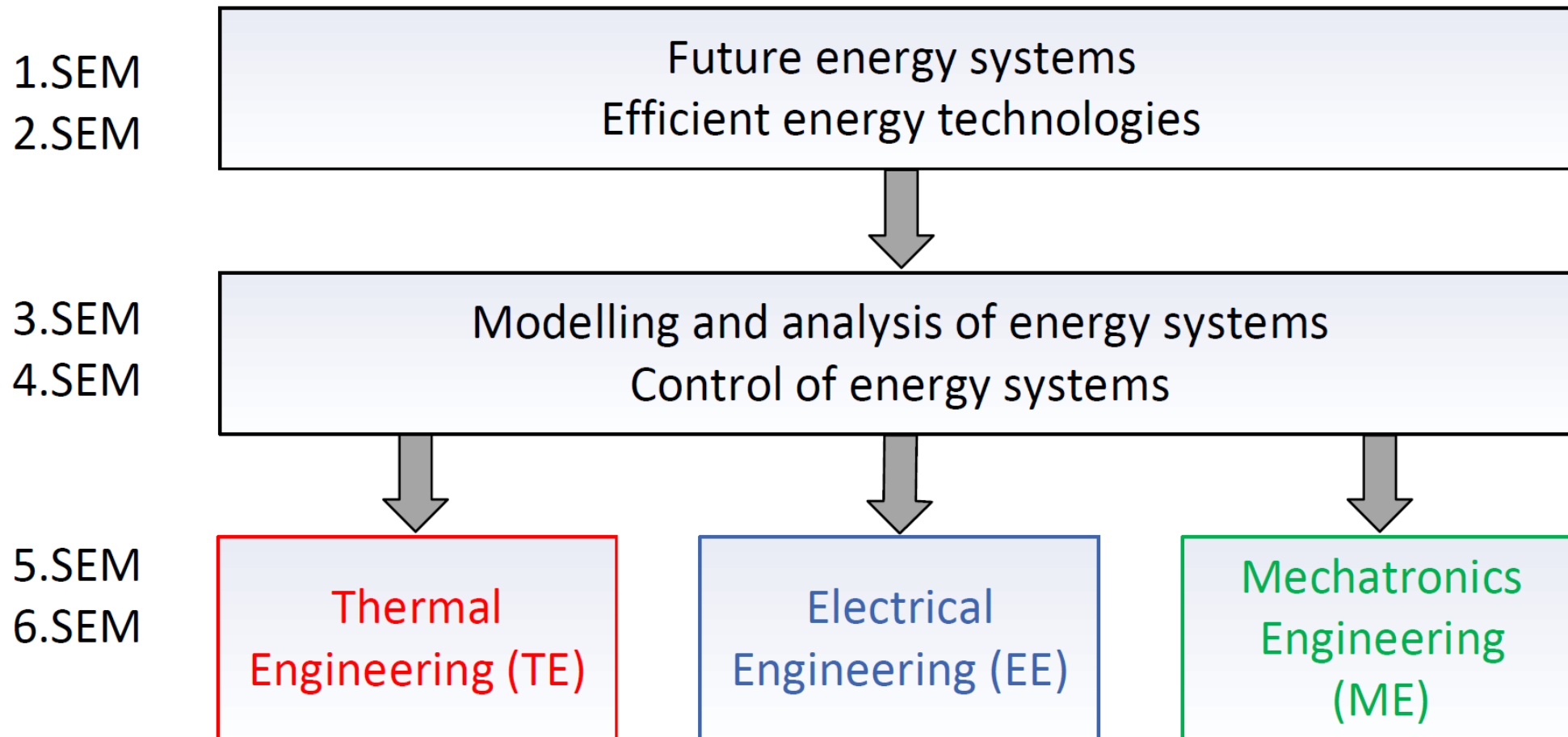
All master's programs are in English.

Sammensætning af ingeniøruddannelse

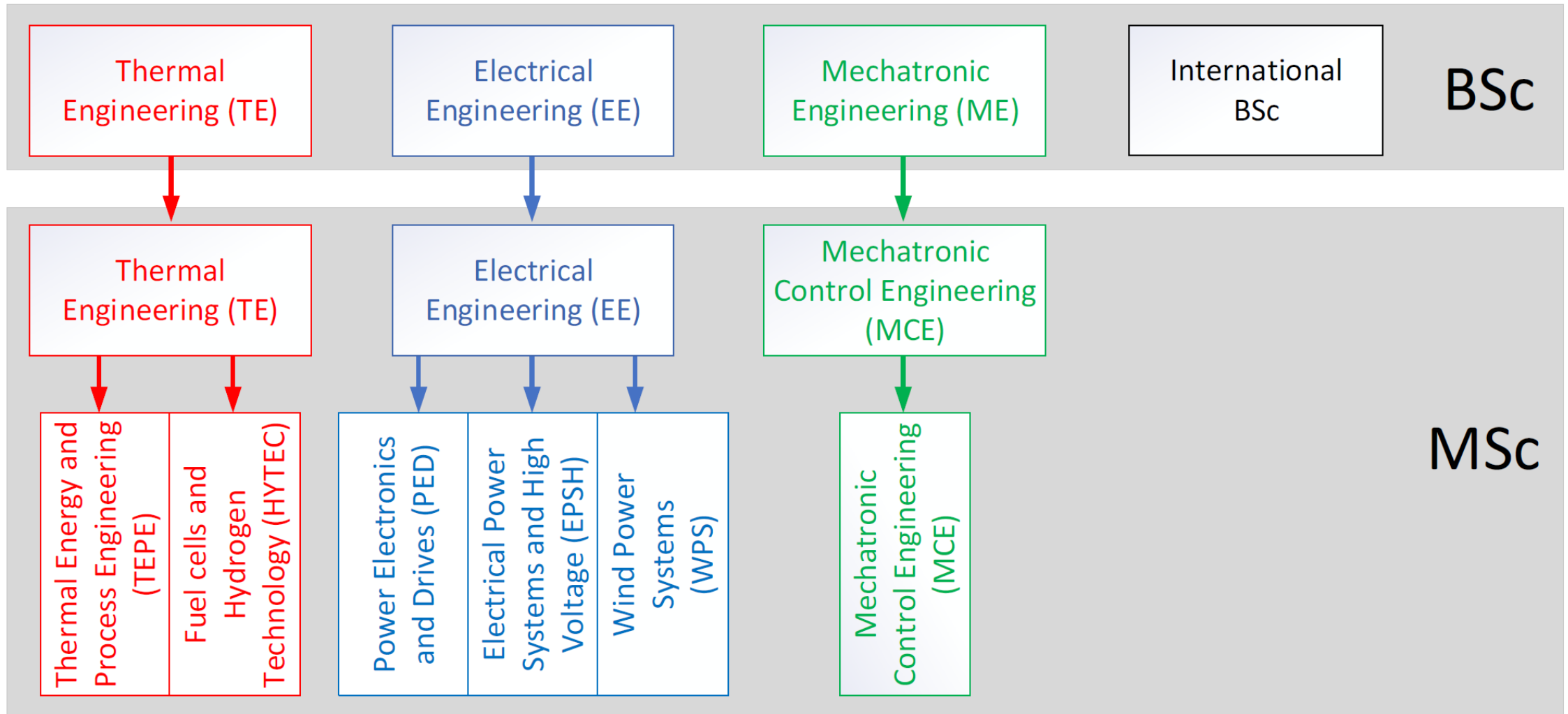


European Credit Transfer and Accumulation System (ECTS)
1 ECTS = 30 hours of work

Specialisering – diplom- og bachelor



Masterspecialising



Mange veje til paradiset 😊

In the 3rd semester of the Master's programme, students have the option of choosing a traineeship at a company (project-oriented course) in either Denmark or abroad or a study abroad stay where they take the semester at another Danish or foreign university.

	PLAN A	PLAN B	PLAN C	PLAN D
3.SEM	Project – 20 ECTS Course 1 – 5 ECTS Course 2 – 5 ECTS (30 ECTS)	Traineeship at company (30 ECTS)	Study abroad (30 ECTS)	Long master project - 50 ECTS
4.SEM	MSc project (30 ECTS)	MSc project (30 ECTS)	MSc project (30 ECTS)	Course 1 – 5 ECTS Course 2 – 5 ECTS (60 ECTS)

Så det som det handler om er at putte erhvervslivet ind så mange steder som vi kan – det er jer – CIGRE's medlemmer, der her kan spille en kæmpe stor rolle.



Hvor kan erhvervslivet komme i indgreb?

- 2 semester – de er lige startet – de skal have strøm!

**Udbygning af elnettet for at
håndtere den grønne omstilling**

Overbelastningsanalyse af distributionsnettet omkring Hirtshals
havn

Andreas Christian Lund, Anne Thorhauge Nielsen, Mads Hyrup
Jensen, Marc Otto Cronin, Mikkel Lyhne Filbert Nielsen &
Patrick Egsdal Vestergaard
EN2-204, Maj 2024

2. Semesterprojekt



P2 - Projekt Skagen Havn

Beregninger af kapacitet i Nordjyllands elnet med henblik på
inkorporering af cold ironing



Projekt Rapport
EN2-202

Aalborg Universitet
Energi

4. Semester inden de vælger el-retning

- De skal have en god oplevelse 😊
- 4. semester mest regulering – så må de regulere noget elektrisk!
- Så de fik et team af mig og to meget flittige og dygtige kolleger, der gav dem fuld service



Modellering og Kontrol af Microgrid

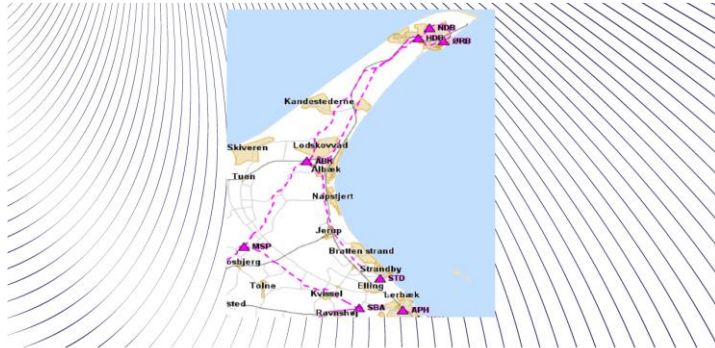
Med PI Strømregulering på L- & LCL-filter.

Nikolai E. Boesen, Nikolaj K. Andersen, Jonas Jürgensen, Christian K. Tvede
EN4-405, Juni 2024

4. Semester projekt



6. Semester – nu er de EL



Predicting and Mitigating Congestion on
the 60 kV Distribution Grid Using
Forecasting Tools and Load Flow

Christian Nordentoft, EuiHyun Song,
Nikolaj Torp Jensen, Victor Daugård Lambæk

Electrical Energy Engineering, EE6-611, 7-6-2024

Bachelor Project



Der var også projekter med



Ørsted



Nu bliver de stærkstrømsingeniører!
Hvis vi vil have en Master skal der 4
Semestre mere til.

Alle masterprojekter skal være med industri!

projektforslag studerende > E24

Navn

- Fremtidens grønne energiforsyning.docx
- HVDC omkobling Energinet.docx
- Hvordan nås målene sat for den grønne omstilling_EN1.docx
- Loss_Calculation_and_Optimization_of_a_custom_300A_High_Frequency_Transformer_1_B.pdf
- Modelling of harmonic propagation across power transformers.docx
- Modelling of HVDC converter station for harmonic analysis based on stationary waves.docx
- RE Opstart EN1 og IV1.msg
- Reliability and Risk Assessment for Design of Danmarks Energy Islands.pdf
- Single_Turn_Secondary_High_Frequency_Transformer_-_Loss_Calculation_and_Optimization_1_A.pdf
- SV Semesterprojekt.msg
- Transient_HVDC_Interconnection.pdf
- TRI-KAS 400 kV.docx
- TRI-KAS 400 kV_EN3.docx
- TRI-KAS 400 kV_EN3.log
- TRI-KAS 400 kV_EN3.pdf
- TRI-KAS 400 kV_EPSH.docx
- TRI-KAS 400 kV_EPSH_final.docx
- VS European Service Experience with Composite Insulators Role of Line Entrance Arresters Monitoring Pollution
- x____xHrI02pn2a47fDXFD8P1GEw_x____x_ags_6b90ee13-561c-11ef-8e18-0e6ffc7b6bd5.pdf

VS European !
Entrance Arre:
Type: Outlook
Størrelse: 719
/Endringsdato
Status for tilg:

forslag studerende > EPSH 2024

Navn

- 19_05162-57 Master project proposal - Active filtering in a meshed transmission system 9187600_5_0.DOCX
- 19_05162-57 Master project proposal - Active filtering in a meshed transmission system 9187600_5_0_CLB.DOCX
- Analysis of voltage profiles for cablified power systems.docx
- Master Thesis Proposal-Robustness of Danish Grid against Extreme Solar Storms (002).docx
- Modelling of HVDC converter station for harmonic analysis based on stationary waves.docx
- MSc2_Project groups_Spring 2024 (002).docx
- Nordenergi_EPSH.docx
- RE Projektforslag.msg
- RE Projektforslag_1.msg
- Reliability and Risk Assessment for Design of Danmarks Energy Islands.pdf
- Sa-pon111-124022910590.pdf
- Transient_HVDC_Interconnection.pdf
- Travelling waves.docx

Laura praktik N1 2024

Line og Mette

Morten og Kasper

Niels Pauli diplom

Nordenergi 2022

Ny mappe (2)

Olaf EPSH10

Ragnar

Zhijie

20211210_RC_dividers_with_alternative_gaseo

Arentsen2020_Chapter_PartialDischargesOfHic

Bsc Project 11.01_zli_clb.pdf

dumpemøde.pptx

EN2_Elnettet.pdf

EPSH3_933-D1_CLB.pdf

Insulation coordination study of a new 400 kV Gas insulated substation.pdf

Iternreport 14.10_new.pdf

Jone Ringdal Folkvord_856890_559343_Hovedopgave_report.pdf

Master_Thesis_Bjarni_Helgi_Thorsteinsson.pdf

Master_Thesis_Bjarni_Helgi_Thorsteinsson_r.pdf

P8_Islanding_in_the_10_kV_network_with_a_comprehensive_amount_of_renewables

Oprettelsesdato: 02-07-2020 12:25

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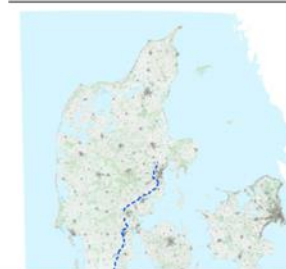
ENERGINET

New double-circuit 400 kV line from Trige (north of Aarhus) to Kassø (near German border) – three real life project proposals for EPSH.

The green transition requires a strong and very flexible transmission system. The Danish TSO Energinet has decided to build a new double-system 400 kV line between the large city Århus and the substation Kassø close to the German border.

The new line will replace an old 400/150 kV (one 400 kV circuit + one/two 150 kV circuit(s)) line built between 1970 and 1980 which now has a too low capacity and is facing full refurbishment. The 150 kV will be undergrounded, and the new double-circuit will be erected on EAGLE tower and substantially strengthening the power transfer capacity. The line will be constructed primarily as an overhead line but in smaller sections of natural beauty underground cabling will take place.

Udsnit fra Energinets webkort



Praktikophold – både diplom og master – en fantastisk mulighed for at ”lære” en måske ny medarbejder at kende

Dette semester har jeg 6 MSc praktik på EPSH3 og 1 diplom praktik ophold.

**Eurowind
Energy™**



L-Engineering A/S

Har man mere komplicerede problemer end en MSc kan klare findes en udvej...

- En erhvervsforankret supermand/kvinde – en erhvervsforsker!

On the Propagation of Harmonics in Meshed Transmission Power Systems with a Large Number of Underground Cables

by
Bjarne Søndergaard Bukh



ENERGINET
Eltransmission

DESIGN AND INTEGRATION OF BLACK START SERVICES BY OFFSHORE WIND FARMS TO ASSURE RESILIENCE IN 100%-RENEWABLE FUTURE POWER SYSTEMS

by
Daniela Pagnani



AALBORG UNIVERSITY
DENMARK

Dissertation submitted



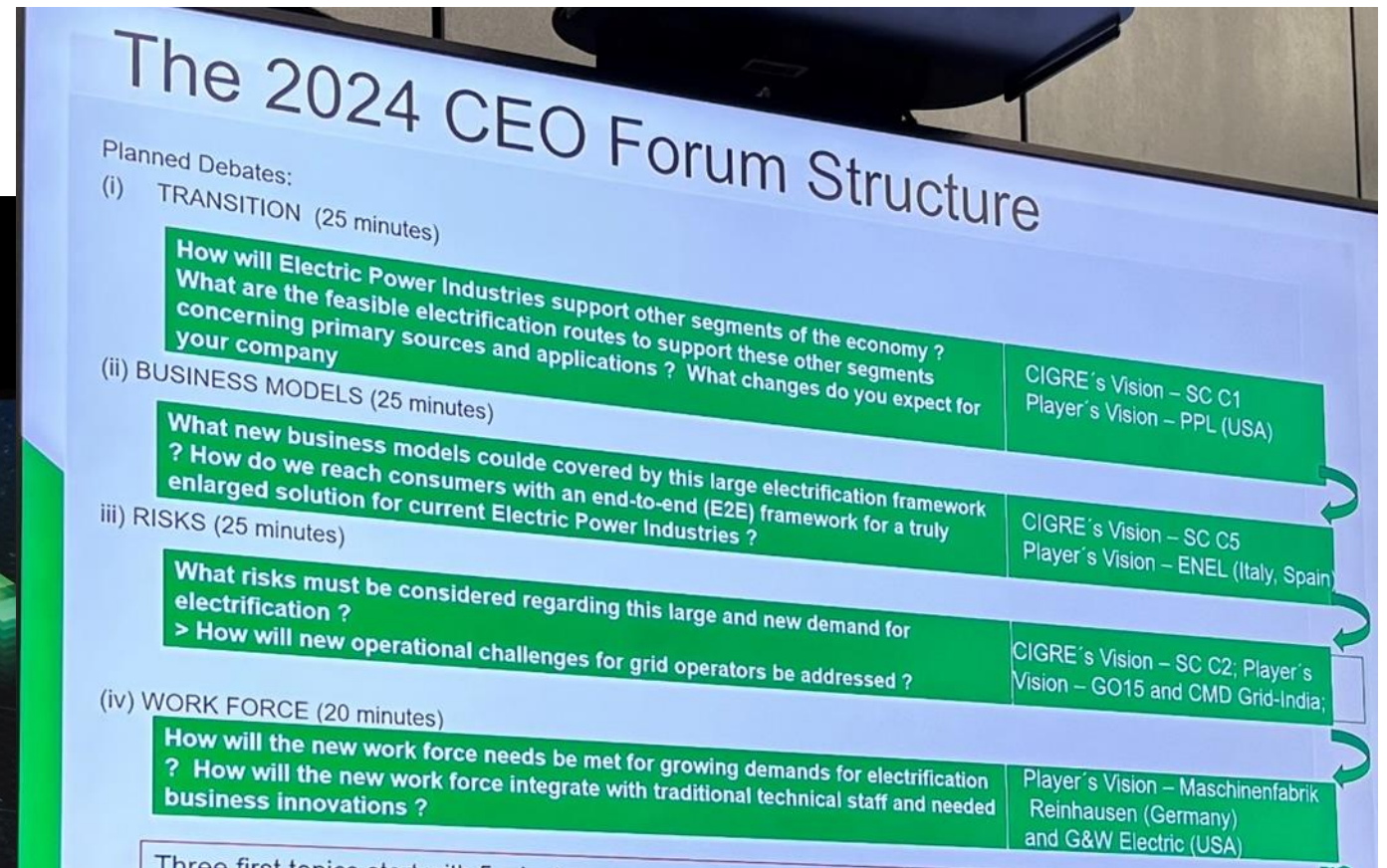
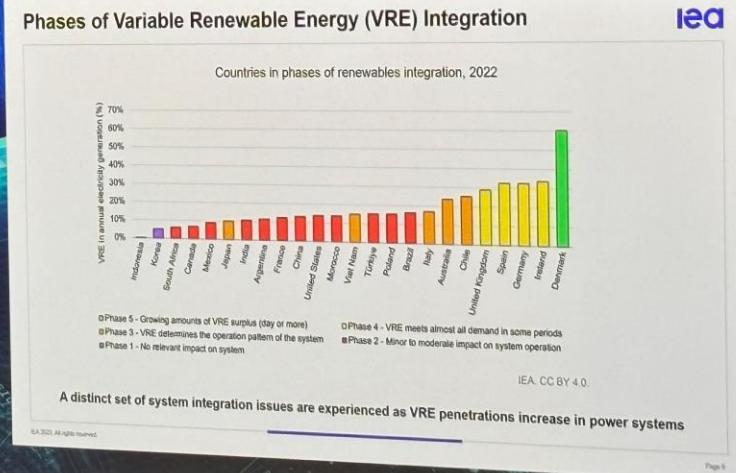
Ensuring Supply Reliability and Grid Stability in a 100% Renewable Electricity Sector in the Faroe Islands

By Helma Maria Tróndheim

PH.D. DISSERTATION
SUBMITTED 2022



Hvad siger omverdenen – CIGRE CEO Forum Paris 2024



Vi skal have de uge denne vej – skrive specialer i STÆRKSTRØM



Så det er industrien og uddannelsesstederne –
sammen der skaffer fremtidens
stærkstrømsingeniører – til den grønne omstilling!

