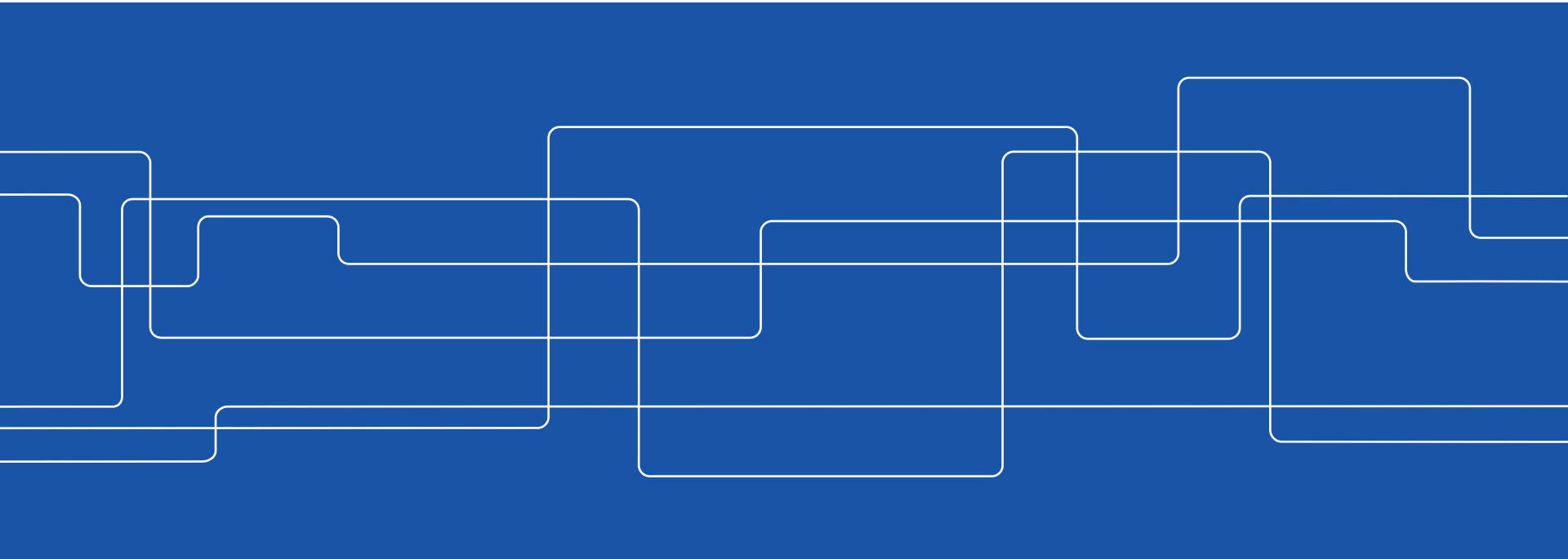




KTH Royal Institute of Technology





This is just the beginning





Research and education for a brighter tomorrow

KTH rests on three pillars; ***sustainability, equality and internationalisation:***

- We are working proactively for a more sustainable future.
- For us, gender balance is about equality, as well as quality of learning, research and results.
- We are home to students, researchers and faculty from around the world - all dedicated to advancing knowledge.



Sigbritt Karlsson,
KTH President



An innovative European technical university

Sweden's largest technical research and learning institution:

- More than 13,000 full-time students (one-third women).
- Close to 1,800 research students (one-third women).
- Around 3,500 full-time positions (one-third women).
- Four campuses in the Stockholm region.





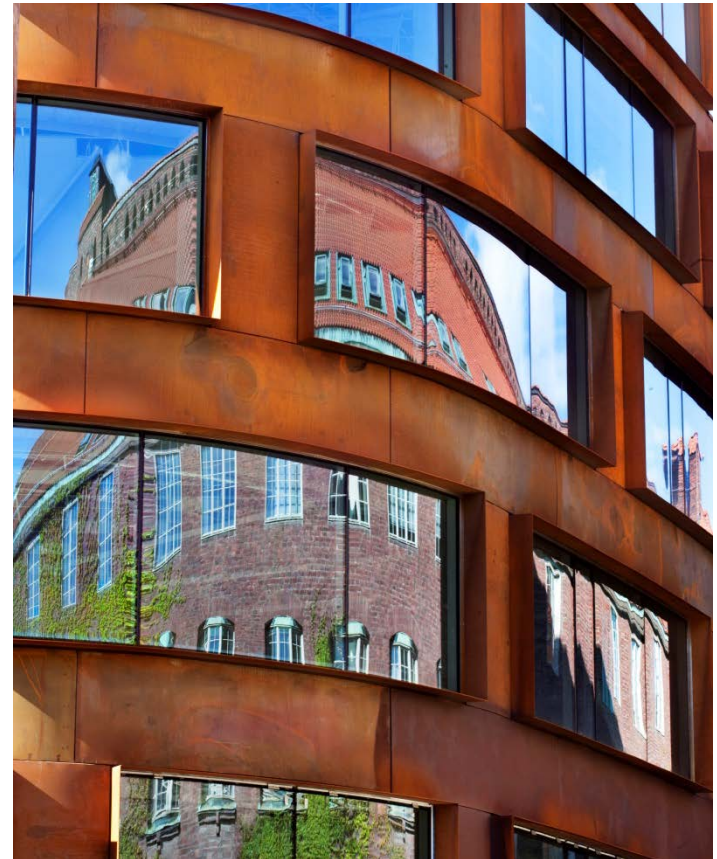
World-class ranking

QS World University Ranking

- 98th university in the world
- 23rd in Architecture and Built Environment
- 26th in Electrical Engineering
- 39th in Mechanical Engineering
- 39th in Materials Science

Times Higher Education (THE)

- 159th university in the world
- 36th in Engineering and Technology globally
- 72nd university in Europe



Our programme and courses

- One master of science in engineering (five years) consisting of a bachelor programme and a master programme
- Four master of science (two years) in electrical engineering:
 - Electric power engineering
 - Information and network engineering
 - Electromagnetics, fusion and space engineering
 - Systems, control and robotics
- Ph.D. programme (four - five years)



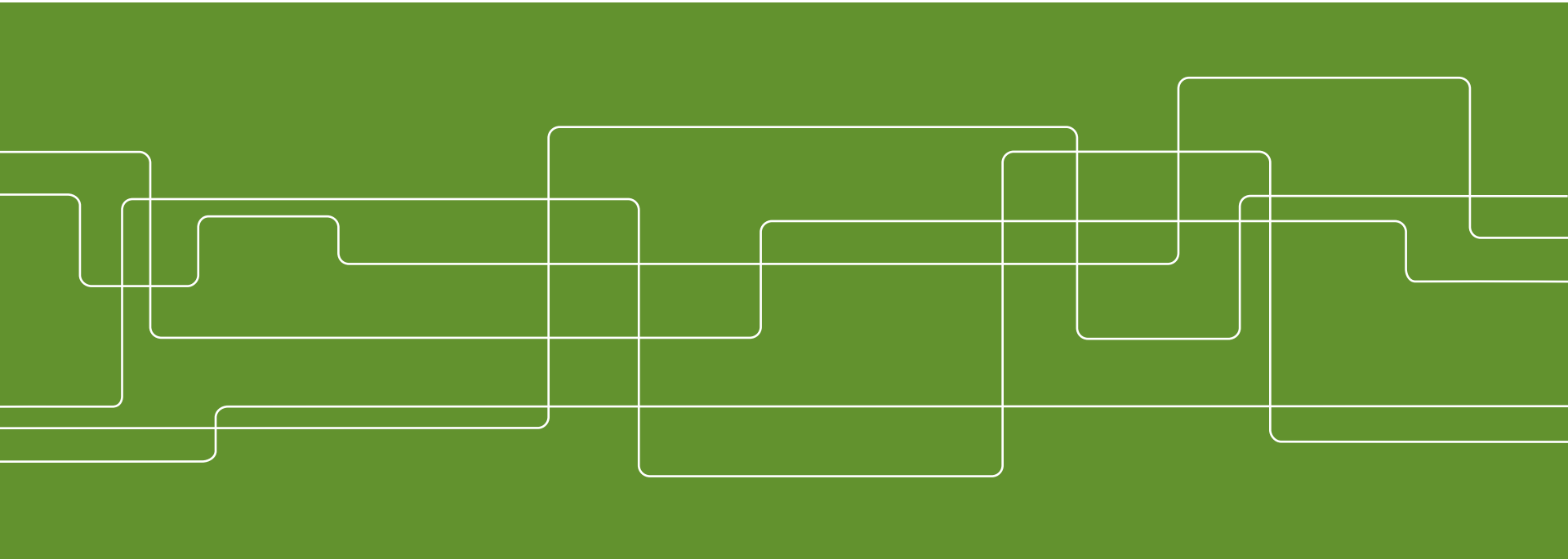


Department of Electric Power and Energy Systems

INTEGRATION OF RENEWABLE ENERGY SOURCES

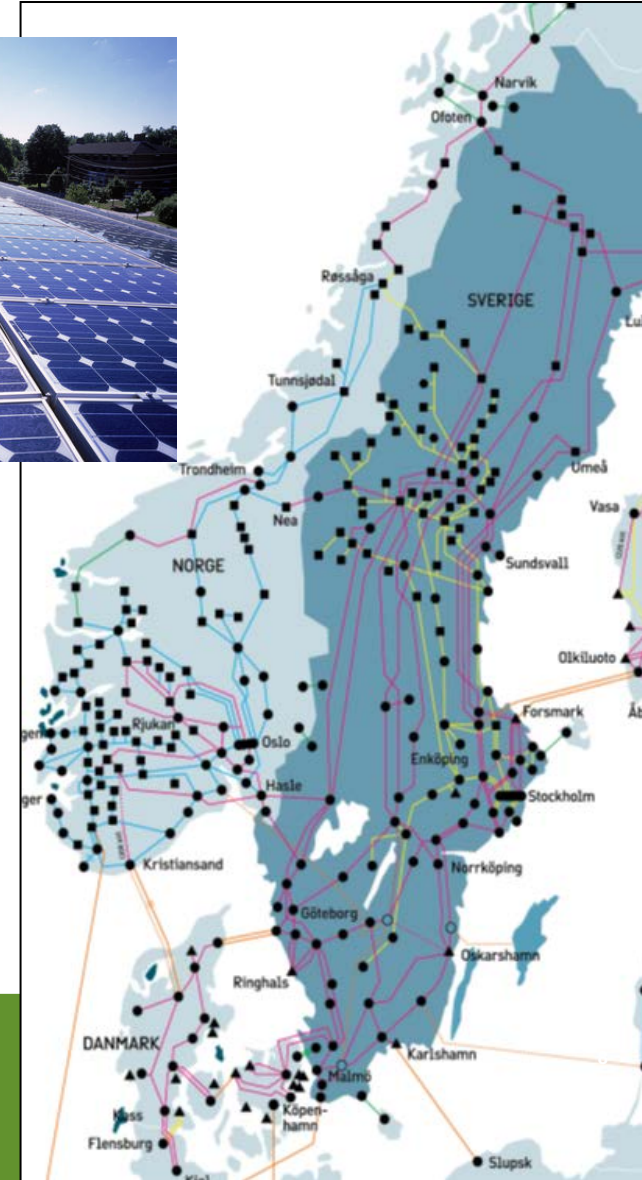
November 13, 2017

by Lennart Söder
Professor Elektriska Energisystem, KTH



Current (171113) KTH-EPE projects-activites

Integration of Renewable Energy Sources





Who is Lennart Söder?



- Born 1956 (family: wife, 3 children born -86, -88, -94)
- MSc EE, KTH, 1982
- PhD, KTH 1988: "Benefit assessment of wind power in hydro thermal power systems"
- University lecturer at KTH, professor from 1999.
- Main supervisor of 32 PhD students up to licentiate (2.5 year) and/or PhD (5 years) exam (total of 45 theses).
- Areas: wind power integration, transmission expansion, harmonics, power quality, dynamics, distribution, hydro power, reliability, electric railways, electric vehicles, economic regulation, restoration etc.
- >300 papers and reports. Out of these 186 are presented in conferences and 94 are published in journals
- Hobby: E.g. play and make music.



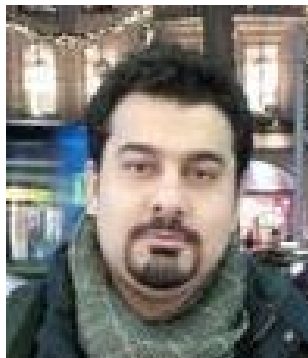
IRES Post-docs



Poria Hasanpor - Divshali
Voltage control in distribution grids
wind solar-PV



Manuel Marin & Jon Olausson
Design of open source software for power system simulations (not dynamics)



Shahab (Mohammad) Nazari
Notice time dependent Demand Side Management





IRES PhD students



Martin Nilsson

Efficient
System
operator
balancing



Egill Tomasson

Multi area reliability
and capacity value



Lars Herre

Notice time
dependent Demand
Side Management



Stefan Stankovic

Transmission system
reactive support from wind
power in other grids



Elis Nycander

Wind power minimum
curtailments



Evelin Blom

Hydro power system
equivalents