T4T – TECHNOLOGY FOR TRANSMISSION

Technology for Transmission

an excellence cluster initiative

Get to know us event - 17 February 2026

https://tech4transmission.se

Agenda

Welcome and introduction to T4T

Lars Nordström, KTH

Industry panel - R&D priorities

Leif Pettersson, Svenska kraftnät,
Jurgen Hafner, Hitachi Energy
Mikael Unge, NKT HV Cables

Questions, Answers & Discussion

Ilka Jahn, KTH

Why T4T?

Fotograf: Tomas Ärlemo

Electrification & grids

Electricity **demand is rising quickly**: global electricity demand grew by 4.3% in 2024[1]

Global grid investment is huge and rising: spending on power grids is expected to reach about USD 400 billion in 2024, after years around ~USD 300 billion/year[2]

Grids are a bottleneck **globally** : at least 3,000 GW of renewable projects (about 1,500 GW in advanced stages) are waiting in grid connection queues[3]

1: IEA, Global Energy Review 2025 (Electricity); IEA,
2: World Energy Investment 2024 (Overview & Key Findings); IEA,
3: Electricity Grids and Secure Energy Transitions (2023), executive summary / OECD PDF edition.

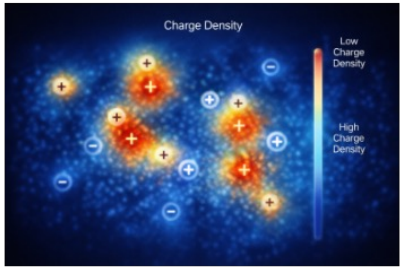
Grand challenges that holds development back

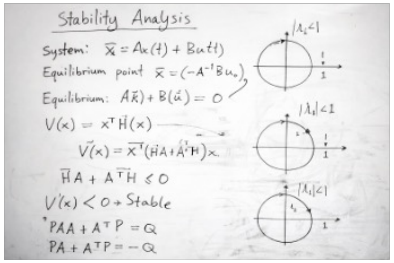
Over-current capabilities of semiconductor devices, material breakdown, thermal aspects

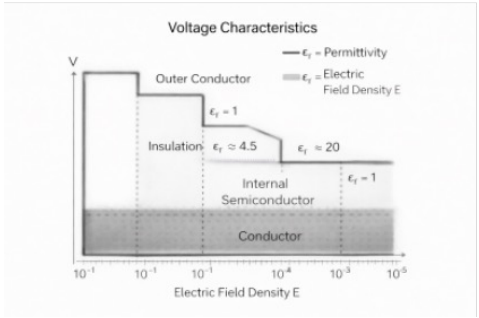
Voltage characteristics for insulation in cables and transformers and for semi-conductors in switching applications.

Stability in inertia free power systems, wide-band resonance phenomena and control interaction in systems

Cost efficient and reliable loss-less power transfer, super conductivity at high power levels





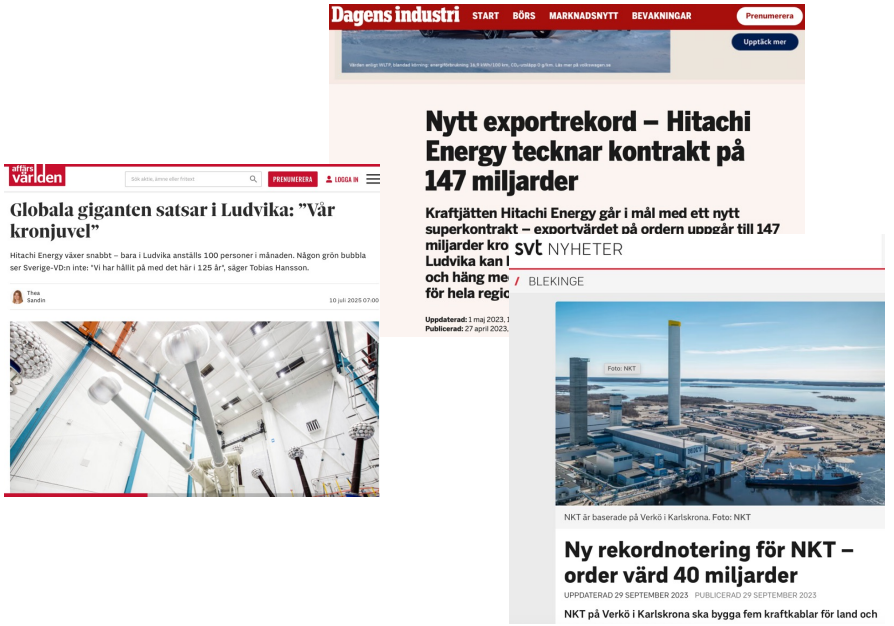


Fotograf: ChatGPT

Source: Hitachi Energy

Sweden is a global leader

High Voltage DC (HVDC) and Flexible AC Transmission Systems (FACTS) are core technologies to enable electrification.



Where is the Swedish R&D focus?

How?

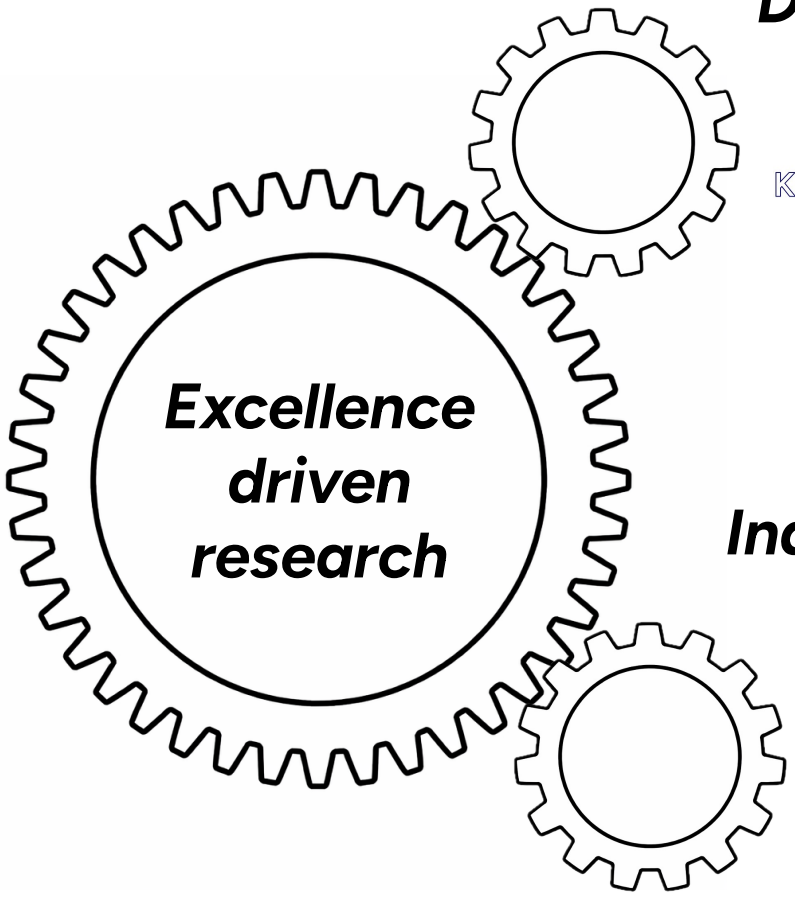
National R&D for Transmission Technology

- To support the leading Swedish power industry in the global technology race and to foster a new generation of innovative solutions in the new geo-political situation **a novel approach to national R&D in the area is needed**.
  - *Focus on excellence driven research to foster innovation and global competitiveness instead of short term societal needs in the Swedish energy system*

- Increased focus on attracting leading talents – students and researchers alike - to furhter strengthen the extensive national competence across a range of disciplines relevant for electrification

- T4T will by 2027 be established as a key actor to prioritise and focus excellence driven R&D activities across the Swedish R&D ecosystem towards a jointly developed national R&D vision in the benefit of electrification

The T4T Research and Innovation engine



Disruptive innovations

KTH ventures

UPPSALA INNOVATION CENTRE

KTH INNOVATION
#itallstartshere

Industrial innovation

samarkand 2015

NKT
We connect a greener world

SVENSKA KRAFTNÄT

RI. SE

HITACHI

KTH VETENSKAP OCH KONST

UPPSALA UNIVERSITET

LINKÖPINGS UNIVERSITET

LULEÅ UNIVERSITY OF TECHNOLOGY

What?

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