



Guest lecture

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**Titel: Industrial Electrification and Market Power
in a Hydro-Thermal Power System**

Date: Friday, 10.10.2025 at 09:00 am

Place: Institute of Electricity Economics and Energy Innovation
Multifunktionsraum IEE (HS02024), Inffeldgasse 18/II

LECTURE

Ambitious climate packages promote the integration of variable renewable energy (VRE) and the electrification of the economy. With its ample hydro reservoirs and transmission capacity, the Nordic region is well positioned for this transformation. However, the additional need for flexibility and electrification of industrial processes could give power producers more leverage to exert market power. By using a Nash-Cournot model with a detailed spatio-temporal representation of the Nordic power system, we explore how strategic operations may be affected by (i) increased industrial demand and (ii) matching expansion of onshore-wind power. We find that increased electrification, modelled by industrial demand, diminishes firms' market power but simultaneously leads to a higher average price. Meanwhile, matching industry's electricity demand with onshore-wind capacity restores prices to their baseline level but reintroduces market power. In particular, hydro plants are flexible enough to exploit such a power system's additional industrial demand and VRE's intermittent output to actually increase their payoff from market power.