

Metrology for a green future: VSL's contribution to the energy transition

Climate neutrality by 2050 and the energy transition are the top challenges of the European Union and therefore highly relevant in the Netherlands. As the biggest source of greenhouse gas emissions, the energy sector is undergoing a profound transformation on the path to a net-zero economy. The shift to a more sustainable energy system entails switching from fossil fuels to low-carbon and renewable energy sources, improving energy efficiency in products, industry and buildings, and creating a more sustainable energy system based on clean technologies. VSL has a strong scientific and technical position on metrology for energy, supported by coordination of multiple EURAMET JRPs on hydrogen, CO₂, biogas/biomethane. Current and future examples are displayed of how VSL translates the metrological needs of the energy transition into new measurement solutions.

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CHEMISTRY



CO₂

- Development of primary materials and analytical methods for the calibration of analysers with impurities N₂, O₂, H₂, CO, CH₄, NO₂, SO₂, and H₂O.
- Primary standard for CO₂ gas flow measurements up to 10 bar. Transferability of calibration with alternative gases

FLOW



H₂

- High-pressure hydrogen flow standards for refueling stations.
- Dynamic H₂ mixture preparation methods include dynamic dilution and permeation.
- Primary standard for humidity in hydrogen gas at pressures up to 3 MPa.

TEMPERATURE



(L)NG

- Uncertainty characterization of thermometers under LNG conditions.
- SI-traceable LNG and Biomethane calibration facility for flow meters under cryogenic conditions.
- Upgrade high-pressure natural gas primary flow standard for H₂ and CO₂ admixtures