Role of National Metrology institutes in the transition from natural gas to green hydrogen and biomethane

A.M.H. van der Veen

Van Swinden Laboratorium, Thijsseweg 11, 2629 JA Delft, the Netherlands

Abstract

Europe is expressed large ambitions regarding the decarbonization of its energy supply. By 2050, the energy supply should be transformed to having net zero carbon dioxide emissions. The transition from fossil fuels to renewable energy poses huge challenges to society, industry, regulators and the community providing measurement standards to support the safe application of energy, the related financial transactions, and the operation of the supply chains. National Metrology Institutes (NMIs) are tasked with the provision and dissemination of metrological traceability to support, among other, a measurement infrastructure supporting the supply of energy. To facilitate a joint response in Europe, EURAMET, the association of NMIs in Europe, created a European Metrology Network (EMN) for Energy Gases. This EMN coordinates the response in Europe to the needs of the industry, regulators and end-users of energy gases.

The transition from mainly natural gas to biomethane and hydrogen from renewable sources is associated with a need for novel measurement standards and innovative methods to ensure that both the quantity and quality of renewable fuels can be monitored and measured. The quality of hydrogen and biomethane is regulated in respectively ISO 14687 and EN 16723. These standards set additional requirements with respect to the maximum levels of impurities. By the example of VSL, we show how NMIs develop novel and improved measurement standards and related services to address the need for metrological traceability for measurements related to renewable energy gases. In the presentation, an overview is given of the state-of-the-art in standards for hydrogen and biomethane quality and quantity measurement. Insights are given in how VSL prepares for the energy transition, ensuring that the current measurement infrastructure remains in tact until no longer needed, and that a novel infrastructure is created to support the supply of renewable energy.