

Air quality monitoring Ineris and LNE are partnering to certify sensor systems

On 31 July 2020, the French National Institute for Industrial Environment and Risks (Ineris) and the French National Laboratory for Metrology and Testing (LNE) created the association CIE “Certification Instrumentation pour l’Environnement” [Environmental Instrumentation Certification] in order to establish a certification of sensor systems for air quality measurements.



Air quality is a major health issue. Exposure to ambient fine particles (aerosols) caused more than 4 million premature deaths in the world in 2016 (WHO 2018). Local authorities and citizens are increasingly calling for real-time air pollution information on finer scales. In this context, various sensor systems have been widely developed, seeking to meet this need.

At present, no national or European standards framework makes it possible to compare the performance of these various instruments, already commercially available, with the reference measuring instruments that comply with the performance objectives required by Directive No. 2008/50/EC of 21/05/08 on ambient air quality and cleaner air for Europe.

Guaranteeing confidence in sensor systems; Air Quality Sensor certification

In order to address this issue, LNE and Ineris are partnering to create a voluntary certification that aims to validate the level of metrological performance of sensor systems for air quality measurements. This certification is supported by the “Certification Instrumentation pour l’Environnement” [Environmental Instrumentation Certification] or “CIE” association. “Air quality sensors” certification enables manufacturers and distributors of systems that integrate sensors for air quality monitoring, to display and guarantee the performance of their products after they have been evaluated by competent and independent bodies.

The certification frame of reference is based on test protocols in the laboratory and under real conditions, based on the international standards work of the WG42 working group within the European Standardisation Committee on air quality (CEN TC 264 “Air quality”) in which Ineris and LNE take an active part. An audit of systems manufacturing is combined with this experimental evaluation in order to guarantee quality of manufacture. In the first instance, this voluntary certification targets the fine particles PM_{2,5} and nitrogen dioxide (NO₂) before extending itself to other pollutants such as ozone (O₃) and PM₁₀. A performance division is assigned to each pollutant measured on the basis of metrological criteria which allow a comparison with those of Directive No. 2008/50/EC.

A certification committee meets to examine and validate the certification reference frame. It is composed of stakeholders grouped in different colleges: users, manufacturers, administration, technical experts, evaluation laboratories, and certification bodies.

Ineris and LNE, air quality monitoring actors

Partners within the Central Laboratory for Monitoring Air Quality (LCSQA), LNE and Ineris are two major actors in the verification of air quality measurement systems. They rely on recognised expertise and high-performance test facilities. They also have expertise in certification and are accredited in many areas, including product certification.

Raymond Cointe, Director General of Ineris

"Ineris has become a major actor at the national and European level in the area of air quality, with a wide range of activities ranging from measuring pollutants and characterising hazards, through to the modelling of pollution incidents, and socio-economic studies. This partnership with LNE will strengthen our presence in this area by developing a certification activity."

About Ineris

For 30 years, Ineris has been conducting studies and research programs on the prevention of industrial and environmental risks. Its activities contribute to assessing and preventing risks that economic activities pose to the environment, to health, and to the safety of persons and property. It develops its scientific and technical expertise in the fields of technological risks, risks related to the impact of chemical substances on health and the environment, ground-level and subterranean risks, and air quality risks.

Thomas Grenon, Director General of LNE

"Whether it is to monitor the impact of our activities on the environment or to devise the ecological solutions of tomorrow, LNE is significantly engaged in environmental issues as demonstrated by the creation of this association with Ineris which will enable us to guarantee confidence in the measurements which our fellow citizens are increasingly sensitive to."

About LNE

LNE provides businesses, manufacturers, institutions and local authorities with the technical solutions they need to meet their performance, competitiveness, health, safety, and sustainable development requirements. Its expertise takes the form of research, metrology, testing and analyses, certification, training, and technical assistance. With over 800 employees, more than two thirds of them being engineers and technicians, the LNE Group deploys its know-how internationally, with its subsidiaries located in America and Asia. It holds a position in the emerging fields of nanotechnologies, additive manufacturing, and artificial intelligence.

Bosch adds its support

Today Bosch's air quality body shows its interest in certification. Marko Babic, chief of the air quality department, explains: "There is currently a wide variety of air sensors; with this certification, Ineris and LNE contribute to setting up a solid frame of reference to determine these sensors' accuracy and reliability of measurement. This also ensures the instruments have a guarantee of consistent quality during the certificate's term. We believe that this informed approach will make it possible to bring together the major air quality stakeholders in Europe, and will replace the various non-standardised test methods. Bosch compared the CIE's test standards against the other certification approaches used in various markets. The CIE follows a process, and criteria, that are in accordance with the advances of the European standard for certifying air control system sensors. This standard is currently in development (CEN TC 264, Working group 42)."

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