



ECN

Your energy. Our passion.

AirBox / 空气质量箱

Air quality measurements for every situation

对各种环境的空气质量监测

Exposure to pollutants in the air is a persistent environmental problem. Air pollution damages health, affects nature and agriculture, and contributes to climate change.

暴露在空气污染物下是一直以来的环境问题。空气污染不仅危害健康，对自然环境和农作物造成影响，也引发气候变化等问题。

That is why it is important to measure air quality. This is true for various locations, such as near sources of pollution (highways, industrial sites) and at locations where vulnerable groups reside (schools, nursing homes for the elderly).

这也是为什么测量空气质量是十分重要的，尤其在很多地方比如说污染源（如高速路，工业区）附近，或是体弱群体聚集的地方（如学校，养老院）。

Up to now, accurate instruments that allowed measurements with a large spatial density were not available. With the AirBox, ECN has changed that situation.

至今在市场上还没有什么仪器能在高空间密度下对空气质量进行比较精确的测量，而ECN的空气质量箱则改变了这种状况。

AirBox / 空气质量箱

- Compact instrument for online air quality measurements.
• 紧凑设计的在线空气质量测量
- Equipped with particulate matter sensor and can be expanded with other sensors.
• 配备颗粒物传感器，可扩备其它传感器
- Temperature, relative humidity and GPS.
• 温度，相对湿度和GPS全球定位
- Can be expanded with: NOx and ozone.
• 可扩备对氮氧化合物和臭氧成分的测量
- Can be used both autonomously and in a network.
• 可单独使用也可用在互连网络内
- Can be built in a complete system with source determination, signalling when boundary values are exceeded and reports can be used for justification towards the competent authority.
• 可配备排放源判定仪器并内置成一个完整系统，当排放超过边界值时发出信号。报告也可作为依据呈给主管机构。

AirBox offers flexibility / AirBox 空气质量箱的灵活性

Different sources produce different pollutions and have different effects at different locations. Air quality measurements therefore must be tailored to the specific situation.

不同的排放源会产生不同的污染物，以及在不同的位置会造成不同的影响。因此空气质量测量需要根据具体情况进行调整。

An array of sensors can be integrated in the AirBox. Particulate matter (incl. particle size distribution), temperature, relative humidity and GPS are standard. The AirBox also offers room for sensors that measure nitrogen and ozone. Next to stand-alone application, multiple AirBoxes can be used to set up a network with a large spatial density. This network offers functions such as sending a signal when boundary values are exceeded and determining the location and emission of sources of pollution. Smart data processing leads to a concise report containing information for internal use or for justification towards the competent authority.

在ECN空气质量箱内可集成一系列的传感装置。对颗粒物（包括颗粒大小分布）、温度、相对湿度和GPS定位等都是按照标准进行测量的。在该空气箱内还留有空间以备测量氮化物和臭氧的传感器所需。除了可以单独使用，在高空间密度下多个空气箱可以联网组成一套系统。这样当超过临界值时发出报警信号并可以判断排放的污染物以及位置。智能的数据处理会生成一个简洁的数据报告供内部使用或呈交给主管机构。

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AirBox applications / 空气质量箱的应用

Measuring particulate matter at industrial sites / 工业用地的颗粒物监测

The Dust Monitoring System can measure fugitive dust at industrial sites. The particulate matter sensor from the AirBox has been used in this system at a coal transshipment terminal in the port of Amsterdam. Here, eight sensors visualise the amount of fugitive dust, online and real-time. ECN processes the measuring data and offers them to the manager of the site in a clear report.

可作为粉尘监测系统测量工地上的扬尘。这个空气箱内的颗粒物传感装置已应用在阿姆斯特丹港口的一个煤炭中转站。在该系统中8个传感器被用来对扬尘量进行可视化在线实时监测。ECN对测量数据进行处理并给现场的管理负责人提供一份清晰的报告。

A dispersion model is used to determine which part of the emissions originates from the coal transshipment terminal. This enables monitoring, signalling and intervention in processes in case of undesired, high concentrations of dust. Based on continuous annual measuring, the annual emission load can be calculated.

在该项目中，一个扩散建模被用来确定哪一部分的排放污染物是来源于该煤炭中转站的，从而可以在不理想高浓度粉尘环境下进行监控、发出信号和对其进行干预。此外基于每年连续测量数据可计算出年排放量。

Urban air quality / 城市空气质量监测

The municipality of Eindhoven and the Province of Noord-Brabant want to improve health and quality of life by reducing air pollution. AiREAS, which ECN is part of, is an association that is developing the Innovative Air Measuring System (ILM) Eindhoven. With the AirBox, it is possible to realise the ILM with a large spatial density.

荷兰埃因霍温市和北布拉邦省希望减少空气污染以提高健康水平和生活质量。ECN作为成员之一的AiREAS协会创办了埃因霍温创新空气监测系统（ILM）。借助ECN空气箱装置，ILM系统可实现在高空间密度的使用。

The AirBox, which is equipped with sensors for particulate matter (PM₁₀ and PM_{2.5}), NO_x and ozone, is at the heart of the system. ECN links the AirBoxes to a data collection platform, which processes the measuring data in a format that enables local authorities and the province to take actions towards improving the air quality.

配备有测量颗粒物（PM₁₀ 和PM_{2.5}）、氮氧化物和臭氧的传感器的ECN空气箱被放置在系统中心位置。ECN把空气箱数据链接到一个数据采集平台。该平台处理测量数据并按照特定格式呈现。地方和省主管机构可依据这些信息采取措施来改善空气质量。

Measuring campaigns & Mobile measurements / 测量活动和移动式测量

A network of AirBoxes can be deployed for a measuring campaign at a specific location. Compared to traditional equipment, AirBoxes can create measurements with a large spatial density. Placed onto a vehicle, it is easy to conduct mobile measurements.

空气箱联网系统可在选定位置开展测量。与传统装置相比，ECN空气箱可在高空间密度环境下进行测量活动。放置在车辆上时，它还可以很容易实现移动式测量。

Measuring indoor climate / 测量室内空气质量

The AirBox can also be used to measure indoor climate. Indoor air quality is important, for example in workshops, kitchens, offices, meeting rooms, and so on.

ECN空气箱可用来测量室内空气情况。室内比如说车间、厨房、办公室、会议室等的空气质量是十分重要的。

