NOISE, GROUND-BORNE NOISE AND VIBRATION

By producing surveys and reports about environmental noise, ground-borne noise and vibration, we can provide guarantee good conditions both inside and outside the buildings with careful planning. When the adverse effects of noise and vibration are minimised, the quality of life improves.

Identifying the adverse effects early on enables significantly better functionality and clear cost savings. This applies in the product development of devices, noise and vibration mitigation in buildings and traffic routes, and design of city districts and traffic routes.

Our services include analyses for noise, vibration and ground-borne noise as well as related designing, consultation and training. In environmental noise and vibration projects we offer our customers a comprehensive service solution comprising of measurements, modelling, calculation, analysis and reports.

In relation to ground-borne noise and vibration mitigation, we collaborate closely with structural engineers, geo-engineers and architects.

**Environmental noise**

Environmental noise surveys are usually related to land-use planning, the construction of new buildings, renovations, supplementary construction, industrial environmental permits or the analysis of the environmental impact of a new road or rail traffic route.

Environmental noise reports may be:

- the analysis of a current or future situation: Are the guideline values for environmental noise met?
- the analysis of control measures: Where and why are guideline values potentially exceeded?
- the tailoring and designing of noise control operations: How can the noise-related problem of an existing or planned location be solved whilst keeping within the guideline limits?

Environmental noise reports are conducted, for instance, near traffic routes, or in industrial facilities and docks, but may also concern and entire city or district. Measurements and calculations are also conducted at shooting ranges and motor sports facilities as well as outdoor-event locations.

Surveys done well in advance often lead to significant cost savings enabling the most beneficial noise abatement, which can then be constructed in conjunction with the project.
Vibration and ground-borne noise

We carry out vibration and ground-borne noise surveys that generally cover the surrounding areas of traffic routes, residential areas or industrial locations. The source of disturbance may be, for example, an existing or a planned traffic route, and the subject of the survey may be an individual building or an entire residential area.

It is our task to make sure that vibration and ground-borne noise from the traffic do not cause harm to the people in the buildings and that the vibration does not damage the buildings. In large infrastructure projects, vibration and ground-borne noise reports are a part of risk management.

Vibration and ground-borne noise reports are conducted in order to make sure that a rail route in the middle or below a residential area does not disturb or restrict land-use in the future. We can also define the requirements for new constructions to be built in the immediate surroundings of rail routes or directly above them.

The consultation can focus on the sources of disturbance inside the building and the locations affected by the disturbance. An example of a source of disturbance is the rumble caused by an industrial power plant reaching the offices and conference rooms nearby.

Special targets include research and imaging devices that are extremely sensitive to vibration, where their undisturbed operational environment ought to be guaranteed prior to construction with vibration measurements and reports.
Vibration and ground-borne noise reports are often connected to government legislation and requirements. These can be related to city planning, environmental permits or building. For instance, an essential part of large infrastructure projects are reports to authorities and risk management of environmental impacts.

"Picture 2. Road-, railroad- and tram-noise and vibration surveys and abatement plans for more than 30 different areas in greater Helsinki area."
Unique expertise

We have created our own calculation formula for estimating the propagation of ground-borne noise, which has enabled, for instance, preliminary assessment of the impacts of ground-borne noise in large railway projects and planning solutions before the construction of railways and railway tunnels well before the launch of rail traffic.

We can provide accredited measurements using equipment, which in calibrated in accordance the national measurement regulations. We are also in possession of the most recent tools for calculating environmental noise.

Additional information on noise, ground-borne noise and vibration projects

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