

Environmental countermeasure technology for analytical instruments

The need to deal with environmental conditions is becoming more important as the performance of analytical instruments continues to improve.

This is a guide to Environmental Solutions that JEOL provides. Let's start the tour with Mr. JEOL.







2 Environmental countermeasure

* Refer page 7 for glossary on notes 1 to 6.





4 Environmental countermeasure







Glossary

*1 Environmental survey

Items such as vibration, magnetic field, acoustic noise at installation site, etc. are measured to clarify the sources of influence. The measured raw data is processed using a JEOL proprietary method specifically for the instrument type, and a report is issued stating the instrument performance that can be expected.

*2 Vibration

Typical sources of vibration are road traffic, large machinery and facilities located nearby. If the underlying ground is weak, such as reclaimed land or a riverfront site, vibration tends to be amplified, so additional attention is necessary.

*3 Stray magnetic fields

The sources of stray magnetic fields which exert an influence on the instrument include electrified railways, elevators and moving vehicles. Also AC power cables inside the building and outdoor high voltage lines can also be sources.

*4 Active vibration isolation system

This system compensates the vibration from the floor by means of electromagnetic actuators. It is efficient for vibrations in the 2 to 10Hz frequency range, and contributes to high magnification observation with electron microscopes.

*5 Active magnetic field canceller

This system compensates stray magnetic fields surrounding the instrument by means of compensation fields generated from canceller coils. Compared to passive shielding, this system has cost and performance advantages, so it is now a mainstream method for magnetic field countermeasures.

*6 Radiant panel cooling system

Cooling water with highly-precise temperature control is used to cool the multiple radiant panels fixed on the walls and also absorb the heat dissipated from the instrument to stabilize the temperature fluctuations in the room (0.05°C/min, 0.2°C/h). Another advantage is the minimal air flow and low acoustic noise compared to conventional air conditioning systems.

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