

Eco-design initiatives for a sustainable society

Materiality1 [Action Target1](#) [Action Target2](#) [Action Target3](#)

Key words

Eco design

Environmentally conscious design

LCA (life cycle assessment)

Contribute to solving environmental issues by developing and promoting products and services with high environmental value

To help achieve a sustainable society, Hitachi High-Tech has been conducting eco-design evaluations for all newly developed products since FY2016. From the product development to each stage of the product life cycle, we have identified 30 environmental impact items that affect climate change, resource depletion, and ecosystem degradation. We are working to make improvements by evaluating environmental impact reduction from multiple fronts. Hitachi High-Tech also incorporates design and development processes that comply with the international standard IEC 62430*1. In particular, the reduction of CO₂ emissions during use of sold products (Scope 3 Category 11) leads to the reduction of CO₂ emissions by our customers. Hitachi High-Tech is committed to providing environmental value as an added value to its products.

Examples of eco-design achievements in FY2023

● Dark Field Wafer Defect Inspection System DI4600

A dark field wafer defect inspection system detects contaminants and defects in each semiconductor device manufacturing process and reports the number of defects and their detected positions. This device has improved throughput by about 30% and reduced CO₂ emissions by about 35%*2 on the same platform and with the same power consumption as the previous model. Also, motor control has been switched to a communication specification using LAN cables, which reduces the number of boards and wiring, while LEDs have replaced consumable halogen lamps to extend service life and contribute to resource conservation.

● High-Precision Electron Beam Metrology System GT2000

A high-precision electron beam metrology system (critical dimension-scanning electron microscope (CD-SEM)) measures the finish of semiconductor devices at the nanometer level in each semiconductor manufacturing process. By feeding back measurement results to semiconductor manufacturing equipment, these systems contribute to yield improvement and new product development in semiconductor device manufacturing by our customers. The GT2000 improves throughput by 25% and reduces CO₂ emissions by approximately 50%*2 compared to the previous model. Power consumption efficiency has been improved by 10% through the use of a switching power supply with established low-noise technology. Other measures such as the use of non-CFC cooling units also contribute to the reduction of environmental impact.

● cobas c 703 analytical units

Automated biochemical analyzers are devices that analyze bodily fluids such as blood and urine to help diagnose and treat diseases. This equipment reduces CO₂ emissions by approximately 42%*2, power consumption per unit analysis performance by approximately 38%, and water consumption by approximately 28% compared to the previous model.

Additionally, by reducing the amount of unusable liquid left in detergent bottles by up to 71%, we are reducing the amount of detergent that is wasted.

Furthermore, by using LEDs instead of consumable halogen lamps, the frequency of replacement has been reduced. In addition, for some maintenance items that are difficult for users to handle themselves, the device can self-diagnose and automatically adjust, allowing users to carry out the maintenance themselves, reducing the frequency of service visits and the CO₂ emissions that would otherwise be associated with vehicle visits.

Toward further reduction of environmental impact

Various laws and regulations related to climate change, the circular economy, and biodiversity are being enforced and strengthened across the globe. Customers also have high environmental goals to achieve a sustainable society.

To address environmental regulations and customer demand, Hitachi High-Tech will further reduce CO₂ emissions during product use, increase the use of environmentally friendly materials in its products, and promote the reuse of parts. Additionally, to minimize negative impacts on natural capital, we will continue to engage in various activities to reduce environmental impact, including improving the energy efficiency of our products and services and appropriately managing chemical substances.

*1 An International Electrotechnical Commission standard that defines environmentally conscious design for electrical and electronic products.

*2 CO₂ emission reduction rate considering the amount of functions (compared to 2010 standard products)



Dark Field Wafer Defect Inspection System DI4600



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