

Focusing on sustainable anesthesia care for a resilient tomorrow



Aisys™ CS² Anesthesia Delivery System with Et Control*

Creating a more sustainable future requires us to care for the planet and its inhabitants

It is essential that we continue to drive progress toward early, precise, and accessible diagnosis and treatment of more patients. For the planet, it is critical that we do so with a reduced impact on precious and rare resources that are imperative to life. We believe that the advancement of precision medicine, greater digitization of healthcare, and increased access to quality care are fundamental to accomplishing this goal.

We support carbon policies that reduce greenhouse gas emissions and promote sustainable development. GE HealthCare is committed to achieving net zero by 2050, and we have signed up to the Science Based Targets initiative (SBTi) business ambition for 1.5C, a group of visionary corporate leaders taking ambitious climate action, and we have committed to implementing science based targets. This includes a public goal to reduce operational emissions (scope 1 and 2) by 50% by 2030 against a 2019 baseline. As a result of these efforts, we want to enable a more sustainable health system by addressing not only the environmental impacts of our products, but also the challenges healthcare professionals and their patients face with resilient, digital solutions.



We are committed to achieving net zero emissions by 2050.

We've set a public goal to reduce operational emissions (scope 1 and 2) by 50% by 2030.

Leading a new era in sustainability for a more resilient tomorrow

We're creating a world where healthcare has no limits, helping to improve access to care and enable better patient outcomes.



Environmental

Using fewer resources for a healthier planet.

Digital

Transforming healthcare through innovation.

Resilience

Building flexibility and dependability across healthcare systems.

Aisys CS² anesthesia machine helps create a more sustainable tomorrow

Our Aisys CS² Anesthesia Delivery System and its services help ensure clinicians and the patients they serve have the technology necessary to create a more sustainable and resilient tomorrow.

Reducing environmental impact

- Minimize greenhouse gas emissions from agent waste, encourage green, low-flow anesthesia practices, and track anesthetic agent usage and cost.
- In one study, Aisys CS² with End-tidal Control Software has been shown to reduce greenhouse gas emissions by over 40%.¹
- Implementation of renewable energy and reduction of electricity used in manufacturing operations.

Improving care

- Helps prevent post-operative pulmonary complications (PPCs) with lung protective ventilation (LPV) tools.^{3,4}
- In a clinical trial, Entropy™ (EEG & FEMG signal) Monitoring has been associated with a 30% reduction in Sevoflurane/Isoflurane usage⁵ and a 15% reduction in Propofol.⁶



Contributing to a healthier planet

More than half of the healthcare sector's climate footprint, approximately 53%, is attributable to energy use.⁷ As a result, we have strengthened our commitment to environmentally conscious design, and we are implementing more sustainable practices across our product manufacturing, sourcing, distribution, installation, and service operations. This includes improving energy efficiency, optimizing the use of limited or rare materials, providing digitally enabled service throughout the product lifespan, and offering refurbishment and recycling options at the end of product life.

GE HealthCare environmental management system is ISO 14001 certified

Our production and service operations align to ISO 14001 standards.⁸

We're committed to environmental product design

This product conforms with IEC60601-1-9:2007.⁹

Materials

GE HealthCare reviews the environmental aspects of the material supply used within our products to increase recyclability and decrease the use of hazardous substances, when possible.

Recyclability

We are committed to increasing recyclability according to Waste Electrical and Electronic Equipment regulations and to reducing use of hazardous substances in manufacturing, when possible.

Aisys CS² materials are recycled according to the product WEEE passport¹⁰

- Ferrous Metal: 30%
- Non-ferrous Metal: 44%
- Plastic: 18%
- Other: 8%

Reduce the use of hazardous substances

EU RoHS directive 2011/65/EU.¹¹

REACH (EC) 1907–2006.¹²



Packaging

GE HealthCare anesthesia delivery systems have a robust and multi-sourced supply chain for systems and spare parts across our product portfolios.

Product packaging

Aisys CS² packaging material utilized in the Madison, WI USA site consists of the following materials (% per weight):⁸

- Plastic: 78%
- Cardboard: 4%
- Metal: 3%
- Other: 15%

Manufacturing

Through our environmental reviews, we also focus on implementing more renewable energy and reducing waste, when possible.

Renewable energy

The Madison, WI USA manufacturing plant sources 25% of its gas and electrical power from renewable sources.⁸

Reducing electricity

Through our environmental reviews, we are committed on implementing renewable energy and reducing waste in our manufacturing.⁸



* Image shows a US-only configuration

Product utilization

Our anesthesia products are designed to help enable energy efficiency through dedicated features and advanced applications, to reduce the environmental impact and extend product life through new optional configurations, and to help enhance health and potentially reduce environmental impacts by reducing waste through ergonomic design.⁸

Medical electrical equipment

Complies with IEC 60601-1-6 international standard for medical electrical equipment to ensure usability, as it relates to basic safety and essential performance,¹³ aligned with the engineering usability process set forth in IEC 62366-1.¹⁴

Reduce staff burden

One study has shown that the number of key presses can be reduced by 50%¹⁵ to help simplify adoption of low-flow strategies by your staff.

Power consumption

Instructions for use provide direction to minimize the environmental impact of the equipment during installation, use, and operation.

- User-determined display brightness to reduce energy consumption of backlighting⁸
- Active Mode 0.094 kW¹⁶
- Standby Mode 0.088 kW¹⁶

Cybersecurity

GE HealthCare's Design Engineering Privacy and Security (DEPS) process follows GDPR, HIPAA, NIST 800-53, NIST 800-30, and NIST CSF requirements.¹⁷

End of product life

We are increasingly putting our retired products' materials back into the supply chain to maximize efficient use and minimize unnecessary waste. This circularity model enables our anesthesia delivery products to extend their clinical impact through longer lifespans while reducing the environmental footprint. Additionally, we offer our customers support for upgrades and services throughout a product's lifespan, when available, to maintain optimal performance and help drive better patient outcomes.

Product utilization

Guidance for end of lifecycle

Equipment instructions are provided to minimize the environmental impact for disposal or recycling.

Upgradeability

Expected service life for the Aisys CS² series is 7 years; however, preventive maintenance as well as available hardware and software upgrade options may extend the product lifespan.⁸

Waste reduction

This system is in accordance with Waste Electrical and Electronic Equipment (WEEE) regulations.¹⁰

Cleanability

Our equipment is designed to be cleaned and disinfected easily. We continue to test and approve new cleaning and disinfecting agents. Visit [Cleaning.GEHealthCare.com](https://www.gehealthcare.com/cleaning) for updates.

Digitizing healthcare through transformative innovations for a more resilient tomorrow

We are committed to investing in digital capabilities that help accelerate clinical decision making, optimize anesthesia delivery operations, and drive efficiencies in perioperative workflows, all of which can help clinicians improve patient outcomes. Enabling digital transformation will further enhance our predictive and maintenance service operations for the life of your products.

We are also dedicated to driving a more resilient and sustainable future in healthcare. Many factors, including the pandemic, climate-related weather disasters, and supply-chain issues amplified this need. Managing operations through these challenges requires resilience and perseverance.

Optimizing sustainable anesthesia care

Our advanced software algorithms on the Aisys CS² Anesthesia Delivery System are designed to give you critical data in real time, so you can optimize anesthesia protocols and patient safety, while minimizing harm to the environment.

Minimize PPCs with LPV strategies

Improper ventilation during anesthesia can increase postoperative pulmonary complications (PPCs) by up to 60%.³ The lung protective ventilation (LPV) tools on the Aisys CS² workstation provide you with the resources to configure automated lung recruitment maneuvers. These programmable steps can enhance your ventilation techniques, allowing for precise control of PEEP levels during mechanical ventilation.

Safely reduce anesthetic agent waste with automated End-tidal (Et) Control software*

- Based on provider set targets for safe, low-flow anesthesia for end-tidal O₂ (EtO₂) and anesthetic agent (EtAA), the Et Control software* will automatically adjust fresh gas concentrations to quickly achieve and maintain these targets, regardless of changes in the patient's hemodynamic and metabolic status
- Reach 90% of your target EtAA within 90 seconds and maintain targets at minimal flow rates¹⁸
- In one study, Aisys CS² with End-tidal Control Software* has been shown to reduce greenhouse gas emissions by over 40%¹

* Et Control in the United States is indicated for patients 18 years of age and older.



Optimizing sustainable anesthesia care

Unified monitoring platform for your entire perioperative ecosystem

Requiring 25% less electricity consumption¹⁹ and 48% less packaging of material mass²⁰ than its predecessor, CARESCAPE Canvas™ Patient Monitor offers a high-end, intuitive design with a responsive touchscreen, allowing for individualized monitoring of patients and bed-specific scalable levels of acuity while retaining the same, familiar user experience and cleaning simplicity for effective infection control.

Reduce anesthetic agent waste and accelerate recovery/discharge with a more personalized anesthesia dose

In a clinical trial, Entropy™ (EEG & FEMG signal) Monitoring has been associated with a 30% reduction in Sevoflurane/Isoflurane usage⁵ and a 15% reduction in Propofol.⁶ Supplemented by other monitored parameters, Entropy provides a complete picture of the patient's status on screen, allowing the anesthesia provider to customize anesthesia for each patient at a lower fresh gas flow rate.

AMSORB® Plus CO₂ Absorbent

- **Eco-friendly**—This unique absorbent formulation breaks down into harmless organic compounds and does not produce harmful by-products, such as carbon monoxide (CO),²¹ Compound A,²¹ or formaldehyde,²¹ so it's easier on patients and staff — and potentially simpler to dispose of by not going into medical waste.
- **Efficient**—Violet color indicator lets you know when it's time to change the canister, improving confidence in clinical and purchasing decisions
- **Cost-effective**—Low-flow anesthesia delivery reduces consumption of the anesthetic agent and lowers overall cost of ownership

*NOTE: Image shows a US-only configuration.



Optimizing sustainable anesthesia care

Carestation™ Insights Applications

Carestation™ Insights Applications data is automatically transmitted to a cloud-based analytics platform, which provides visibility to agent utilization, cost, emissions impact, and more on any computer or mobile device internet browser. When used to monitor agent consumption and drive adherence to low-flow protocols, one study has shown that Carestation Insights applications support an additional 34% reduction in local hospital costs.²²

- **Agent Cost Application**—Provides an analysis of anesthetic agent use and costs across your department and helps support low-flow initiatives that may help reduce agent costs and agent emissions into the environment.
- **Adequacy of Anesthesia (AoA) Application**—View real-time* and historical AoA data measured against customized performance targets. See the impact of AoA practices on emergence times and track anesthetic agent costs.
- **Checkout Application**—Keep track of Aisys CS² anesthesia machines that have completed the checkout procedure to help improve scheduling workflows and protect patients against injury.
- **Lung Protective Ventilation Application**—View ventilation settings and patient lung response from the Aisys CS² machine. Use the data to support lung protection initiatives to help drive improved clinical outcomes and help reduce PPCs.
- **OR Workflow Application**—View case phase and OR status in real time* without the need for manual data entry. An OR efficiency score card is also calculated based on your goals to help track improvements over time.

* Actual time may vary slightly due to hospital network and processing times.



References

1. Tay S, Weinberg L, Peyton P, Story D, Briedis J. Financial and environmental costs of manual versus automated control of end-tidal gas concentrations. *Anaesth Intensive Care*. 2013 Jan;41(1):95-101. doi: 10.1177/0310057X1304100116. PMID: 23362897.
2. The number 2 footnote has been omitted to avoid any confusion with the Aisys CS² product name.
3. Futier, E., M.D., Constantin, J., M.D., PhD., et al (2013). A Trial of Intraoperative Low-Tidal-Volume Ventilation in Abdominal Surgery. *The New England Journal of Medicine*, 369(5). doi:10.341/f.718056191.793482037.
4. Güldner, A., Kiss, T., Serpa Neto, A., Hemmes, S.N.T., Canet, J., Spieth, P.M., Rocco, P.R.M., Schultz, M.J., Pelosi, P., Gama de Abreu, M; Intraoperative Protective Mechanical Ventilation for Prevention of Postoperative Pulmonary Complications: A Comprehensive Review of the Role of Tidal Volume, Positive End-expiratory Pressure, and Lung Recruitment Maneuvers. *Anesthesiology* 2015; 123:692–713 doi: <https://doi.org/10.1097/ALN.0000000000000754>.
5. El Hor T, et al. "Impact of entropy monitoring on volatile anesthetic uptake." *Anesthesiology*. 2013 Apr;118(4):868-73. doi: 10.1097/ALN.0b013e3182850c36. PMID: 23337606.
6. Vakkuri A, et al. Spectral entropy monitoring is associated with reduced propofol use and faster emergence in propofol-nitrous oxide-alfentanil anesthesia. *Anesthesiology*. 2005 Aug;103(2):274-9. doi: 10.1097/0000542-200508000-00010. PMID: 16052109.
7. Karliner J, Slotterback S, "Health Care's Climate Footprint How the Health Sector Contributes to the Global Climate Crisis and Opportunities for Action." *Health Care Without Harm Climate-smart health care series Green Paper Number One*, Produced in Collaboration with ARUP. September 2019, https://noharm-global.org/sites/default/files/documents-files/5961/HealthCaresClimateFootprint_092319.pdf.
8. GE HealthCare Aisys CS² Environmental Product Collateral Data Substantiation. DOC2895863 Rev 1, September 2023.
9. GE HealthCare Aisys CS² 60601-1-9 Verification Results. DOC1826119 Rev 2, October 2016.
10. GE HealthCare Aisys Series WEEE Passport DOC0223497 Rev 4, September 2018.
11. GE HealthCare Aisys CS² and Avance CS² RoHS Compliance Letter DOC1485137 Rev 1, December 2013.
12. GE HealthCare ARC EU REACH Substance Compliance Information DOC2798430 Rev 2, April 2023.
13. GE HealthCare Aisys CS² IEC 60601-1-6 ITS Test Report 3rd Ed Harmonized DOC1632965 Rev 1, January 2015.
14. GE HealthCare Aisys CS² IEC 62366 ITS Test Report DOC1632970 Rev 1, January 2015.
15. Singaravelu, S. and Barclay, P., Automated control of end-tidal inhalation anaesthetic concentration using the GE HealthCare Aisys Carestation. *British Journal of Anaesthesia* 2013; 110 (4): 561–6.
16. GE HealthCare ARC Power Consumption DOC1954308 Rev 2, February 2017.
17. GE HealthCare Aisys CS² v12 MDS2 DOC2464810 Rev 2, May 2023.
18. Et Control user's reference manual (5824844-USA), Et Control Accuracy Graph.
19. GE HealthCare CARESCAPE Canvas and Bx50 Power Consumption Measurements and Energy Usage. DOC2742033 Rev 3. December 2022.
20. GE HealthCare Monitoring Solutions HKI Product Packaging Volume and Weight Data. DOC2770171 Rev 2. January 2023.
21. Kharasch ED, Powers KM, Artru AA. Comparison of Amsorb, sodalime, and Baralyme degradation of volatile anesthetics and formation of carbon monoxide and compound a in swine in vivo. *Anesthesiology*. 2002 Jan;96(1):173-82. doi: 10.1097/0000542-200201000-00031. PMID: 11753018.
22. Cucchia, M., Piergiorganni, C., Toni, G., Ciarpica, C., Driving Down Greenhouse Gas Emissions While Saving Cost on Anaesthetic Agents: A case study using Carestation Insights™ Agent Cost Application. GE HealthCare Whitepaper JB23747XX, May 2023.



Creating a healthy world to help enable better patient outcomes.

GEHealthCare.com/about/sustainability

Et Control in the United States is intended for patients 18 years and older.

Not all products or features are available in all geographies. Check with your local GE HealthCare representative for availability in your country. Contact a GE HealthCare representative for more information. Intended for healthcare professionals only.

© 2024 GE HealthCare. GE is a trademark of General Electric Company used under trademark license. Aisy, CARESCAPE, CARESCAPE Canvas, Carestation, and Entropy are trademarks of GE HealthCare. AMSORB is a registered trademark of Armstrong Medical Ltd. Reproduction in any form is forbidden without prior written permission from GE HealthCare.

Nothing in this material should be used to diagnose or treat any disease or condition. Readers must consult a healthcare professional.

JB25769XX

March 2024



GE HealthCare