

Aisys™ CS² Anesthesia Delivery System with Et Control

Digital intelligence for precise control



Life support digitally enhanced

Advances in digital technology are driving a new era of perioperative care, big data and analytics. For anesthesia, it all comes together in the Aisys CS² Anesthesia Delivery System. Now collect breath-by-breath data to enable agile decision-making for care that can focus on individual patient needs. Go beyond the machine into an intelligent ecosystem that supports your goals.



Patients

may benefit from individualized therapy with rapid-response ventilation technology that is digitally controlled for precision that may help minimize the risk of postoperative pulmonary complications (PPCs).



Anesthesia staff

can rely on practical decision-support tools, automated gas and agent delivery, mobile supervision support and an intuitive interface designed to help improve OR efficiency and enhance treatment options.



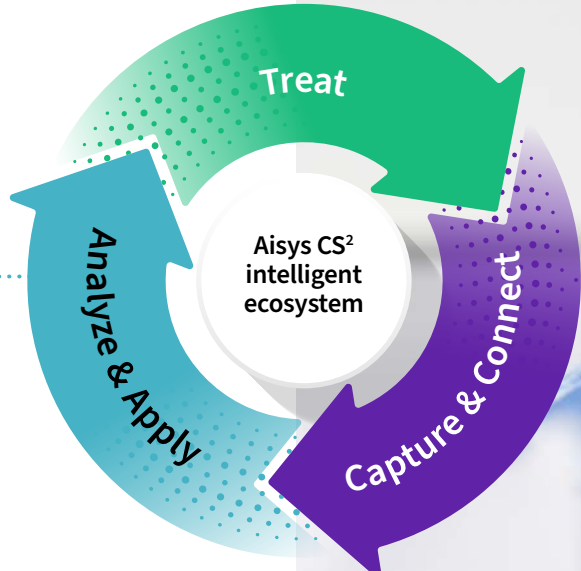
Hospital management

can gain OR visibility with cloud-based data analysis of therapeutic practices, environmental emissions and costs for delivering efficient, high-quality anesthesia care.

Driving better outcomes

Actionable insights through real-time and retrospective data analysis along with automation helps drive desired outcomes

Intelligent machines with tools and algorithms to facilitate continuous improvements in delivering individualized patient care



High-fidelity machine data connected to smart applications provide the foundation for agile decision support



Understanding your perioperative challenges

📍 Clinical

- Minimize postoperative pulmonary complications
- Reduce preventable adverse events in the OR
- Enhance patient comfort and satisfaction

🔧 Operational

- Maximize workflow efficiencies
- Deliver care to a wide acuity range
- Address staff safety, training and burnout

💰 Economical

- Reduce inhalation agent spend
- Minimize patient length of stay
- Protect equipment investments

🌿 Environmental

- Reduce anesthetic agent waste
- Adopt eco-friendly, green protocols
- Adopt reusable accessories

100 years

of expertise in anesthesia delivery, we built the Aisys CS² anesthesia machine to be modular and upgradeable, so you can protect your investment while evolving with an ever-changing healthcare environment.

TREAT

Confident control of low-flow anesthesia

End-tidal Control responds when your patient needs support

Anesthesia providers simply set the targets for end-tidal O₂ (EtO₂) and anesthetic agent (EtAA), and 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.

When compared to manual fresh gas flow (FGF) control, studies have shown using Et Control software offers:

Fast, low-flow control

Reach 90% of your target EtAA within an average of 90 seconds.¹ Maintains targets at minimal flow rates.

Reduced workloads

One study shows Et Control can reduce the number of key presses by >50%³ to help simplify adoption of low-flow strategies by your staff.

Vigilant patient support

One study shows that Et Control is twice as accurate in maintaining the set EtO₂ and EtAA regardless of patient status.²

More eco-friendly practices

One study has shown a potential 44% decline in the rate of greenhouse gas emissions⁴ when employing Et Control software.

Improved cost savings

Studies have shown that Et Control can reduce anesthetic agent consumption by over 25%^{2,3}.

E is for Efficiency
E is for Eco-friendly
E is for Economical



1. Et Control user's reference manual (5824844-USA), Et Control Performance Data.

2. Refer to GE Healthcare Et Control Pivotal Study Report DOC2163005.

3. S. Singaravelu and P. Barclay, Automated control of end-tidal inhalation anaesthetic concentration using the GE Aisys Carestation. British Journal of Anaesthesia 2013; 110 (4): 561-6.

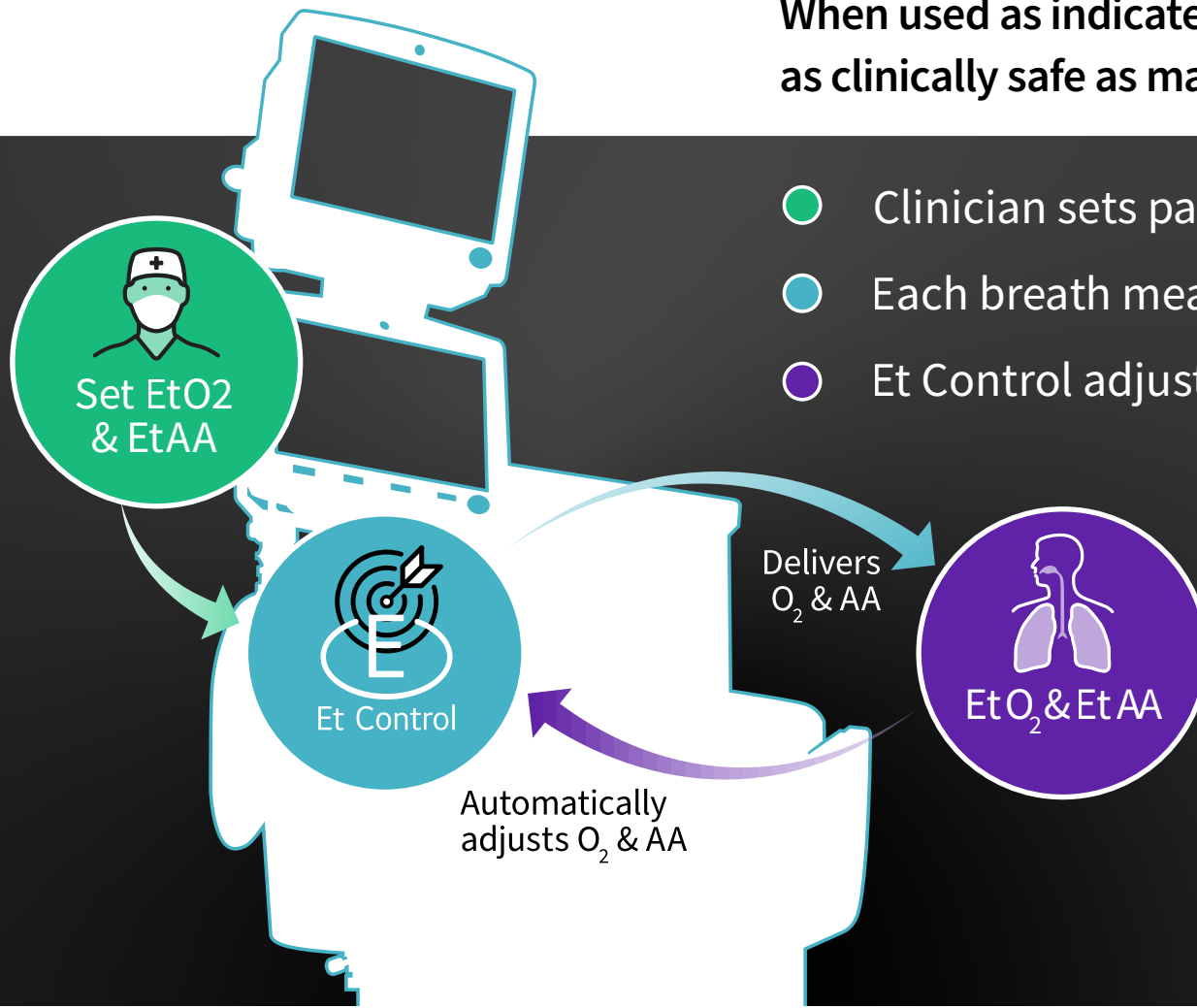
4. Tay, S, et al. Financial and environmental costs of manual versus automated control of end-tidal gas concentrations, Anaesth Intensive Care 2013; 41: 95-101.

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

How Et Control works

When used as indicated, Et Control* is as clinically safe as manual fresh gas control.¹

- Clinician sets patient targets
- Each breath measured and monitored
- Et Control adjusts delivery to targets



Master agent delivery

Rely on the speed, precision and accuracy that the Aisys CS2 anesthesia system brings with digitally controlled ventilation, gas delivery and agent vaporization. When the Aisys CS² electronic control system is combined with Aladin2™ Agent Cassettes, you can be confident that the information displayed is measured — not estimated.

Guided safety measures

Accidental awareness protection

- Audible and visual warning alarms when anesthetic agent runs low
- After vaporizer is filled, the system reminds you to turn it back on with the last setting

Overdose protection

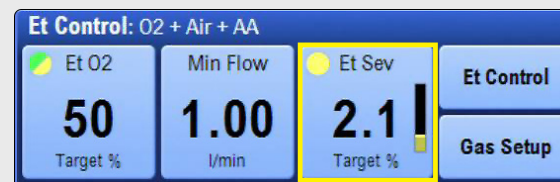
- Changes in patient status are monitored every 200 ms, giving you the precision to act quickly when needed
- Automatically prevents delivery if risk of overdose is detected

Automatic record keeping

- Electronic control collects agent setting data
- Gas usage data shows low flow savings analysis

Up to 2x the accuracy

Anesthetic delivery accuracy exceeds published performance specifications of other electronic and conventional anesthesia vaporizers.¹



Aisys CS² display

Electronic agent level sensing displays cassette fill level and notifies you when the cassette is empty.

1. DOC1426375 GE internal analysis of published industry standards and vaporizer data product performance specifications comparing GE Aladin2 Cassettes to Draeger Vapor 2000 (conventional), FLOW-I (digital), Blease Datum L series Anesthesia Vaporizer (conventional), GE Tec 6 Plus and Tec 7 Vaporizers (conventional). Comparison shows that the Aladin₂ is up to 2 times (200%) as accurate as other vaporizers (Draeger Vapor 2000, Blease Datum, Penlon Sigma Elite).

Streamline your workflows

With Aisys CS² hardware and software working in harmony, you can focus on starting cases on time and responding to changes in patient status.

Smart menus

Fresh gas flow, oxygen, anesthetic agent and ventilator modes can be adjusted in less than three seconds with task-specific, quick-pick menus.

Et Control software

Automated oxygen and agent delivery to set targets can help avoid delivering hypoxic mixtures while practicing low-flow anesthesia.

Pause gas flow

Press one button to temporarily stop all gas flows, agent delivery and ventilation as well as suspend alarms, so you can respond to critical patient needs.

Guided checkout

Fully automated, comprehensive system checkout, including leak and vaporizer checks.



Auto alarm limits

To help reduce alarm fatigue, easily manage upper and lower alarm limits for MV, TV, RR and EtCO₂ on a case-by-case basis.

99%

of GE HealthCare-experienced clinicians recommend our anesthesia delivery solutions.¹

TREAT

Rapid response for individualized care

Let the Aisys CS² anesthesia workstation help you ventilate the most difficult patients. The novel ventilation engine in the Aisys CS² workstation is built using an electromagnetic proportional flow valve that precisely controls delivered volumes and pressures similar to those found in ICU ventilators, like our CARESCAPE™ R860 Ventilator. This allows you to quickly achieve and maintain set pressures and volumes, which maximize your patient's time available for gas exchange.



Precise



Control of gas flow, volume and pressure helps reduce challenges in managing neonatal and pediatric patients.*

5 ml

Breath-to-breath tidal volumes as low as 5 ml in PCV mode.¹



Circuit compliance compensation accounts for the volume in the patient circuit to ensure that what you set is what is being delivered to the patient.

Immediate

30 ms

Responds to patient demand in less than 30 ms.

250 times/sec

Monitors and responds to changes in the patient's airway pressure and respiratory efforts up to 250 times per second.

2.7 L

Small 2.7 L breathing system facilitates rapid gas concentration changes.



Fresh gas is always delivered to the patient at the start of a breath, so the patient can quickly receive any desired gas concentration changes.

* When Et Control is used for controlling fresh gas flows, this mode should only be used on patients 18 years and older in the United States

1. GE benchmark study. Actual results may vary and are dependent on the patient. DOC0933949

Minimize PPCs with LPV strategies

Improper ventilation during anesthesia can increase postoperative pulmonary complications (PPCs) by up to 60%.¹ There is growing evidence that lung-protective ventilation strategies, consisting of low tidal volumes (VT), application of PEEP, and use of alveolar recruitment maneuvers (ARMs), can reduce PPCs.^{2,3} 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.

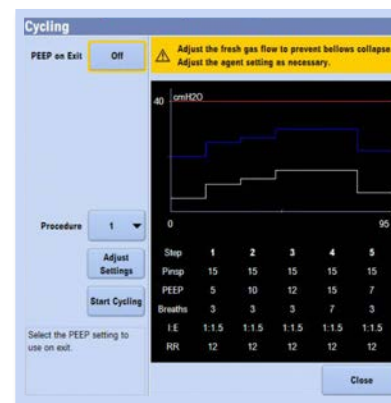
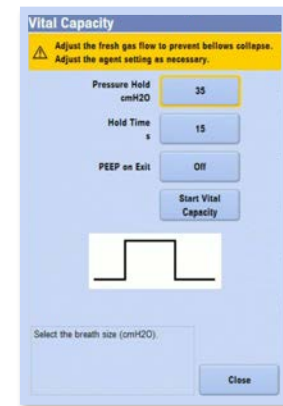


Real-time compliance trending

Displays compliance measurements in real time to help you assess the effectiveness of automated lung procedures.

Vital capacity procedure (single-step)

Automates the manual bag “squeeze and hold.” PEEP can be programmed at the end of the procedure to help sustain an open lung.



Cycling procedure (multi-step)

Allows you to configure a lung recruitment maneuver. Programmable steps allow for increasing and decreasing PEEP levels during mechanical ventilation.

1. Futier E., M.D., Constantin J., M.D., Ph.D., 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.

2. Futier E., Constantin J.M., Jaber S. Protective lung ventilation in operating room: a systematic review. Minerva Anestesiol. 2014; 80: 726-735

3. Guldner A., Kiss T., Serpa Neto A. et al. 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

* Improvements are dependent on individual patient types and clinician practice.

TREAT

CARESCAPE™ patient monitors — a perfect OR pairing

Bring familiarity and precision when monitoring patient responses and status to Aisys CS² anesthesia delivery.

Rely on our family of CARESCAPE patient monitors to help you make decisions for each patient type with scalable solutions that use our innovative FlexAcuity™ software and measurement technologies. We can help you optimize care across different patient populations with robust parameters that deliver the accuracy you need to make proactive clinical decisions from the OR to the bedside.



CARESCAPE Canvas
1000 Monitor



CARESCAPE ONE
Intra-Hospital
Transport Monitor



CARESCAPE
B450 Monitor



CARESCAPE
B650 Monitor



CARESCAPE
B850 Monitor

CARESCAPE Canvas™ Monitor

Clinical excellence by design

A shortage of qualified staff and ever higher patient-to-caregiver ratios require a patient monitor design that offers confidence in demanding perioperative cases. Patient information can be quickly updated with a modular approach to parameters that fits seamlessly into your perioperative workflow.

- Intuitive user interface, crisp and clear waveforms and numerical values
- Highly responsive state-of-the-art touchscreen
- Excellent durability and easy-to-clean design for infection control
- Improved visibility to critical moments
- A FlexAcuity™ solution with modular parameters for any care area



Cutting-edge parameters and algorithms

Insights to individualize care

Our GE HealthCare monitoring parameters are built with proven algorithms for accurate data, delivering real-time decision support during and after surgery. Continuously updated, cutting-edge parameters and algorithms are built on over half of a century of excellence in patient monitoring.

GE HealthCare monitoring solutions are embedded with proven technologies for clinical performance such as:

The EK-Pro arrhythmia algorithm

Monitors, processes and analyzes four independent, simultaneous leads, detecting arrhythmias and other cardiac events that might otherwise go unnoticed.

CARESCAPE respiratory modules

Provide comprehensive, holistic views of a patient's respiratory status and helps to personalize care and may help you improve clinical outcomes.

The Adequacy of Anesthesia concept (AoA)

Entropy™ and NMT measurements may help clinicians enhance patient care, minimize drug use in adults, and optimize patient throughput.

Cerebral oximetry

INVOS™ regional oximetry (rSO₂) technology from Medtronic can detect changes in the patient's oxygenation condition quicker than traditional peripheral measurements, such as SpO₂.¹

Seamless connectivity with endless capabilities

The Aisys CS² anesthesia machine is designed to support system interoperability by simplifying connections to other medical devices and to your hospital network. Real-time* data transmission can be configured to automatically send important physiological, machine and service data to various clients simultaneously. Easily access breath-by-breath waveforms, alarms, measured values, machine settings and more in real time.



500+

Breath-by-breath data points

- Waveforms
- Alarms



Easily interface with your EMR using industry standard HL7 protocol



Send data to the cloud for use in Carestation Insights Mobile Applications



Send data to the hospital network for use in research, software development & more!



Use Network Time Protocol (NTP) to sync with hospital clock



Automatically transmit service logs to the hospital network via FTP

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

Transform complex data into actionable insights

Once the Aisys CS² anesthesia machine and CARESCAPE Patient monitor are connected to the hospital network, use Carestation Insights mobile applications to help you identify opportunities that can:

- Improve perioperative productivity
- Reduce operating costs and optimize revenue
- Standardize best practices across anesthesia providers

This intelligent OR ecosystem automatically captures and analyzes high-fidelity case data. Our applications use advanced algorithms to interpret this data and uncover actionable insights that are displayed on your personal devices: desktop, laptop, tablet and smart phone. Use these insights to help improve patient care and support your operational and financial goals.

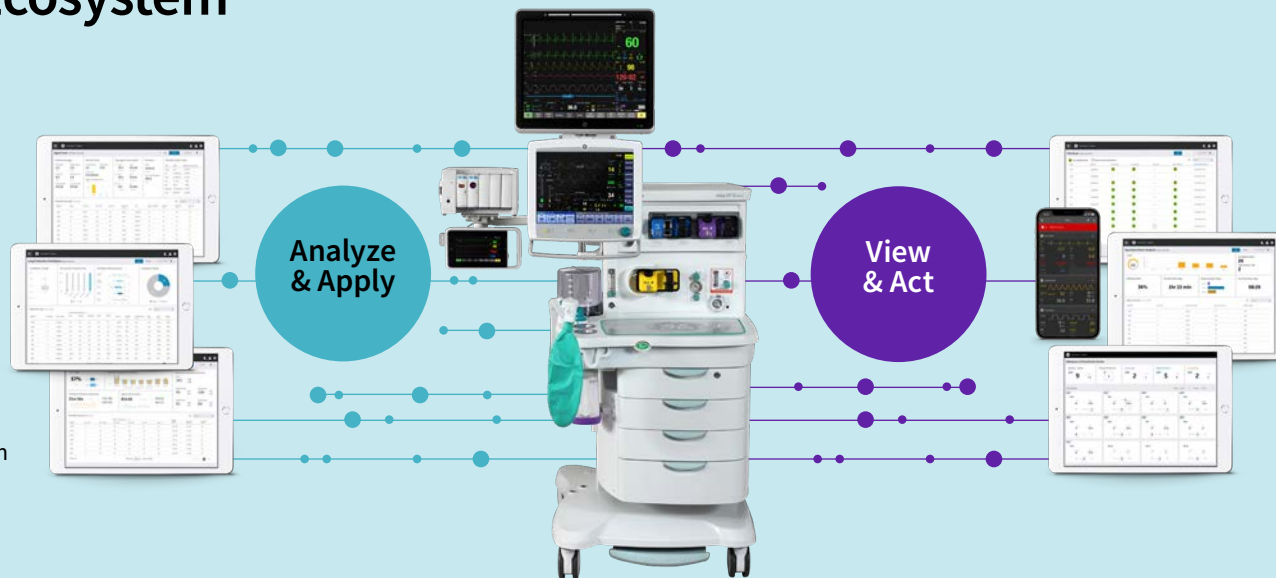
OR Digital Ecosystem

Retrospective Analysis

Departmental view of protocols. Visibility into results and trends.

Carestation Insights Applications

- Agent Cost
- Lung Protective Ventilation
- OR Workflow
- Adequacy of Anesthesia (AoA)



Aisys CS² Anesthesia Machine & CARESCAPE Patient Monitors

Live View

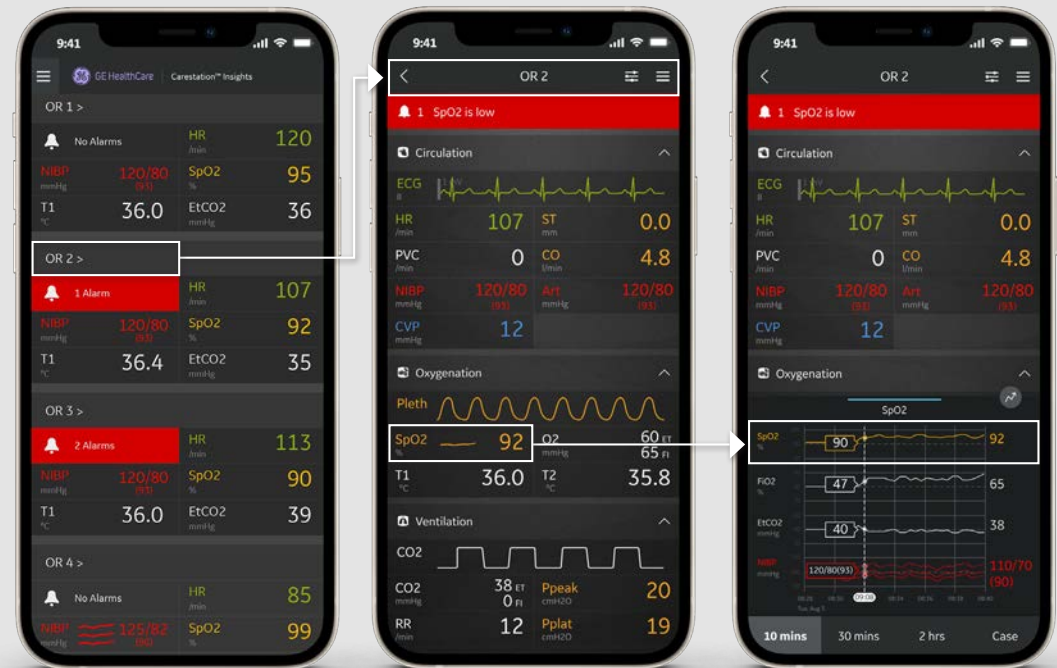
Support protocol adherence in real time. Remote supervision.

Carestation Insights Applications

- LIVE
- Checkout
- OR Workflow
- Adequacy of Anesthesia (AoA)

Supervise multiple ORs in real time*

with Carestation Insights LIVE Application



Multiple OR View

Single OR View

Patient Trends Details

The Challenge

Prioritizing tasks and delivering medical direction, while constantly on the move outside the operating room is demanding for one clinician. There is no simple way to quickly access the relevant patient and anesthesia data when not in the OR.

The Solution

The Carestation Insights LIVE application captures high-fidelity data from the Aisys CS² anesthesia machine and CARESCAPE patient monitors, and organizes it into a simplified display on a smartphone. You receive real-time, breath-by-breath data from multiple ORs, so you can review patient status and how anesthesia therapy is being delivered. Then determine if an OR needs additional support or not. Customize the LIVE app interface to notify you when machine alarms are triggered and then view detailed patient data.

Desired Outcomes

- Supervise multiple ORs with confidence
- Enable clinicians to prioritize medical direction
- Help clinicians support adherence to protocols in real time

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

NOTE: This product does not generate data or alarms but transmits data from the OR and displays active alarms in the room for awareness. Images are representative of the product, but may change in future product software updates.

We analyze. You drive change.

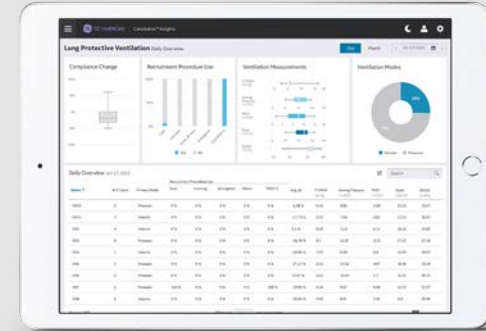
Carestation Insights Mobile Applications for the Aisys CS² anesthesia machine

Use these mobile applications to gain insights into your OR traffic, Aisys CS² machine readiness, LPV and AoA protocol adherence, anesthetic agent spend and more.



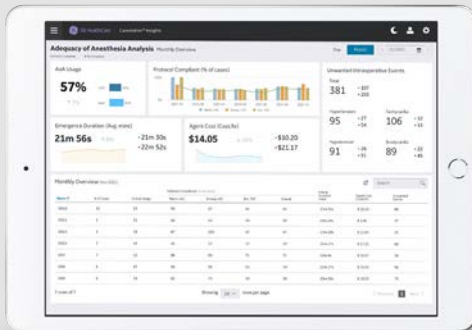
Agent Cost Application

Provides an analysis of anesthetic agent use and costs across your department. Helps support low-flow initiatives that may help reduce agent costs and agent emissions into the environment.



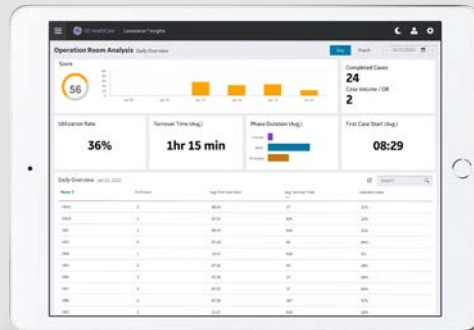
Lung Protective Ventilation Application

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.



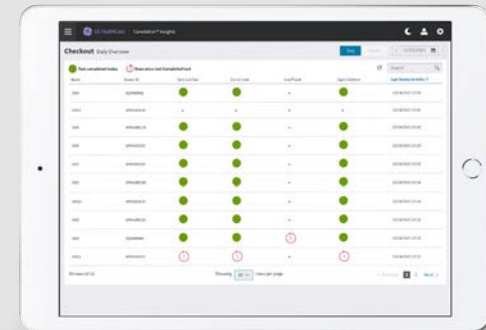
Adequacy of Anesthesia (AoA) Application

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.



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.



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.

* Actual time may vary slightly due to hospital network and processing times.
NOTE: Images are representative of the product, but may change in future product software updates.

Simplified lifecycle support

Help make life less costly and complicated for your biomedical staff with modular designs, verified accessories and expert training.

Connect patients you care for with equipment you trust

Purchase high-quality accessories that have been tested and verified directly from GE HealthCare. Find your reliable source of clinical accessories throughout the life of your Aisys CS² machine at [gehealthcare.com/products/clinical-accessories](https://www.gehealthcare.com/products/clinical-accessories).

Tailor biomed training for peak performance

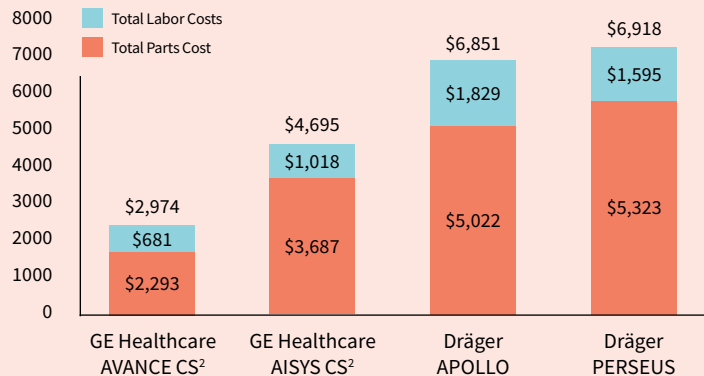
- Instructor-led training on site or in our GE HealthCare facilities
- Online training videos with expert guidance on repair and maintenance
- Access to a library of training resources 24/7

No tools required for disassembly

The modular design of the Aisys CS² anesthesia workstation provides self-contained subsystems that are easily removed without any special tools, making cleaning and maintenance simple for biomedical staff.



Median Total Planned Maintenance Cost of Ownership over a 12-Year Period¹



Low cost of ownership

The total cost of planned maintenance for the Aisys CS² anesthesia machine is significantly lower than other anesthesia machines in its class.¹

¹ This Planned Maintenance Total Cost of Ownership (TCO) study was commissioned and paid for by GE HealthCare. The published report was created by MarketVision Research and highlights their independent research findings of Total Cost of Ownership associated with major anesthesia machine brands in the United States based on feedback from biomedical engineers in facilities that perform planned maintenance in house. Refer to document JB66045US.

Keep downtime down with the right service plan

No need to worry about maintaining your fleet of Aisys CS² anesthesia machines with the right GE HealthCare service and preventative maintenance plan.

With AssurePoint™ Full Service plans and in-house service offerings you have choices to help keep your anesthesia devices operating at peak performance long after the warranty has expired.

Options can include

- Comprehensive on-site coverage
- Remote and phone support
- System repairs at our Repair Operations Center (ROC)

Contact your GE HealthCare representative today and find a service plan that complements your in-house expertise and budget.



Did you know?

Customers may achieve a 30% savings¹ by using a service contract for their planned maintenance versus requesting planned maintenance support on-demand.

Why partner with GE HealthCare?

- 2,600 service engineers across the U.S.
- 85K+ parts and accessories available online at serviceshop.gehealthcare.com
- Service history for 3.3 million devices
- Over 100 years of anesthesia experience

Anesthesia sustainability — stay eco-friendly

To help hospitals minimize greenhouse gas (GHG) emissions, GE HealthCare provides tools that can help reduce the consumption of inhaled anesthetic agents and capture CO₂ without jeopardizing patient care.

Et Control Software

Build confidence when you use the Aisys CS² anesthesia delivery system with Et Control* instead of relying on manual adjustments for managing agent and O₂ delivery. This software allows anesthesia providers to practice, safe low-flow anesthesia, while helping hospitals reduce GHG emissions by more than 40%¹ according to one study.

Carestation Insights Agent Cost Application

This convenient tool analyzes anesthetic agent usage for each case and tracks trends across different ORs. The information is displayed in a user-friendly app to help you drive compliance to low-flow initiatives and track environmental impact.

AMSORB® Plus CO₂ Absorbent

The unique absorbent formulation breaks down into harmless organic compounds, so it's easier on patients and staff and potentially simpler to dispose of by not going into medical waste. The violet color indicator lets you know when it's time to change the canister, so you produce less waste.

[gehealthcare.com](https://www.gehealthcare.com)

1. Tay, S, et al. Financial and environmental costs of manual versus automated control of end-tidal gas concentrations, *Anaesth Intensive Care* (2013); 41: 95-101.

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

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