Aisys™ CS² with ecoFLOW

Fully digital.
Fully connected.

gehealthcare.com

From anesthesia to analytics.
Each breath builds a more complete picture of your OR.

Advancements in digital technology are driving a new era of brilliant machines, big data and analytics. For anesthesia, it all comes together in the Aisys CS^2 — a technologically sophisticated class of digital Carestation™.

The Aisys CS^2 is a fully digital system designed for seamless connectivity with your other medical devices and your network infrastructure. With hundreds of data points captured during each breath and easy-to-use, cloud-based applications to analyze data, it's more than an anesthesia delivery system. It's the central command for your entire OR.

Leveraging our 100-year expertise as the global leader in anesthesia delivery, we redesigned the Aisys CS^2 user-interface and paired it with numerous intuitive workflow features. We also made it modular and upgradeable, so you can plan for the future while protecting your investment.

With a fully digital system that seamlessly connects to the rest of your hospital, the data you collect from each breath can inform the decisions you make to improve your OR.

Low tidal volume

As low as 5 mL

Delivers tidal volumes as low as 5 ml in PCV mode.[1]

Responsive

250x per second

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

Precise delivery

Precision volume and pressure delivery to the patient wye, breath by breath, helps reduce the challenges in managing neonatal and pediatric patients.

Circuit compliance compensation

Ensures that what you set is what you get, precisely showing what is delivered to the patient and taking into account volume in the patient circuit.

ICU inspired. Advanced ventilation with a personal touch.

The ventilation engine in the Aisys CS^2 is built around the electromagnetic proportional flow valve that precisely controls delivered volumes and pressures similar to those found in ICU ventilators like our CARESCAPE™ R860. This helps you ventilate the most difficult patients, from neonates to large adults.

ICU flow valve technology provides digitally controlled flow valves for fast response times. The Aisys CS^2 ICU flow valve technology quickly achieves and maintains set pressures and volumes to maximize the time available for gas exchange helping you confidently deliver care to all your patients, even the smallest ones.

The lung protective ventilation features on the Aisys CS[2] arm you with the resources to configure automated lung ventilation maneuvers. These programmable steps can enhance your ventilation techniques allowing for increasing and decreasing PEEP levels during mechanical ventilation.

Vital capacity procedure

Automates the manual bag "squeeze and hold."

PEEP can be programmed at the end of the procedure to help sustain an open lung.[2]

Cycling procedure

Allows you to configure a lung ventilation maneuver.

Programmable steps allow for increasing and decreasing PEEP levels during mechanical ventilation.

Compliance trending

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

More than 300 points of data.
One simple connection.

In an increasingly digital world, how our digital technologies connect to one another is just as important as the digital information that they create. Especially in technology-rich environments like hospitals.

With more and more digital medical devices capturing important information about patients, procedures and equipment performance, you need your technologies to be able to talk to one another and with your hospital infrastructure.

The Aisys CS^2 was designed to seamlessly connect with other medical devices and with your hospital's network. Using the industry standard HL7 protocol, it easily interfaces with your EMR, analytics platforms and care systems. Real-time data transmission can be configured to send important physiological, machine and service data automatically to the cloud for analysis and storage.

And because it uses the HL7 protocol, it speaks directly to your EMR without the need for a third party device. This gives it a plug-and-play ability that allows you to effortlessly connect to your hospital network.

Until now, anesthesia delivery systems have relied on a narrow pipeline to deliver connectivity needs. The Aisys CS^2 is designed to bring your connectivity infrastructure up to market expectations with a high speed, dedicated network connection that gives it a plug-and-play usability and a richer data set than previously available.
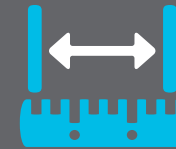
State of data flow in the past

236   100   10-30   EMR

MDI/Connection
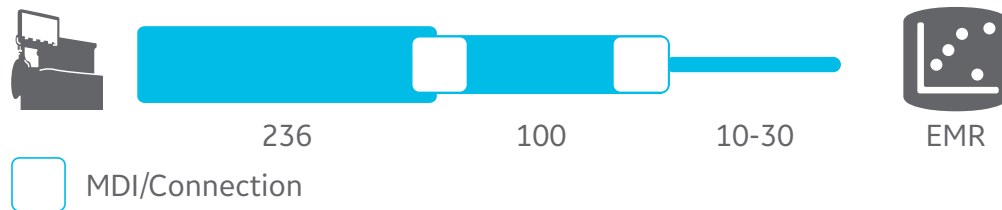
Aisys CS^2 data flow

300+   EMR

Brilliant machines

Brilliant machines with intelligent sensors and IT integration that help enhance productivity.

Big data

Data from these machines are funneled into software applications that help reveal insights.

Cloud based

A cloud-based ecosystem of brilliant machines and data analytics help improve performance.

Real time analytics.
Real life outcomes.

The Aisys CS^2 captures over 300 data points with every breath — like ventilation modes, peep settings, alarms and error codes — to help you track system performance, monitor costs and see where changes can be made to improve the patient experience.

We realize that data alone is of little use. It's what you do with it that provides value. To help you immediately start leveraging your data, we developed several cloud-based applications that address some of the OR's biggest challenges: agent cost, room utilization and lung protection.

These applications are easy-to-use dashboards accessible on your computer or tablet. They provide actionable data analysis and visibility into your OR to help reduce waste, increase room utilization or improve patient ventilation.

These three applications are just the beginning. Together, they use less than 10 percent of more than 300 data points available. There is an enormous opportunity to explore new ways of analyzing this data to develop a detailed understanding of your OR.
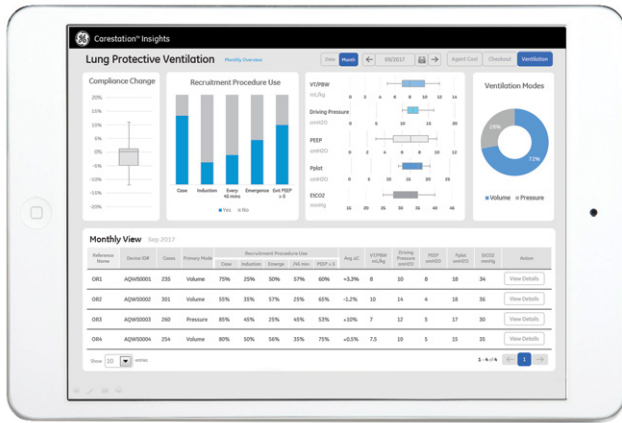
Lung Protective Ventilation Dashboard

Display ventilation characteristics and patient lung response across your department. Use the data to support lung protection initiatives to drive improved clinical outcomes and reduce post-operative complications.
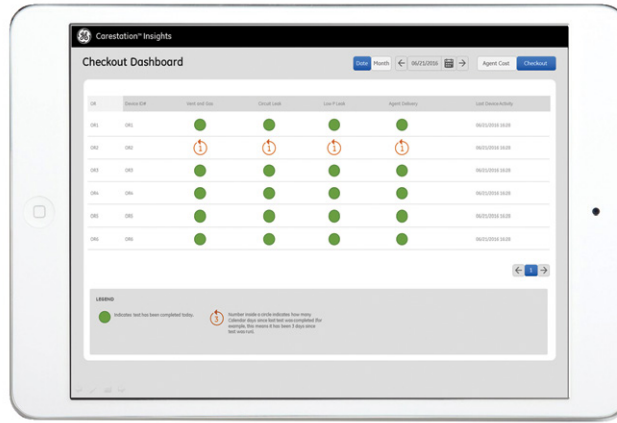
Checkout Dashboard

Keep track of when anesthesia machines were checked out across your entire department to improve scheduling workflow and ensure patient safety.
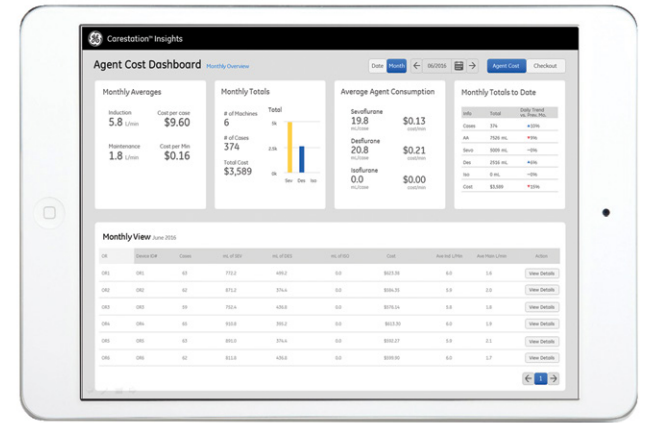
Agent Cost Dashboard

Provide transparency to anesthetic agent usage and costs across your department and use the data to support low-flow initiatives.

Carestation™ Insights is a suite of cloud-based applications designed to harness the power of connected Carestation data to create a digital ecosystem of brilliant machines. Cloud-based analytics algorithms and dashboards can transform complex data into actionable insights to help hospitals better drive operational, economic and clinical outcomes. As the Carestation Insights suite continues to grow, so too will the possibilities for better outcomes.

Low flow.
High impact.

The initial acquisition cost of an anesthesia system does not accurately reflect the total cost of ownership, because it does not include ongoing maintenance and operational costs. Anesthetic agents are the biggest ongoing expense associated with anesthesia units.[3] They are not only costly, but scientific evidence suggests that excess inhaled agents released into the atmosphere may have an effect on the environment.[4]

The ecoFLOW technology offered on the Aisys CS² is a display option that provides a graphical representation of oxygen flow and anesthetic agent use. This data can help you monitor and maintain the desired oxygen concentration for your patient and identify unnecessarily high fresh gas flow rates. ecoFLOW has the potential to deliver a positive impact on the environment and reduce agent costs when agent waste gases are reduced.

Clinicians skilled in the practice of low- and minimal-flow anesthesia delivery understand that sometimes less is more. The ecoFLOW digital display option shows your pre-set target and then calculates in real-time the cost of the liquid agent used that corresponds with your set flow.

Total Flow
l/min

15
9
3
2
1

Fi 25

O2 Total
2.4
Fi25 O2 flow

Agent

$ 30.82 /h

ml/h
200
20

Sev
30
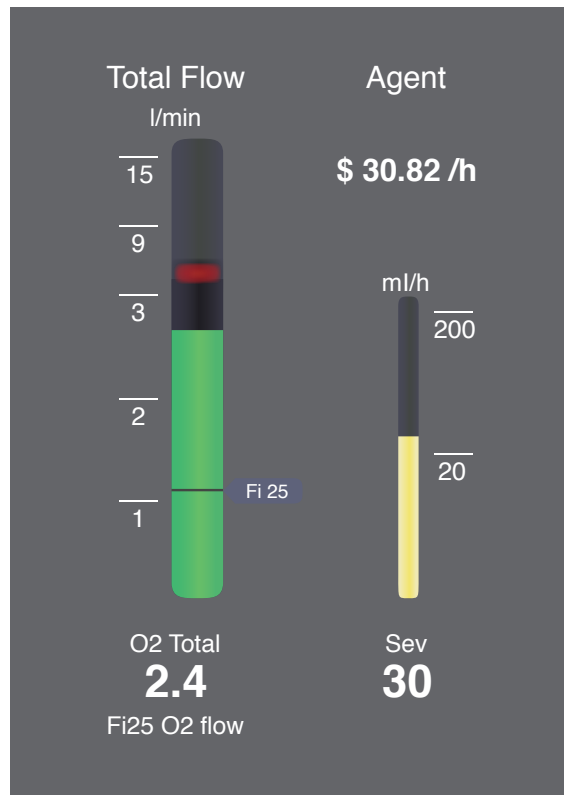
ecoFLOW technology

ecoFLOW offers a way to look at flow tubes to help you ensure your inspired oxygen target settings are achieved. The illustration shows flows above the Fi25 target as potential waste gas or excess to the patient's consumption.

ecoFLOW savings

ecoFLOW shows you a target and displays the cost of the liquid agent that corresponds with your set flow.

Use the information to adjust oxygen flow to help avoid hypoxic delivery or unnecessarily high fresh gas flow rates.

ecoFLOW benefits

Patient

View patient inspired oxygen target concentration data for precise care.

Ecological

Low-flow anesthesia may help reduce agent and gas waste.

Economical

Using less agent costs less — which can impact your bottom line.

Turn workflow
into careflow.

The Aisys CS² represents a convergence of our premium anesthesia and patient monitoring heritage. Monitoring and data management are seamlessly integrated through a user interface similar to that found in our CARESCAPE monitors. With time-saving quick pick choices, flat menus and tunneling alarms, the Aisys CS² can help you deliver precise care with a personal touch every day.

To help reduce alarm fatigue and avoid false alarms during mechanical ventilation, the Aisys CS² features Auto Alarm Limits software to help clinicians manage CO2 limit alarms and MV/TV alarm limits on a case-by-case basis. Also included is a mechanism to apply upper and lower limits for MV, TV, RR and EtCO2. The limits are calculated using a pre-defined formula based on the current measured values for these parameters during an individual case for tailored patient care.

The advanced digital features built into the Aisys CS[2] were designed to work together to make your workflow easier. Each piece of hardware, software and technology fits together in harmony to elevate your Carestation to become the information hub of the operating suite.

Vital capacity procedure

Automates the manual bag "squeeze and hold."

PEEP can be programmed at the end of the procedure to help sustain an open lung.[2]

Pause gas

One button temporarily stops all gas flows and suspends alarms, agent delivery and ventilation, allowing time to focus on the patient.

Compliance trending

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

Cycling procedure

Allows you to configure a lung ventilation maneuver.

Programmable steps allow for increasing and decreasing PEEP levels during mechanical ventilation.

Auto alarm limits

Manage CO2 and MV/TV alarm limits on a case-by-case basis.

Apply upper and lower limits for MV, TV, RR and EtCO2.

Small breathing system

Ensures fast circuit response during the critical induction and emergence phases of anesthesia delivery.

Helps support low-flow anesthesia cases.

Digital vaporization

With the precision and accuracy offered on the Aisys CS[2], clinicians can be confident that the information displayed is measured — not estimated.

Up to 2x the accuracy

Responsiveness to changes in the patient's status is measured in milliseconds.

Anesthetic delivery accuracy exceeds published performance specifications of other electronic and conventional anesthesia vaporizers.[5]

Overdose protection

Automatically prevents delivery if risk of overdose is detected.

Accidental awareness protection

Audible and visual warning alarms when anesthetic agent runs low.

After any vaporizer is filled, the clinician will be reminded to turn it back on with the last setting.

1. 15-inch touchscreen vent display

2. Central Brake

3. Digital vaporization:
   Aladin2 Cassettes

4. Metal work surface,
   bilevel illumination

5. Compact Advanced
   Breathing System

6. CARESCAPE Respiratory Module

7. CARESCAPE Monitor B850

8. Flexible mounting for EMR
   integration or navigator
   applications suite

9. InView patient rotating
   display arm for 360° view

The primary elements on the Aisys CS[2] — ventilator, vaporizer and gas delivery — are digitally controlled and measured, so you can integrate devices, therapies and information systems at the point of need. And with our suite of cloud-based analytics applications, Carestation Insights, you have access to over 300 data points to drive improved outcomes.
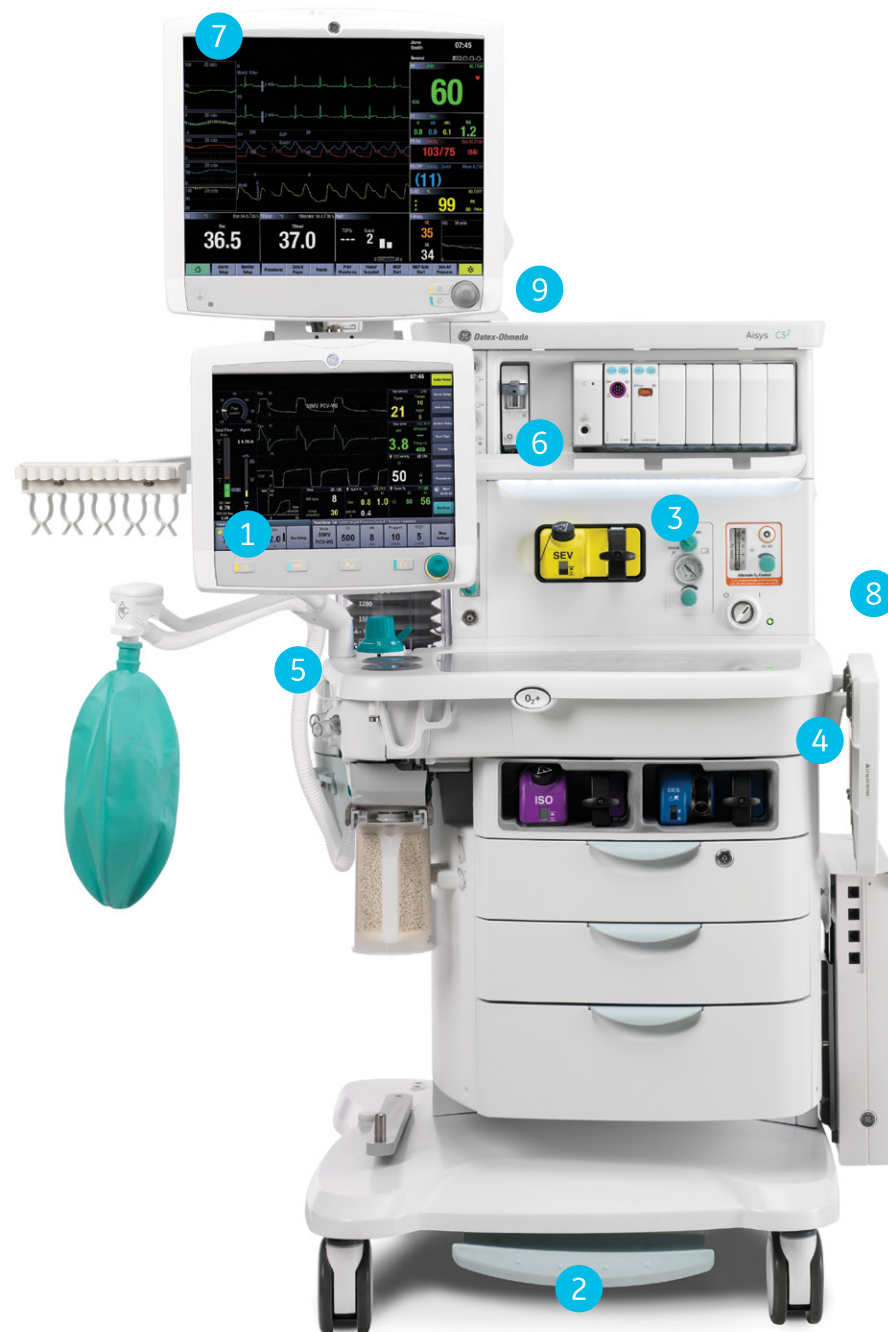
Safety in numbers.

Over a century of anesthesia innovation.

From Thomas Edison's first commercially viable light bulb to our first fully digital[6] anesthesia Carestation, we've continued to redefine what's possible.

Today, we provide anesthesia technologies in nearly every country in the world, collaborating closely with clinicians like you to impact the lives of your patients.

OVER 100
years in anesthesia

OVER 100
currently active patents[7]

OVER 100
thousand units
sold worldwide[8]

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

2 Tusman G, Bohm SH, Tempra A, et al. Effects of recruitment maneuver on atelectasis in anesthetized children. Anesthesiology. Jan 2003;98(1):14-22.

3 ECRI Institute Healthcare Product Comparison: Anesthesia Units. 2011.

4 Greening of the Operating Room: Reduce, Reuse, Recycle and Redesign ASA website PDFT. Kate Huncke, MD; Susan Ryan, PhD, MD; Harriet W. Hopf, MD; Deborah Axelrod, MD; Jeffrey M. Feldman, MD, MSE; Toni Torrillo, MD; William Paulsen, PhD; Caitlin Stanton, MPH; Spencer Yost, MD; Adam B. Striker, MD

5 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 Aladin 2 is up to 2 times (200%) as accurate as other vaporizers (Draeger Vapor 2000, Blease Datum, Penlon Sigma Elite).

6 General Anesthetic Gases and the Global Environment (author Yumiko Ishizawa, M.D., MPH, Ph.D.) Anesth. Analg. September. 2010

7 As of May 2012, active GE Healthcare anesthesia and respiratory patents issued in the United States.

8 Anesthesia machine shipments over the past 25 years based on GE shipping data.

GE Healthcare provides transformational medical technologies and services to meet the demand for increased access, enhanced quality and more affordable healthcare around the world. GE (NYSE: GE) works on things that matter – great people and technologies taking on tough challenges.

From medical imaging, software & IT, patient monitoring and diagnostics to drug discovery, biopharmaceutical manufacturing technologies and performance improvement solutions, GE Healthcare helps medical professionals deliver great healthcare to their patients.

Imagination at work