



BEACONMEDÆS

Lower your operational carbon **footprint**

Halogenated Drug Recovery System (HDR)





A trusted leader

BeaconMedaes is a leading specialist in the design, supply and installation of piped medical gas distribution systems. We proudly play a vital role in hospitals around the globe in sustaining patients when they are at their most vulnerable.



The BeaconMedaes promise:

- Industry expertise
- Commitment to innovation
- Product quality
- Flexibility and customization
- Design that puts patients and healthcare professionals first
- Service excellence
- Best-in-class solutions

Halogenated Drug Recovery System (HDR)

As the effects of climate change become more apparent, widespread and damaging, healthcare facilities are committed to lowering their greenhouse gas emissions. Reducing the environmental impact of anesthetic gases used in operating rooms can help reach this goal. The Halogenated Drug Recovery (HDR) system makes it possible. Developed and patented by BeaconMedaes, HDR allows hospitals to capture and contain anesthetic waste gases for recovery and reuse. The result: a more sustainable operation without compromising patient safety and comfort.



Ease of use



Full-service collection and processing



99% capture of halogenated anesthetic gases



Can be retrofitted into existing scavenging systems

Features

- **Low-impact collection**
 - Fully integrated with BeaconMedaes Anesthetic Gas Scavenging System (AGSS) and Waste Anesthetic Gas Disposal (WAGD).
 - Central collection means less operating room clutter.
- **Low maintenance**
 - No noise and no pressurized tanks to monitor.
 - Simple touchscreen set-up and monitoring.
- **Optional remote monitoring of HDR tank capacity by BeaconMedaes**
- **Automatic tank switching and bypass**
 - Optional automatic tank switching.
 - Automatic bypass can save energy when there are less surgeries.
- **System logging and reporting**
 - Know exactly how much anesthetic gas is captured.
 - Useful for carbon capture credits and rebates (depending on national and local regulations).
 - Optional connection to hospital communication systems and MyMedGas.
- **Sized and optimized for your specific needs to reduce waste and minimize space**

Applications

- Operating rooms
- Surgical centers
- Veterinary clinics

The BeaconMedaes Halogenated Drug Recovery (HDR) system is connected to our Anesthetic Gas Scavenging System (AGSS) or Waste Anesthetic Gas Disposal (WAGD). After the AGSS/WAGD remove waste anesthetic gas mixtures from operating rooms, the HDR captures them to allow for their recovery and reuse.



A patented recovery process

Today, anesthetic waste gases are simply released into the atmosphere. This comes at a significant environmental cost, as halogenated gases have a very high Global Warming Potential. The HDR offers a more sustainable solution. Its patented adsorption and desorption processes allows for recovery and reuse. Here's how it works...



1

REMOVAL

Inside the operating room, the Halogenated Drug Recovery System (HDR) System together with the Anesthetic Gas Scavenging System (AGSS) remove waste anesthetic gas mixtures to safeguard occupational health.

The HDR provides anesthetic waste gas capture capability for up to 40 operating rooms.

2

ADSORPTION: RECOVERY

Inside the plant room, the HDR is integrated with the WAGD/AGSS installation. It is equipped with a claw-type compressor, which ensures a constant gas flow from the WAGD/AGSS to the HDR and eliminates back pressure.

The HDR features two tanks filled with the proprietary Halosorb adsorbent. As the halogenated gases are pushed into the operational tank, the Halosorb adsorbs them until it is saturated. At that point, the system switches to the second tank containing refreshed adsorbent for uninterrupted operation. Tank capacity is tailored to each healthcare facility's needs, with replacement intervals of up to 6 months to minimize operational costs.

The HDR captures 99% of anesthetic waste gases, which today are simply released into the atmosphere.

3

DESORPTION: REUSE

BeaconMedaes removes the saturated HDR tanks and desorbs them. Using a proprietary desorption process, we safely remove the anesthetic compounds from the adsorbent and drain them in liquid form.

This allows the adsorbent to be reused, further lowering the environmental impact.

The captured anesthetics can be returned to a drug supplier for recycling or they can be responsibly disposed.

Achieving a smaller operational carbon footprint

Anesthetic gas management has long been considered an occupational health issue. The respiratory problems and long-term health effects related to exposure to anesthetic gases are well-documented. However, halogenated drug recovery can also play an important role in helping hospitals achieve their sustainability goals.

That's because anesthetic agents such as sevoflurane, isoflurane, and desflurane have an outsized environmental impact. In fact, some of these anesthetics have a global warming potential (GWP) ranging from 4000 to 6000 times more than carbon dioxide. Right now, 95% of anesthetic gases are released into the atmosphere after their use.

1 bottle of anesthetic gas = 2.6 tonnes of CO₂



Left unmanaged, anesthetic waste gases significantly contribute to the carbon footprint hospitals are trying to reduce. As climate change has already created wide-ranging health risks for millions, hospitals are committed to being part of the solution. National, regional and global agreements, such as the Paris Agreement, set standards, regulations, and incentives that affect both the everyday operations and the long-

term goals of healthcare facilities. HDR offers a practical, efficient solution with a significant impact on a hospital's emissions. With its high capture rate of potent greenhouse gases, this system's environmental gains outweigh emissions from recovery, transport, and production, achieving up to 90% eCO₂ reduction. It's the kind of result that allows hospitals to make a real difference.

Every surgery using sevoflurane releases up to 260kg of eCO₂—equal to driving a car 10 miles, burning a barrel of oil, or what 4 tree seedlings absorb in 10 years.



Proven results

A Canadian hospital put the Halogenated Drug Recovery System to the test, using it with a BeaconMedaes Anesthetic Gas Scavenging System to recover the anesthetic waste gases of 16 operating rooms. During the six-month study, the HDR prevented 35 tonnes of eCO₂ gases from being released into the atmosphere. At the same time, the hospital successfully maintained its high standards of patient care. Installation was easy

and the system required minimal attention from the technical team. Remote monitoring by BeaconMedaes ensured optimal operation of the system and timely tank replacement. With this, the hospital was able to continue to focus on safety and comfort, while significantly reducing its greenhouse gas emissions. Given these positive test results, the hospital decided to keep the HDR as its permanent anesthetic gas management solution.

How much can you save?

How much can the BeaconMedaes HDR reduce greenhouse gas emissions? It is estimated that a hospital with up to 10 operating rooms can save up to 597 tonnes of eCO₂ per year. Savings can go up to 2388 tonnes for large facilities with up to 40 operating rooms.*

*Actual system and eCO₂ savings will vary by site and external factors

Options & specifications



Unit specifications	
Standard tank sizes	60GAL or 120GAL typically
Adsorbent material	Patented halosorb
Compressor type	Atlas Copco DZSP claw
Compressor horsepower	20HP or 30HP typically
Compressor flow range	Sized to match WAGD/AGSS flow
Compressor pressure range	up to 30 psig
Electrical supply	208, 230, 380, 460, 600 (Vac 50/60Hz 3ph)
Sensors	Inlet pressure, outlet pressure, inlet and outlet gas concentrations
Piping connection sizes and types	2", 3", 4" Stainless steel
System weight	Up to 2500 lbs
Electrical certification	CSA



Life is in the details.

