HELISYS®

HELIUM RECOVERY & PURIFICATION

sysadvance®

VPSA TECHNOLOGY

INDUSTRIAL



CARBON FOOTPRINT REDUCTION

THE END OF HELIUM WASTE

RECYCLE

PURIFY

REUSE

Your HELIUM

Most Helium recovery systems just recycle your problems. HELISYS solves them.

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THE CRITICAL CHALLENGE

THE REALITY OF TRADITIONAL HELIUM RECOVERY

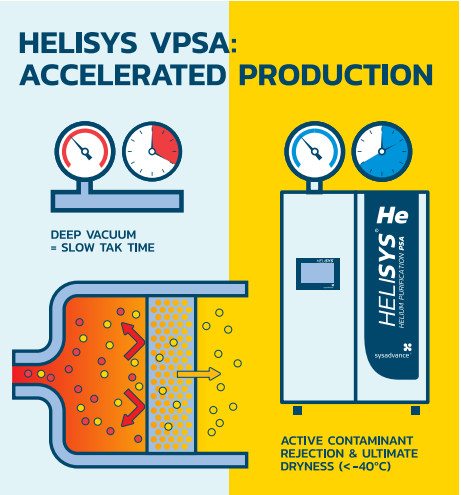
Most **Helium Recovery** systems on the market today offer only passive recovery. They collect, compress, and filter for dust, but they cannot stop the buildup of atmospheric air – containing N_2 and O_2 as well as moisture. This creates a "Dirty Loop" that eventually compromises your entire process, and forces costly Helium "dirty venting" and fresh make-up.

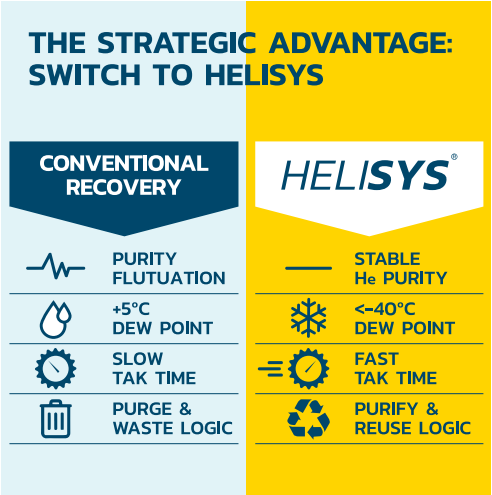
THE "PURGE TRAP"

As Nitrogen, Oxygen, and humidity accumulate, your Helium purity decays.
This forces you into a cycle of "Postponed Waste":

- **VENTING PROFITS**: You must frequently vent "dirty" Helium to the atmosphere just to refresh the system;
- **CONSTANT RE-PURCHASING**: You remain dependent on expensive, fresh makeup Helium to fix purity drops.
- **PROCESS INSTABILITY**: Fluctuating purity leads to inconsistent leak test sensitivity.







The HELISYS Insight:

"If you still have to purge, you aren't saving.
Close the loop and truly Reuse Helium with Helisys."

VPSA TECHNOLOGY

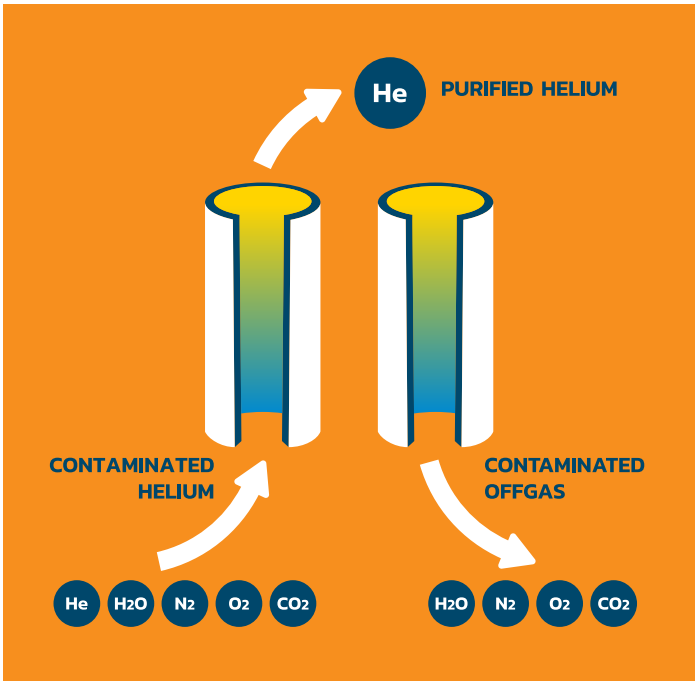
HELISYS VPSA PURIFICATION TECHNOLOGY

Contaminated Helium is fed to the **Helisys** unit that uses Pressure Swing Adsorption technology to remove contaminants N_2, O_2, CH_4, Air, H_2O and CO_2.

The **Helisys** units contain two (or more) columns packed with a selective adsorbent, taylored to retain contaminants and allow Helium molecules to pass. Each column undergoes a cyclic sequence of high- and low-pressure steps, to produce a continuous flow of high purity Helium.

The adsorbent regeneration step is assisted by a vacuum system to enhance the process efficiency. The residual
Helium desorbed during the regeneration step is recycled into the Helium gas bag, resulting in high Helium recovery rates.

The **Helisys** unities are fully automated and cycles are controled based on inlet and outlet He composition, assuring purity.



HELISYS *VS.* CONVENTIONAL RECOVERY

	HELISYS®	VS.	CONVENTIONAL RECOVERY
REMOVED CONTAMINANTS	N_2, O_2, CO_2, H_2O, Oil, CH_4, dust		H_2O
RECOVERY	Up to 98% Constant		Variable and decreasing
DEW POINT	-40° C Constant		Constant up to +3° C
PURITY	Constant (up to 99,999%)		Variable
TAK TIME	Lower vacuum – Faster tak		More vacuum – Slower tak





HELISYS ADVANTAGES

ACTIVE VPSA TECHNOLOGY: A GAME-CHANGER FOR INDUSTRIAL EFFICIENCY

Helisys is not a basic filter; it is an advanced Vacuum Pressure Swing Adsorption (VPSA) engine that actively strips away contaminants to keep your loop pristine.

1. FASTER TAKT TIME (PRODUCTION SPEED)

Traditional recovery requires a deep, time-consuming vacuum in the test chamber to avoid air contamination. Because **Helisys** continuously removes these excess contaminants, you can operate with a shallower vacuum. This significantly accelerates your production cycle, allowing more parts to be tested per hour.

2. ULTIMATE DRYNESS (< -40°C DEW POINT)

Using proprietary molecular sieving technology, **Helisys** achieves a dew point of < -40°C. It eliminates water vapor and CO_2, preserving sensitive test components – especially those using specialized oils or refrigerant gases – from degradation and corrosion.

3. HELIUM PURITY AND SETPOINT STABILITY GUARANTEED

Whether you need to concentrate helium from a low 2% or maintain a 4.0 purity grade, **Helisys** adapts to your needs. It rejects Nitrogen, Oxygen and moisture continuously, ensuring your helium gas (pure or N_2/He mixture) stays at its target composition without the need for frequent fresh Helium "make-up."

OTHER ADVANTAGES

- Continuous Purification: Reject contaminants in real-time, even with changing composition;
- Accelerate your Production: Less vaccum – > Significantly reduce Takt Time;
- High Helium recovery rates, up to 98%;
- Huge savings on Helium cost,up to 98% – Short payback period;
- High and constant purity (up tp 99.99%);
- Adaptative purity control: Maintain your He purity even with changing inlet conditions;
- Also suitable for He / N_2 mixtures;
- Seamless integration with existing recovery systems.









TECHNICAL DATA

SIZED FOR PERFORMANCE. SCALED FOR YOUR LOOP.

Standard Industrial Solutions: **The Helisys SAVER SERIES**

Specifically conceived for standard Helium leak test loops.

MODEL	MAXIMUM LOOP FLOW CAPACITY	APPLICATION FOCUS
Helisys SAVER I	30 Nm^3/h	Individual stations or small-scale loops
Helisys SAVER II	60 Nm^3/h	High-throughput automotive or HVAC lines

ENGINEERED-ON-DEMAND: THE S-SERIES

For large-scale processing, concentration from diluted streams, or ultra-high purity requirements.

- **Helisys 1S (Single Stage)**: For concentration or polishing applications.
- **Helisys 2S (Dual Stage)**: Two separation stages for maximum purification effort.

TECHNICAL SPECIFICATIONS SUMMARY

FEATURE	SAVER Series (Standard)	S-Series (Engineered)
Capacity	30 / 60 Nm^3/h	Up to 2,000 Nm^3/h
Standard Pressure	6 to 9 barg	8 to 9 barg
Dew Point	< -40°C	< -40°C
Contaminant Rejection	Continuous (N2, O2, Ar, CO2)	Custom configured (incl. CH4)
Purity Logic	Stable at Setpoint	Customizable up to 5.0 Grade

HELIUM INDUSTRIAL APPLICATIONS

Automotive components



MRI (Magnetic Resonance Imaging)



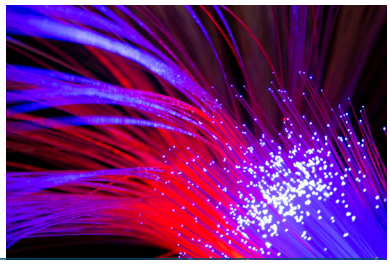
Aviation & Aerospace components



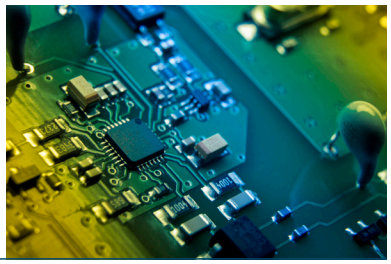
Airship industry



Fiber optics manufacturing



Semiconductor manufacturing



Helium extraction and exploration



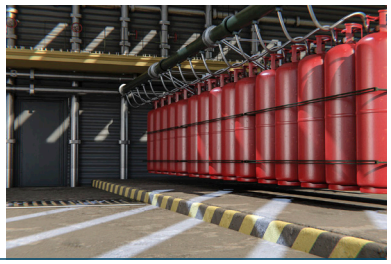
Nuclear power plant



Hermetic compressors/ radiators/ refrigeration



Fireproof equipment



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Ready to start saving money?

Contact Sysadvance for a Technical Helium Audit and see how much faster and more sustainable your production can be.

PURIFY & REUSE HELIUM. EMPOWER YOUR BUSINESS.

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