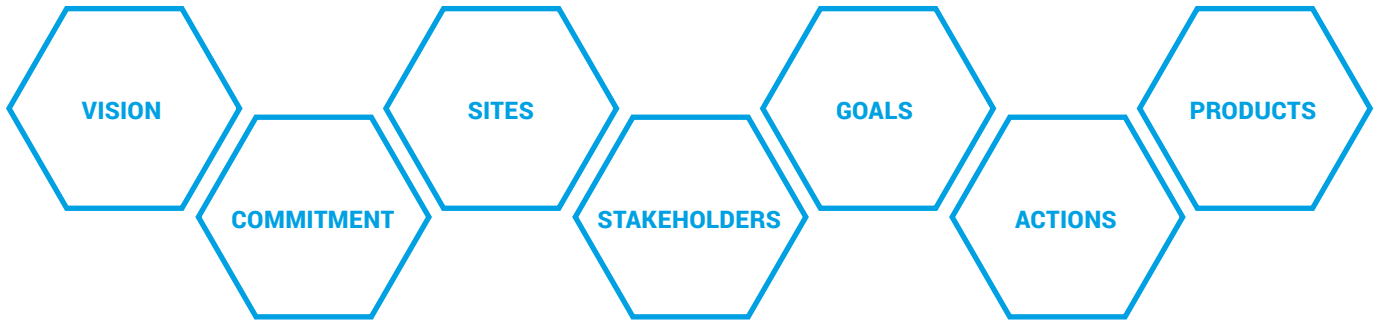


Sustainability in the Vacuum Industry: a Guide to Agilent Vacuum and Leak Detection Green Solutions





How the Agilent Vacuum Products Division Executes on Sustainability

As the Agilent Vacuum Division, we want to enable our customers to advance discoveries and improve the quality of life by offering innovative vacuum solutions

Our goal is to embed sustainability into all aspects of our job all day and every day through people, products, and processes



Lower CO₂ emission



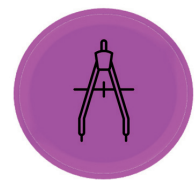
Reduce waste and maximize recycled quota



Limit H₂O consumption



Optimize energy consumption



Sustainable product design

Agilent Sustainable Vacuum Sites

The *Agilent Vacuum Products Division* operates through sites in *Lexington (MA, USA)*, *Torino (Italy)*, and *Penang (Malaysia)*. These sites prioritize environmental responsibility in manufacturing processes. They do this by striving to minimize their carbon footprint and reducing energy consumption, emissions, and waste, while maximizing the efficient use of natural resources such as water and raw materials.



Agilent Sustainability Stakeholders

Agilent Vacuum’s approach to sustainability is based on teamwork involving multiple stakeholders:

Agilent Corporate Structure

Provide directions, framework, and resources to promote sustainable growth across all sites.

[Learn more](#)

Employees

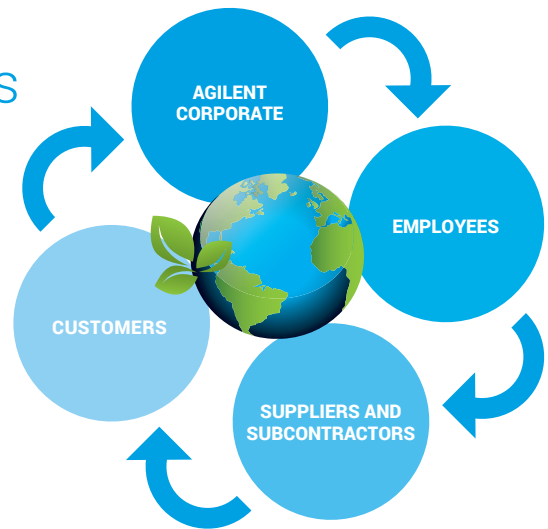
Implement sustainable initiatives within the workplace and propose improved processes as well as state-of-the-art products design.

Suppliers and subcontractors

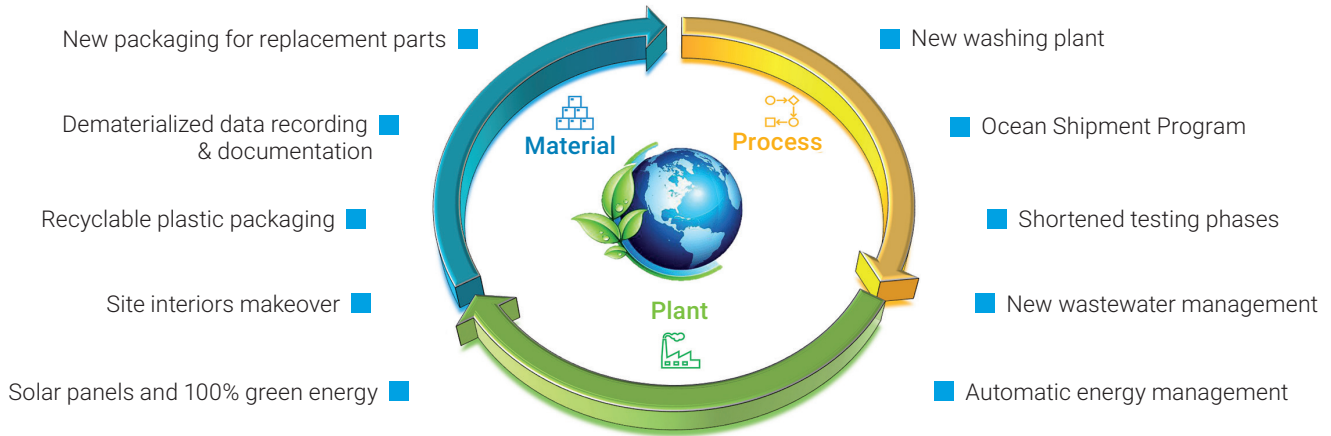
Contribute to company’s sustainability practices by providing products and services aligned to Agilent values and directions. They deliver “green” components for our sustainable products as well as services meant to reduce energy and water consumption and minimize waste.

Customers

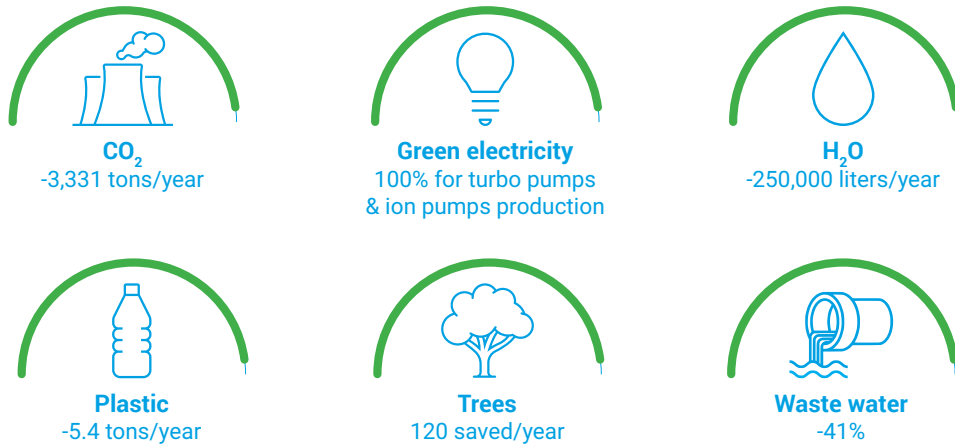
Influence sustainability practices by choosing Agilent Vacuum for its alignment with their values and beliefs. Through Agilent products they achieve sustainability goals by presenting themselves as active players in the green economy.



Agilent Vacuum Actions for Sustainability



Advancing the quality of life



100% green energy for Torino site

The Agilent site in Torino, where turbomolecular and ion pumps are designed and produced, has been using only green *electrical energy* from renewable sources *for its operations since 2022*.

Using 4 GWh of green energy per year allows the Torino site to *avoid the production and release of 1,350 Tons of CO₂ per year*.



Solar Panels

The Agilent Vacuum division decided to produce *green energy itself* as well.

- Large solar panel installations in *Torino* generate 415 MWh energy per year, covering more than 10% of site needs and saving 140 tons of CO₂ per year.
- The *Lexington* site installed carport solar systems able to generate 634 MWh per year, saving 214 tons of CO₂ per year, generating almost 40% of energy required by the site.

Torino (Italy) - Lexington (MA)

Roof and carport solar systems installed in the two sites provide 10% and 38% respectively of site power consumption.

This generated energy contributes toward bringing more green energy into the grid and promoting the culture of sustainability in our communities.

Site Interiors Renovation

The Agilent Vacuum Division renewed its *Torino headquarter site interior and production area energy management systems* to pursue its livability and sustainability goals.

The Torino site *cut 10% of its electrical power* consumption by installing efficient air conditioning and heating systems, a LED lightening apparatus, electrical energy control networks, and inverter driven manufacturing machines.

This is equivalent to *saving 165 tons of CO₂ per year*.



Ocean Shipment Program

Airfreight has the most significant carbon footprint compared to ocean freight. Flights emit 600 g of CO₂/tons per kilometer, while ships emit only 10 to 40 g of CO₂/tons per km.

Agilent Vacuum implemented the "*Ocean Shipment Project*" to cut CO₂ emissions from transportation to logistic centers, cutting 1,380 tons of CO₂ emissions per year.



New washing plant

Agilent vacuum pump components manufactured through industrial processes such as electrical discharge, milling, or grinding undergo dedicated washdowns to remove debris and lubricating fluids. In the *Agilent Industry 4.0* framework, a fully automated cleaning process has been implemented.

It is now a green process thanks to high-performance filtering and recycling systems for a reduced use of water and detergents.

Detergents, acidic and alkaline compounds, and chlorinated solvent vapors are safely used, recovered, and recycled for an effective and ecological washing process.

Constant checks on water turbidity and electrical conductivity ensure the optimized use of water and detergent.

Detailed control plans prevent environmentally harmful process drifts and limit waste from consumables, such as quartz media and activated carbon filters.

Manual operations are *eliminated and the possibility of human error* in detergent dosage, water discharge, and water temperature are reduced to zero. The environmental advantage translates into *saving 25% of water equal to 250 m³/year and reducing 41% of wastewater*.





Recyclable Packaging

Packaging can have significant environmental impact throughout its lifecycle, from production to disposal.

Agilent Vacuum is constantly striving to use more recyclable plastic.

For example, 100% recyclable packaging air cushions and eco-friendly carton boxes were implemented to avoid the use of approximately 500 Kg of nonrecyclable plastic per year.



Production processes green upgrade

Agilent products manufacturing processes are constantly upgraded to find sustainable options:

- Rotary vane pumps end-of-production burn-in cycle was optimized resulting in a 35-MWh energy and 12-ton CO₂ emission reduction.
- Rotary vane pumps in production testing benches are maintained through a vacuum components refurbishment program to avoid their replacement and achieve a saving of 400 CO₂ Kg/year saving.

Dematerialized Data Recording

Agilent Vacuum implemented a new Manufacturing Execution System (MES) to manage, control, and optimize manufacturing processes in its Penang and Torino factories. The new system made it possible to transition from paper documents, used to track production processes, to digital documents, saving more than 20,000 paper sheets per year.



Dematerialized User Manuals

The documentation dematerialization strategy positively impacted the user manuals area as well. Previously, more than 50,000 CDs and roughly 10,000 paper format manuals were produced and shipped, creating a negative environmental impact due to nonrecyclable plastic, CO₂ generation and paper use.

The dematerialization converted all Agilent CD and paper format user manuals to digital format files.

These can be easily found in each product page on [Agilent.com](https://www.agilent.com).

User manual dematerialization has prevented 4.9 tons of nonrecyclable plastic from being released into the environment and saved 1.1 million sheets of paper (equivalent to more than 120 trees/year).



Hybrid Smart Working

Agilent enabled the Flexible Workplace Program impacting approximately 60% of vacuum division employees at all sites.

Remote working created a number of advantages in several ways, including promoting employee wellness and productivity and reducing site environmental impact.

This approach reduced the amount of annual commuting for Agilent employees and has helped Agilent to cut its carbon footprint.

Almost 70 tons of carbon dioxide per year have been saved.



Sustainable Vacuum Products



Scroll Pumps

Agilent scroll pumps contribute to sustainability from multiple perspectives:

- They operate using oil-free technology, *eliminating the risk of oil contamination* and reducing harmful emissions. This makes them an eco-friendly option.
- They provide high pumping speeds and high flow rates, which can increase production efficiency in industrial environments, resulting in *lower overall energy consumption*.



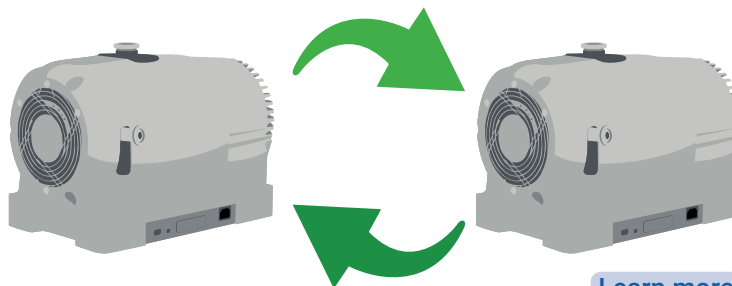
[Learn more](#)



- Pump design is optimized to extend the tip-seal life expanding maintenance intervals, resulting in reduced downtime. This is not only more cost-effective but also *reduces the generation of waste and the environmental impact of maintenance activities*.

[Watch now how to change the tip seals in IPD dry scroll pumps](#)

- The Agilent Exchange Service Program allows you to return your old pump and acquire a refurbished pump. Most *parts are re-used and never go to waste*.



[Learn more](#)

Diffusion Pumps

Despite the presence of oil, Agilent diffusion pumps contribute to sustainability in several ways according to the specific application and operating conditions:

- Agilent diffusion pumps provide high pumping speeds and vacuum efficiency, managing large gas loads with a relatively low power consumption and a small backing pump. This results in *energy savings and reduced greenhouse emissions*.
- Agilent diffusion pumps are made of durable materials and are designed to *operate for long periods of time* without significant maintenance. This reduces the need of pump replacements and *breaks down the amount of waste generated*.
- Most parts which constitute Agilent diffusion pumps are made of stainless steel or other *recyclable materials*, which can be re-used or recycled at the end of their service life cycle.
- The quantity of cooling liquid required is less than the amount of water needed by other pumps in the market – according to models, by an amount of *20 to 40 percent*. This makes a positive impact on the water consumption and electricity used to maintain the temperature on the right level when a chiller is used.
- Diffusion Pumps are provided with *eco-friendly packaging* produced with recycled materials.



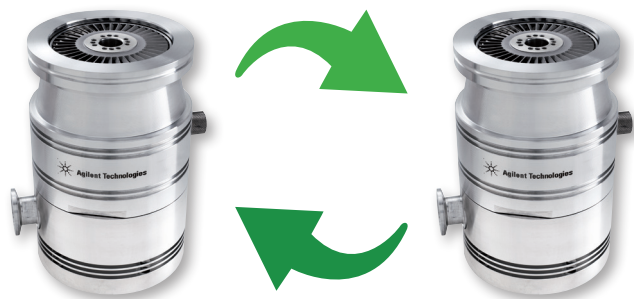
[Learn more](#)



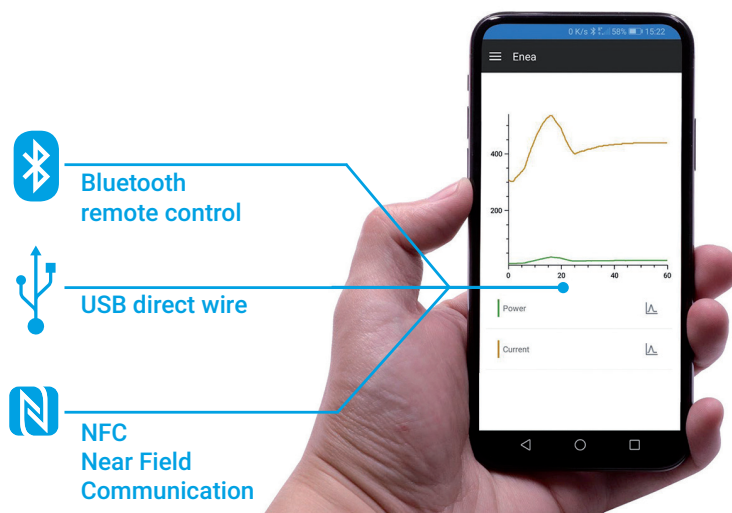
Turbomolecular Pumps

Agilent turbomolecular pumps have the potential to reduce energy consumption, waste generation, and environmental impact in academic, instrumentation, and industrial contexts thanks to several characteristics, such as:

- The Vacuum Link mobile app allows for direct communication and full control of the pump so wired connections to remote electronic control units aren't needed.
- The control system continuously monitors the pump working parameters, *self-adjusting power*, and temperatures, and minimizes energy consumption/waste.
- *Integrated electronics* introduced with TwisTorr 305-IC turbo pump provides *optimized power consumption and efficiency*.
- The long service life of Agilent turbomolecular pumps reduces downtime, resulting in a more cost-effective operation and a *reduced generation of waste and environmental impact of maintenance activities*.
- The Agilent *Exchange Service Program* allows you to return *your old pump* avoiding the generation of waste. Most of the parts are re-used to produce refurbished pumps, that are designed and tested to provide the same performance, quality, and durability of brand-new pumps, resulting in an environmental benefit.



[Learn more](#)

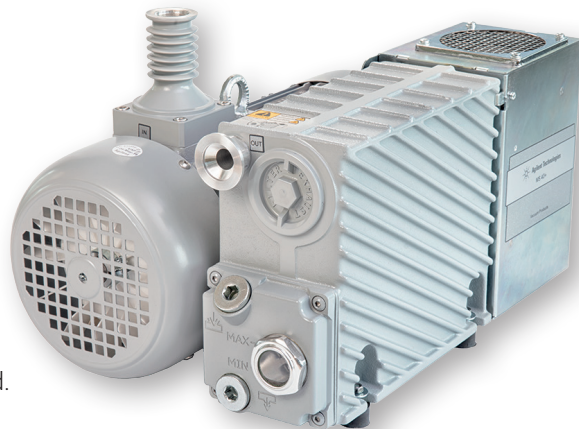


Pump produced in a factory where 100% of renewable energy is used

Rotary vane pumps

Agilent rotary vane pumps have features that make them an environmentally friendly product, even though they use oil as a sealing element.

- Agilent rotary vane pumps are known for their *durability and long lifespan*. They assure a long-lasting operation, reducing the waste generated from the disposal of old pumps.
- They require *minimal maintenance*, doable through a do-it-yourself offered kit and step-by-step guidelines. Shipment to service centers and service engineers' visits are not needed. It results in a cut in CO₂ and a consequent positive impact on the environment.
- Agilent smart rotary vane pumps such as the MS-40 and MS-120 are equipped with inverter technology. They automatically adapt rotational speed and pumping speed and consequently power absorption according to the application. They are eco-friendly due to the reduced power requirements: a start up current lower than 10A and a standby mode.
- Agilent environmental protection tools such as the *oil return kit*, the *integrated anti suck-back valve*, and the exhaust filter prevent oil leaks and oil vapor from releasing in the atmosphere.
- The Agilent *Exchange Service Program* allows you to *return your old RVP* avoiding the generation of waste. Most of the parts are re-used to produce refurbished pumps assuring the same performance, quality, and lifespan of a new pump, resulting in a consequent environmental benefit.

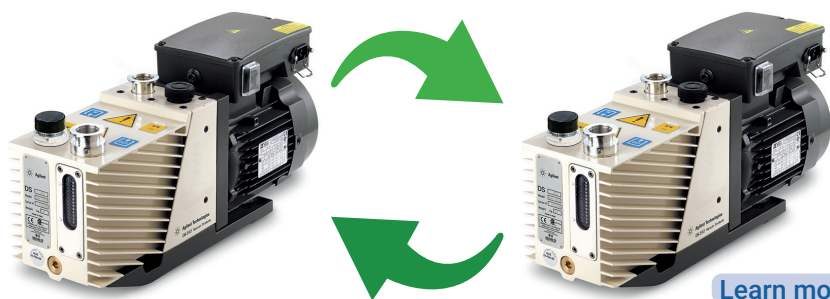


[Learn more](#)



Oil Return Kit

[Learn more](#)



[Learn more](#)

Ion Pumps

Agilent Vaclon pumps represent the best and most sustainable choice in UHV and XHV applications for a variety of reasons:

- *High vacuum performance with low energy consumption* is provided, with a consequent positive impact on lab experiment overall energy consumption.
- Most of Agilent ion pump *parts are made with recyclable materials as stainless steel*. This factor helps in reducing waste and pollution, related to vacuum systems dismantling.
- Agilent ion pumps' *extremely long lifetime and minimal required maintenance* allow them to operate for long periods of time without needing to be serviced.

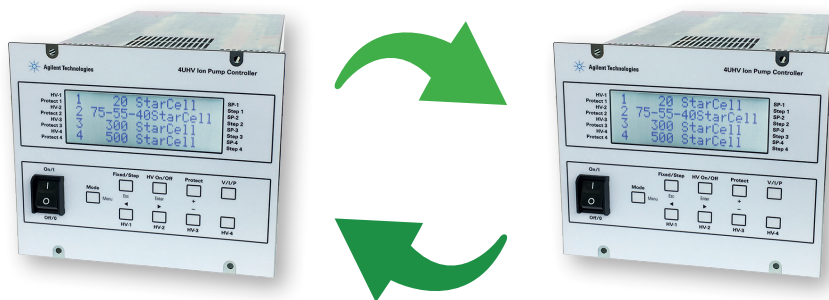
Very few resources are used to maintain and repair them with a positive impact on the environment.

- Pumping elements mounted in Agilent ion pumps can be easily regenerated by means of a heating process. This action allows the user to avoid replacing expensive and environmentally impactful components resulting in a sustainable pump lifecycle.
- The IPCMini ion pump controller uses half of the power applied by similar products on the market to start and operate ion pumps.
- The Agilent Exchange Service Program allows you to remove old electronic units reducing the amount of waste in the environment.

[Learn more](#)



Pump produced in a factory where 100% of renewable energy is used



[Learn more](#)

Leak Detection Products Fostering Environment Protection

[Learn more](#)

Helium leak detectors

Agilent helium leak detectors are easy-to-use instruments to support sustainability policies by reducing waste, promoting energy efficiency, increasing safety, protecting the environment, and improving quality control in various industrial and laboratory applications:

- The Agilent HLD, C15 and PHD-4 can quickly and accurately detect and measure leaks in vacuum and pressurized systems. This helps *reduce waste generated by the contamination of processed materials* and to prevent the *dispersion of pollutant gases* (such as refrigeration gases from air conditioning systems) or *liquids and chemicals* in the environment.
- Agilent helium leak detectors can be used to test the quality and reliability of industrial components in aerospace, automotive, or medical applications *preventing product failures and therefore reducing waste*.



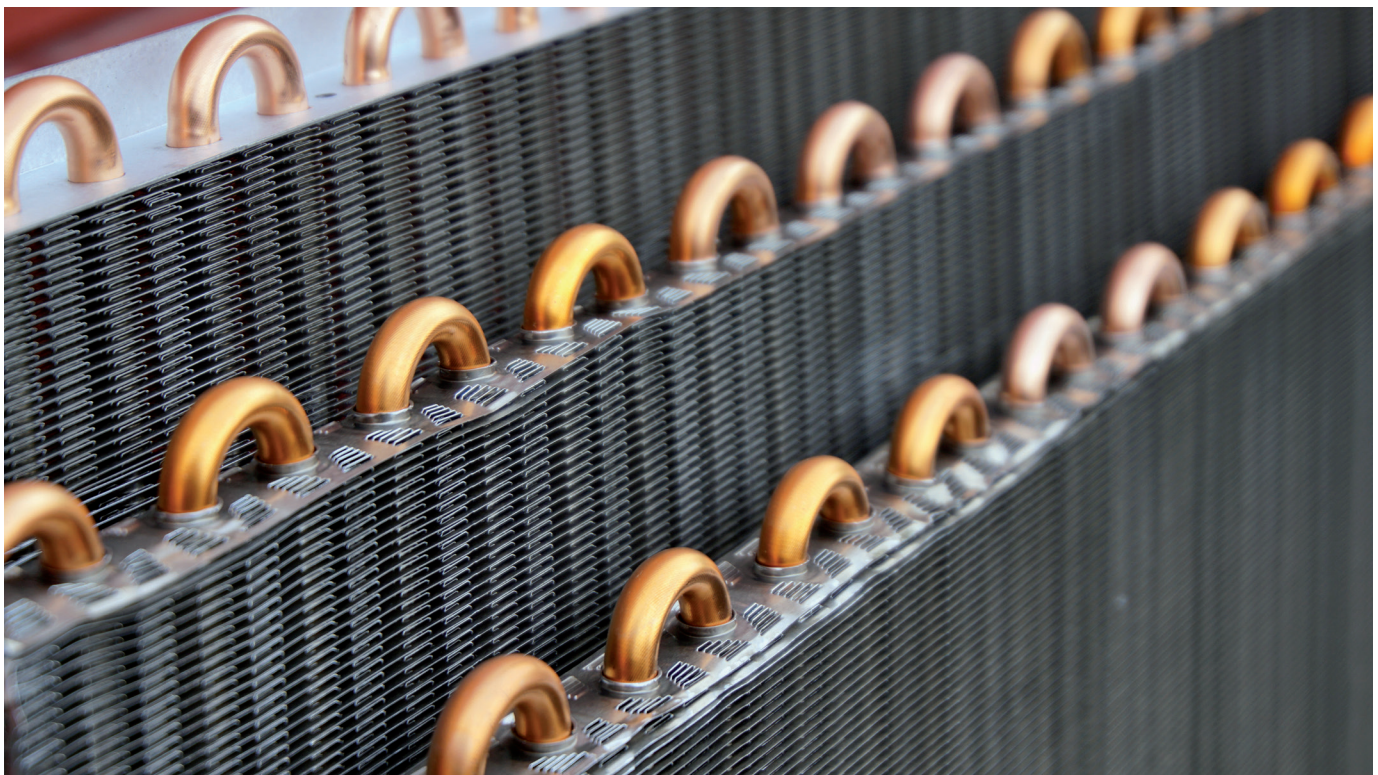
HLD
Stand alone



C15
for integration



Portable
PHD-4



Vacuum Service Options to Keep You Running and Sustainable

Agilent offers a range of solutions to keep your vacuum system or leak detector operating at peak performance while taking care of the environment.

Advance exchange service:

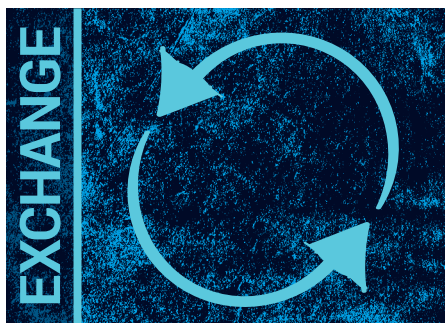
A service aimed at replacing pumps in the field. Downtime is minimized by returning your old pump and receiving a refurbished one in days.

Environmental impact is reduced:

- Returned pump parts are used to produce refurbished units.
- The same packaging employed to deliver the new pump can be used for the return, saving more than 2,500 complete packages per year.



[Learn more](#)



Technology Refresh and Upgrade:

Old technology pumps and leak detectors have a large environmental impact. An Agilent-specific refresh program allows you to *remove old products from the field* and replace them with more modern and *greener products*.



Local repair centers:

Local repair centers have opened globewide to shorten travel distance, time, and minimize the CO₂ emission. More than 1,000 *intercontinental transports* have been replaced by less environmentally impactful *local shipments*.

How Customers can benefit from Agilent's sustainability efforts



Build trust with final customers

Companies leverage on sustainability information to make informed decisions and select suppliers and products. A sustainable approach to business builds trust and loyalty with final customers and creates a long-term competitive advantage in the marketplace.



Take care of reputation

Sustainable companies are seen as more trustworthy and reputable by final customers.



Control environmental impact

Customers want to know that the products they buy are produced in a responsible way and can help them in respecting their own sustainability commitments.



Keep focus on health and safety

Customers want to know that the products they buy are safe and healthy to use.



Streamline processes and foster efficiency

Sustainable products and services are often intrinsically agile and more productive.



Learn more:

[Environmental, Social, and Governance at Agilent](#)

For information about Agilent Vacuum sustainable products:

[Vacuum Technology, Vacuum Pumps & Systems | Agilent](#)

Get answers to your questions about how Agilent products can help your sustainability initiatives:

[Technical Support | Agilent](#)

Agilent Online Store:

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