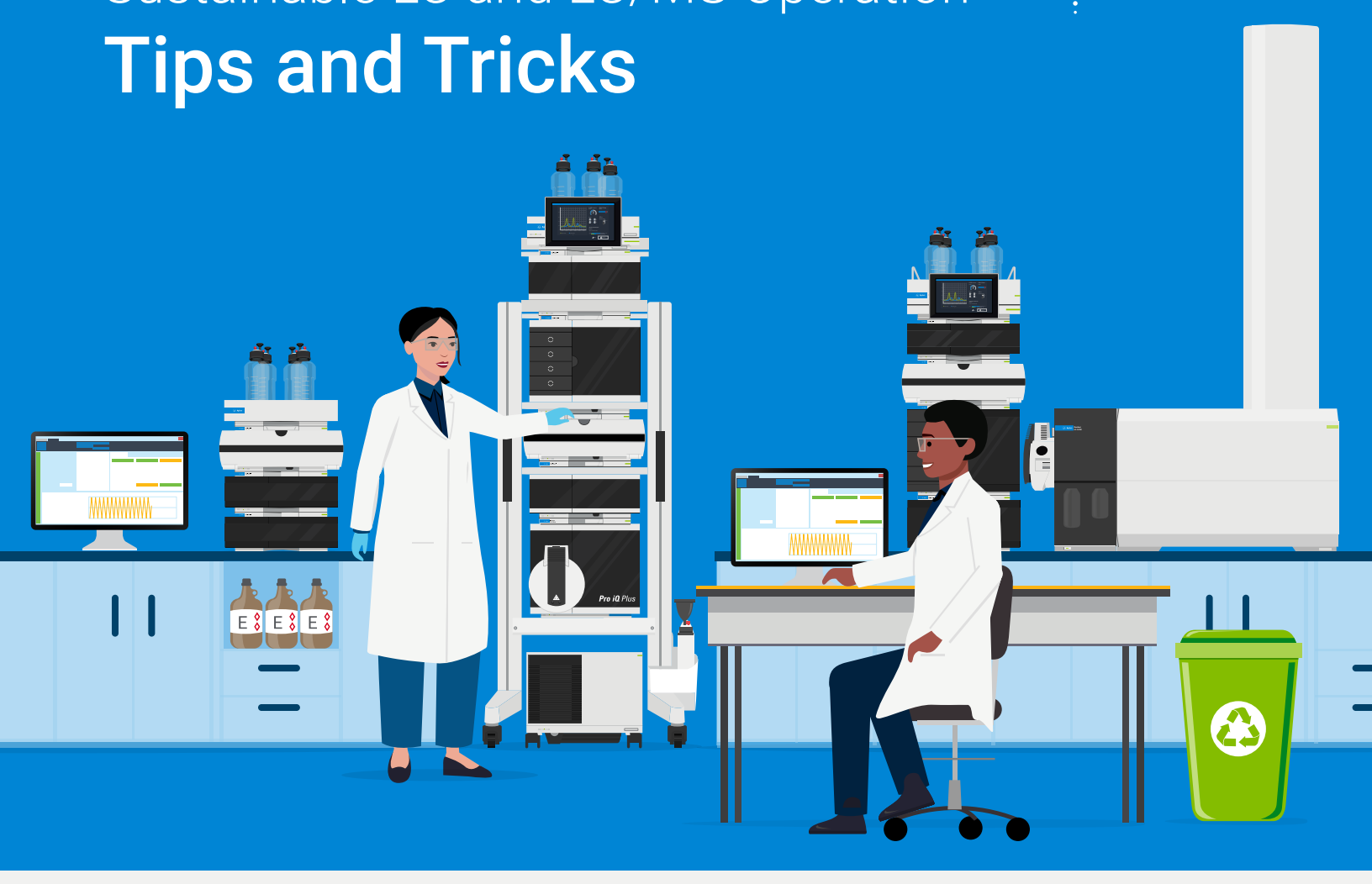
Sustainable LC and LC/MS Operation

Tips and Tricks



>85% of an LC's carbon footprint comes from the use stage.

Agilent Infinity III LC System "Cradle-to-Grave" Product Carbon Footprints White Paper 2026

At Agilent, sustainability means empowering labs like yours to reduce environmental impact without compromising analytical performance. Backed by decades of scientific expertise and a deep focus on sustainable innovation, Agilent is your committed partner in supporting greener, more responsible science in your lab.

Use this guide to help reduce waste, energy use, and resource consumption in your LC and LC/MS workflows.

Easy sustainability wins without impacting your method

Use the Agilent InfinityLab Assist tasks to create automated make-ready, standby, purge, and shutdown LC workflows to cut unnecessary solvent consumption and reclaim up to 125.5 hours/year analyst time per instrument. Without InfinityLab Assist, you can set up a standby method in OpenLab or MassHunter software or your LC pilot.

Use the Agilent InfinityLab Assist health interface to view real-time insights via instrument trends and early maintenance feedback counters to improve solvent efficiency and reduce downtime. Without InfinityLab Assist, you can view these metrics in Lab Advisor.

Use autosampler/multisampler injector programming to automate dilution and cut excess solvent waste.

Utilize solvent prediction to forecast solvent requirements, ensuring you make just enough solvent for uninterrupted analyses and reduced chemical waste.

Switch to well plates instead of glass vials to cut your carbon footprint by up to 10%.

Adopt amber solvent bottles to extend solvent shelf life for reduced degradation, fewer remakes, and lower overall solvent waste.

Use scheduled tune to prepare the LC/MS system in advance, reducing setup time and lowering overall power consumption.

Use standby mode on the LC/MS during idle periods to reduce gas consumption up to 75%. Automate standby mode by adding a post-worklist standby script in MassHunter worklist run parameters.

Use VacShield on LC/MS for ventless ion capillary cleaning, eliminating the need to vent and pump down the mass spec—saving power and 5 hours of downtime.

Elevate your lab's sustainability game to the next level

Utilize BlendAssist software to automate solvent blending during method development and reduce solvent use by 33% per year.

Implement Agilent Buffer Advisor software on your quaternary pump to create right-first-time buffers for reduced solvent waste and more sustainable ion exchange method development.

Swap to smaller ID and shorter LC columns with reduced particle sizes by moving to UHPLC to cut solvent consumption with the LC method translator app.

Consider alternative, greener HPLC-grade solvents like ethanol to reduce hazardous exposure and carbon footprint.

Consider InfinityLab Stay Safe caps to minimize solvent evaporation and reduce hazardous waste generation for safer laboratory operations.

Consider guard columns and inline filters for column and instrument longevity.

Leverage ISET to enable one UHPLC system to perform the work of two instruments for optimized asset utilization and rightsizing your fleet.

Use automated column regeneration and dual-needle injection to reduce downtime between runs with up to 60% time savings per batch, ultimately saving solvent and energy in high-throughput labs.

Evaluate switching to an oil-free dry pump for LC/MS to cut energy use and heat output by more than 50%—and eliminate oil waste entirely.

Use intelligent reflex workflows to automatically reinject outlier samples to reduce unnecessary reruns and save valuable resources.

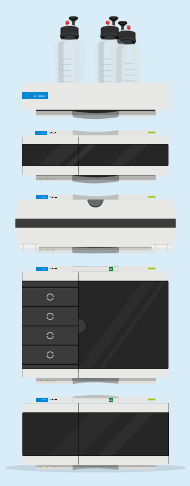
Use MassHunter Optimizer for LC/TQ to automatically generate optimal MRM transitions for new compounds, speeding method development and eliminating hours of manual LC/MS optimization runs.

Shutdown advice

Depending on your workflow, LC systems can be safely powered off at the end of the workday or over weekends when no overnight analyses are scheduled. When not running samples, the LC can be placed in idle mode where all modules are off except for the sample thermostat (if needed) to lower power consumption and reduce solvent use. If the system was powered down, allow time for the system to prime, purge, and re-equilibrate to ready mode before a new run. In contrast, LC/MS instruments should not be powered off and should remain in standby mode when not in use to protect the mass spectrometer's vacuum and ensure stable temperature and performance. To enter standby mode for mass spec, right-click for "standby" in the OpenLab CDS interface or MassHunter and wait for the instrument status to change. There should be a low flow of nitrogen gas in standby mode by default and should not be adjusted. The computer and monitor can be turned off as well. For extended downtime like holidays or power outages, follow our shutdown instructions for LC, LC/SQ, LC/TQ, LC/TOF, and LC/Q-TOF.

Modularity brings longevity

Agilent's modular LC design supports long-term instrument sustainability by enabling stepwise hardware upgrades that extend system life rather than replace it. Infinity LC modules are built with backward compatibility, allowing labs to integrate new capabilities into existing systems and preserve prior investments. This modular approach even allows Infinity II instruments to be upgraded with key Infinity III features, helping laboratories rightsize their fleet, reduce electronic waste, and maximize the usable lifetime of their LC assets.



Retiring your system

When it's time to retire your system, don't forget to take advantage of the Agilent Trade-In and Buyback Program, where you earn cash for your system and give it a new life through the Agilent Certified Pre-Owned Instruments Program. Plus, don't worry about the planning, packaging, deinstallation, and return—we take care of it all.

Product transparency

ACT Ecolabel

Agilent is proud to participate in the My Green Lab ACT Ecolabel program that provides transparent, third-party verified data about the environmental impact of our lab equipment and supplies. Explore our ACT Ecolabel database.

Infinity III product carbon footprint

An independent ISO 14067 assessment found that **more than 85%** of an LC system's cradle-to-grave product carbon footprint occurs during operation. Switching from conventional HPLC to UHPLC can reduce carbon emissions by **up to 63%** per sample. Learn more in the Infinity III Product Carbon Footprint White Paper.

Even more sustainability tips and tricks

Agilent Community is a free, global forum where lab professionals connect to share knowledge, get expert advice, and find reliable answers fast.

Visit The Lab Sustainability Exchange forum to learn from the community and submit your own tips and tricks.

Not all features available on every instrument.

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