

Liquid Chromatograph Mass Spectrometer

LCMS-TQ RX Series

UFMS
ULTRA FAST MASS SPECTROMETRY



LCMS-TQ RX Series

Innovative technology, exceptional design and new ways of thinking are part of our engineering DNA delivering solutions for the ever-changing needs of any laboratory. As our scientific and business needs change our engineering design evolves and adapts. The result is the RX Series of triple quadrupole LC-MS instruments designed with unmatched capability, redefined reliability and creating a new standard in actionable data.

Ultrafast Track to Your Success



Reliable

Designed specifically for routine analysis that requires high reliability

Resilient

Trusted performance even with the changing scientific and business needs of laboratories

Responsible

Our drive is to reduce the impact on the environment by designing instruments that work with lower energy and help reduce operating costs

Ultrafast Sensitivity and Performance

Reliable Resilient Responsible

Shimadzu's RX Series expands the capability and productivity of triple quadrupole mass spectrometer with performance that can be relied upon. The RX Series has been designed to generate a highly focused ion beam from the ion source to detector bringing together advanced ion guide and collision cell technologies. The result is higher data quality that makes an impact on any LC-MS/MS assay.

Heated ESI Probe

The RX Series are equipped with a heat-assisted electrospray ionization probe. The resulting highly efficient desolvation process promotes the ionization of a wide range of target compounds. All models are also equipped with Shimadzu's unique IonFocus™ unit. The focusing electrode efficiently delivers ions into the mass spectrometer.

CoreSpray Technology

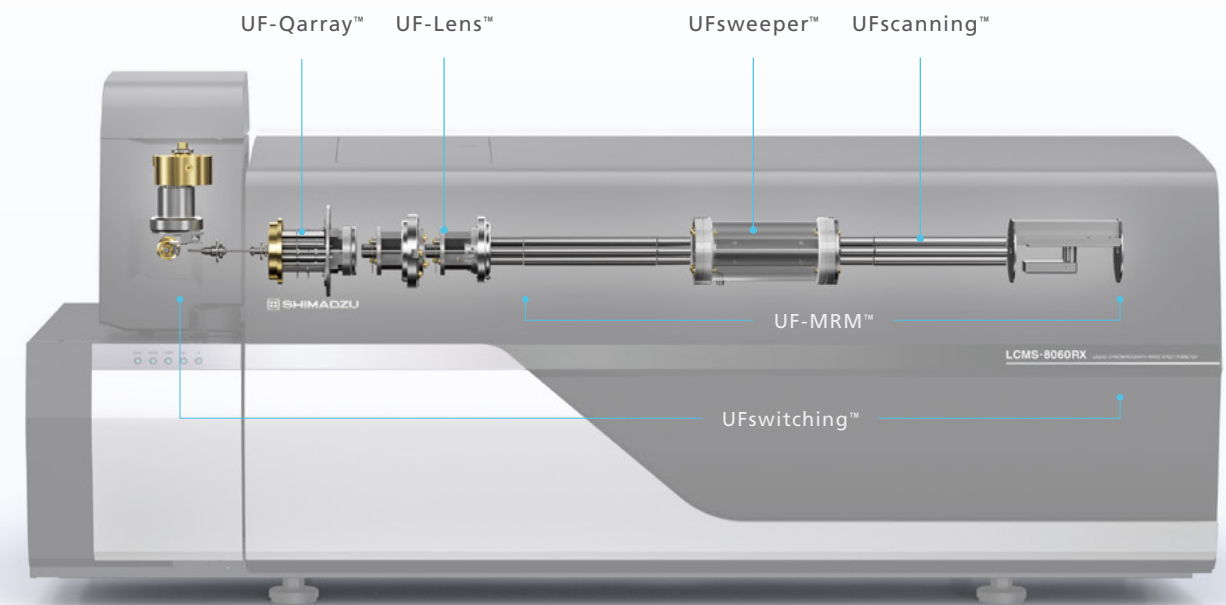
An advanced gas delivery system yields higher flows, better heat distribution, and more reproducible nebulization.

Ultrafast Power Supply

Advanced high voltage power supply technology enables Shimadzu's RX Series to switch from positive and negative ionization in just 5 msec.

Speed Beyond Comparison
UFMS
ULTRA FAST MASS SPECTROMETRY

UFMS™ is ultra-high-speed mass spectrometry from Shimadzu Corporation. Shimadzu's mass spectrometers are equipped with proprietary UF Technologies for industry-leading scanning, polarity switching, and MRM speeds.



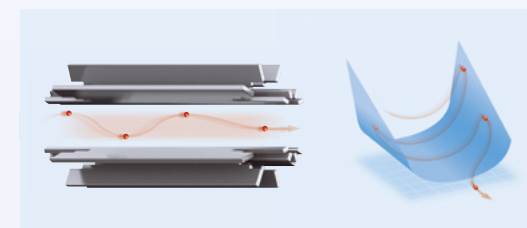
Quadrupole Rods

The quadrupole mass filter is the heart of a mass spectrometer. Shimadzu manufactures high-performance hyperbolic quadrupoles for idealized ion transmittance and high sensitivity, even at a scanning rate of 30,000 u/s.

UF-Qarray™

Shimadzu's Patented Qarray ion guide is designed to effectively focus ions over a wide m/z range using multiple overlapping electric fields.

UFsweeper™ Collision Cell



Ultrafast Detector

An ultrafast high-voltage power supply enables sensitive and stable signal detection, with a short pause time, dwell time and polarity switching time.

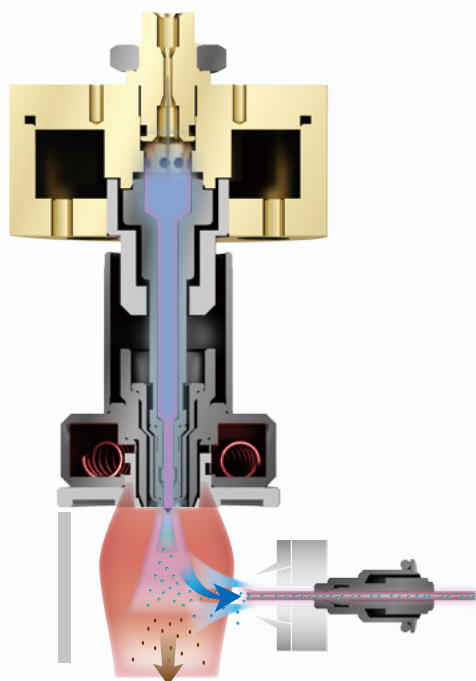
UF-Lens™

The ion guide system integrates two multi-pole RF ion guides to achieve high ion transmission efficiency. The LCMS-8060RX model also includes functionality for eliminating unnecessary ions that can lead to quadrupole rod contamination.

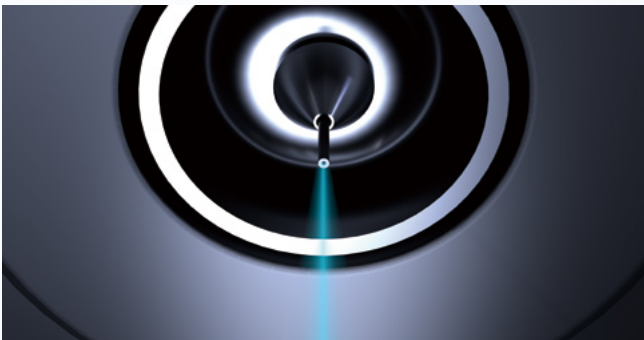
Shimadzu's Patented UFsweeper technology delivers fast and accurate MRM quantitation. High-speed and high-efficiency CID occurs as ions are accelerated through the cell, enabling multi-component analysis with little signal degradation or crosstalk.

LCMS-TQ RX Series CoreSpray Technology

Reliable Resilient Responsible



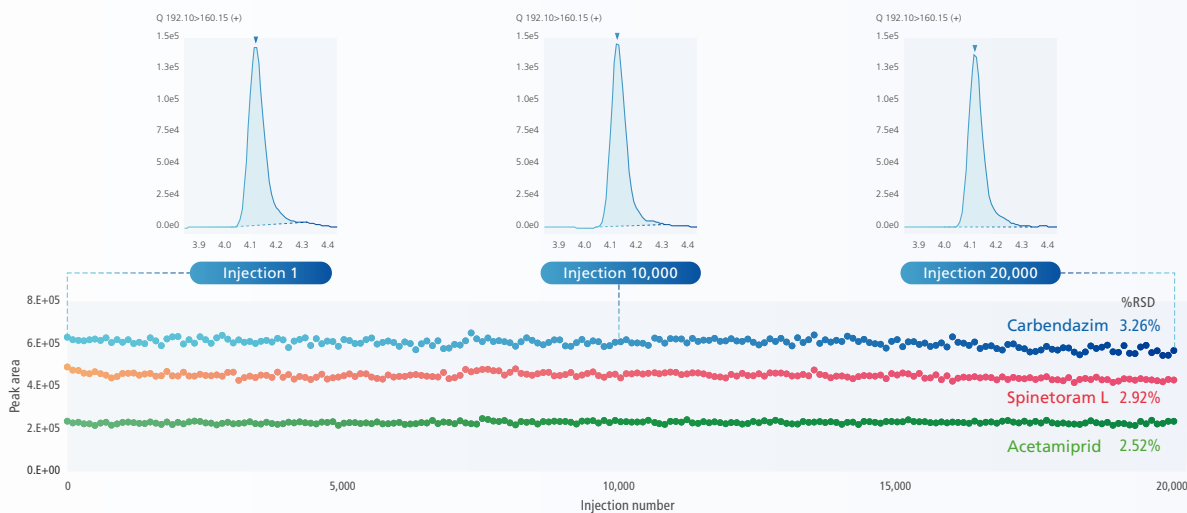
CoreSpray Enhanced Ionization Performance



CoreSpray, a newly developed gas delivery system, improves performance and uniformity of nebulization with higher flows and better heat transfer.

Peak Area Stability in Matrix: 20,000 Continuous Injections

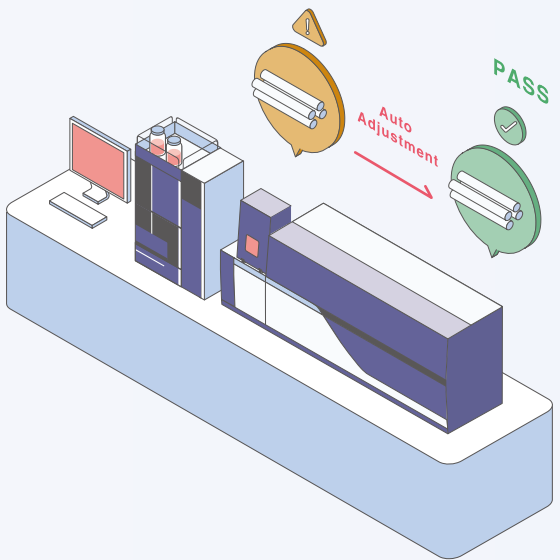
CoreSpray technology applied to the repeated analysis of pesticides in black tea matrix resulting in enhanced robustness (%RSD less than 3.5%, 20,000 injections). Data generated without internal standards and without diverting to waste for the initial polar matrix effects.



PERFORMANCE CONCIERGE™



PERFORMANCE CONCIERGE makes tuning a mass spectrometer easier than ever before. A tuning standard is automatically introduced into the instrument to verify parameters, including mass accuracy, resolution, and signal strength. Based on these checks, tuning may be automatically initiated to ensure optimal performance. Should the criteria not be met, PERFORMANCE CONCIERGE will diagnose the issue and alert the operator of required maintenance and maximize uptime.



Analytical Intelligence represents Shimadzu's innovative approach to automated analytical instrument optimization. This concept encompasses a suite of systems and software designed to emulate the decision-making process of expert operators. It autonomously assesses the instrument status, helps to give actionable feedback and where it can fix problems. By bridging the gap between varying levels of user expertise and instrument familiarity, Analytical Intelligence significantly enhances the reliability of your data.

Maximize Your Workflow Efficiency

Reliable Resilient Responsible

Intelligent tools to help your workflow efficiency generating higher productivity and better data quality.

Preparation

Automatically Ensures Instrument Readiness for Analysis

Instrument Check

PERFORMANCE CONCIERGE



Mass spectrometer tuning and checks for mass accuracy, resolution, and intensity can be performed automatically using the System Check function. The tuning standard is automatically injected into the system, and re-tuning can be automatically initiated if required, resulting in consistent data acquisition and laboratory operation without the need of user intervention. Tuning report outputs ensure traceability of instrument status.

Optimization of Acquisition Conditions

LabSolutions Connect™ MRM

Supports everything from MRM optimization, creating methods and batch files for acquisition and processing.

Startup

FlowPilot



Integrated intelligence on the Nexera™ LC series that allows you to increase column life-times and reduce consumables by enabling automated column equilibration for flow rates and temperature.

Measurement

UF Data Acquisition

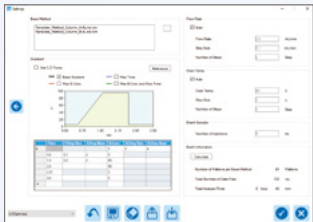
Shimadzu's UF technologies opens up new opportunities to do more with a single sample, detecting more compounds and generating even higher data quality.

LabSolutions Connect MRM

Product



Automates MRM optimization to create high sensitivity quantitative LC-MS/MS methods.

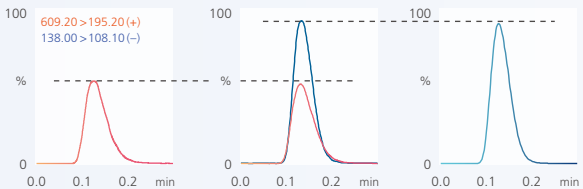


LabSolutions Connect MRM not only optimizes target component MRM transitions and collision energies but also maximizes the response for on column analysis. All optimized acquisition parameters are stored in a data base helping to accelerate both method development and routine analysis.

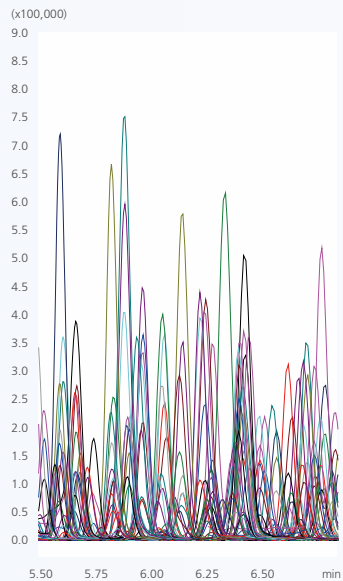
UFswitching: High Speed Polarity Switching

The RX Series triple quadrupole mass spectrometers have unique technology for switching polarity in 5 milliseconds between positive and negative ion modes without affecting ion intensity.

The result is a high data sampling rate across UHPLC peak widths of only 2 to 3 seconds even when multiple analytes are eluting at the same time.



Comparison of measurement using the ultrafast polarity switching (5 msec) and individual measurement of positive and negative ions



Simultaneous analysis of pesticide residues spiked into black tea in positive and negative ion modes

Data Analysis

Tools to Help Accelerate Data Processing and Report Meaningful Results

Peak Integration

Peakintelligence™ for LCMS 

Peakintelligence for LCMS is a world-first AI driven peak integration algorithm requiring zero user settings. The impact is dramatic. Peakintelligence for LCMS delivers higher consistency in peak integration and results in higher data quality and with far less time manually reviewing data.

Reviewing Data and Reporting Results

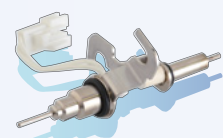
LabSolutions Insight™

LabSolutions Insight supports a dynamic quantitative data review landscape with the tools to drive high confidence in result reporting by 'review by exception'. Insight can be configured to check for any outliers outside the scope of user defined criteria for reporting results.

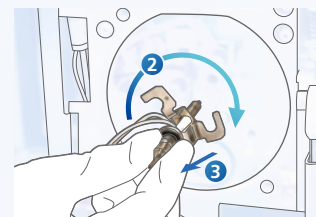
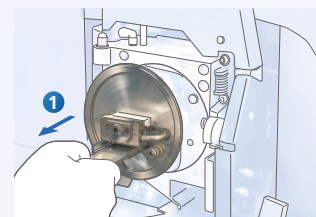
Maintenance

Easy Maintenance Shortens Instrument Downtime

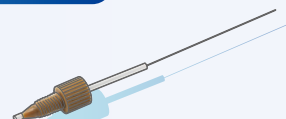
DL Replacement



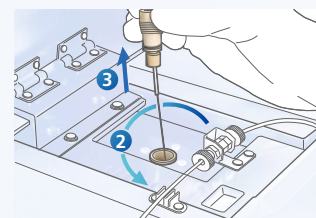
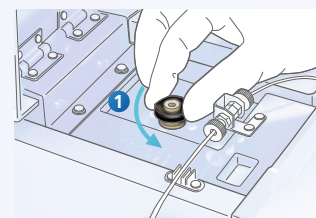
DL (Desolvation Line)



ESI Capillary Replacement



ESI Capillary

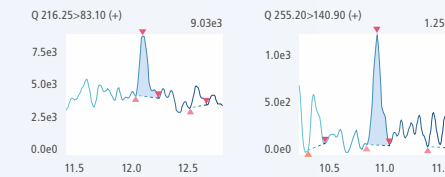


The RX Series keeps the same user-friendly maintenance as its predecessors. Changing the ESI capillary and the desolvation line (DL), which transports ions into the vacuum region, are designed for quick and effortless replacement without breaking vacuum helping to reduce time spent on maintenance and increase instrument uptime.

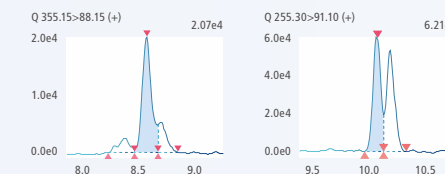
Peakintelligence for LCMS



Product

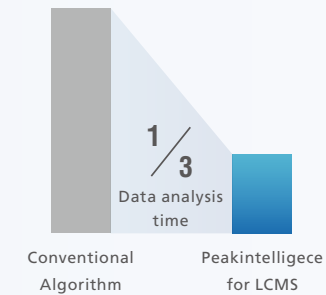


Peaks with a low S/N ratio



Peaks not separated from contaminant or isomer peaks

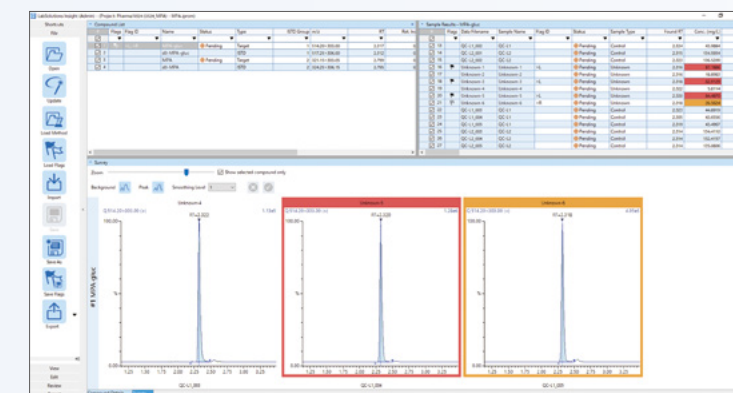
Peakintelligence for LCMS was applied to the analysis of a panel of pesticides in a residue screening study highlighting consistent peak integration at low S/N or with overlapping components.



Peakintelligence for LCMS is an AI driven algorithm for component detection and peak integration without the need for any user parameter. Peakintelligence for LCMS processing results in higher consistency in peak integration and reduces the time-consuming impact of manual review to achieve a more accurate, more reproducible peak processing.

LabSolutions Insight

Product



LabSolutions Insight is a dynamic data review application, seamlessly integrating quantitative analysis and screening capabilities. At its core is the advanced support for 'review by exception' applying user defined reporting criteria to highlight results outside of specified limits. Results that do not meet the rules-based reporting criteria are quickly identified as outliers focusing manual review on the results that are considered as the exception. The flagged results helps to reduce the impact of reporting false positive or negative results and streamlines reporting making your laboratory more efficient, more productive.

LCMS-TQ RX Series

Reliable Resilient Responsible

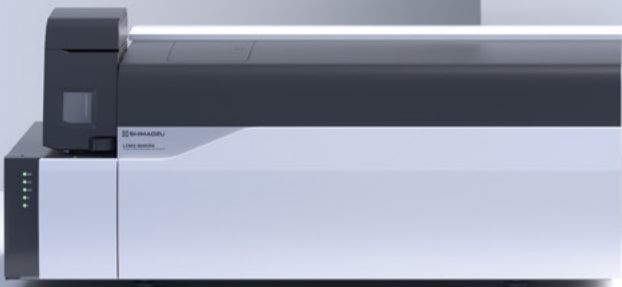


LCMS-8060RX

The LCMS-8060RX builds on the exceptional sensitivity and UF capabilities of the LCMS-8060NX and adds even more robustness without compromising sensitivity.

LCMS-8050RX

Engineered to deliver excellent sensitivity the LCMS-8050RX further extends the performance of the LCMS-8050 to meet the ever-changing needs of any LC-MS/MS laboratory.



LCMS-8045RX

Designed for rugged, routine LC-MS/MS analysis with the optimal balance of cost, sensitivity and performance now enhanced with greater robustness and easier to use.

Ionization Options

For expanded analytical capabilities, the LCMS-TQ RX Series can be equipped with an APCI, DUIS™ or DPiMS ionization unit instead of the standard ESI unit. The DUIS unit offers a unique advantage by simultaneously ionizing compounds using both ESI and APCI methods, making it ideal for analyzing a wide range of polarities in a single run. DPiMS ionization utilizes a probe to contact the sample and produce ions by applying a voltage to the probe tip. All three ionization units share a simple design, allowing for effortless swapping between them to suit your specific analytical needs.



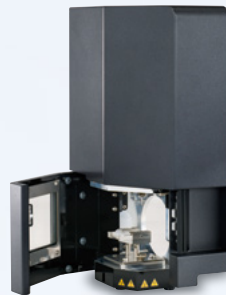
ESI (standard)



APCI (optional)



DUIS™ (optional)



DPiMS (optional)

LC/MS/MS Method Package and MRM Library

A range of method packages are available to streamline multi-component analysis. These packages eliminate the need for extensive method development, allowing you to begin analyzing your target compounds immediately. By utilizing a method package, you can skip the time-consuming steps of reviewing separation parameters and optimizing MRM settings.

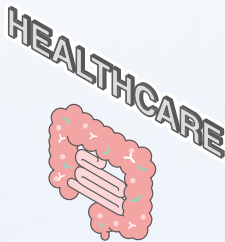
Method Packages

Type	Catalog No.	Type	Catalog No.
Residual Pesticides	C146-E348	Short-Chain Fatty Acids	C146-E355
Veterinary Drugs	C146-E387	Aminoglycoside Antibiotics	C146-E352
Water Quality Analysis	C146-E180	Restricted Chemicals in Textiles	C146-E382
Rapid Toxicological Drug Screening	C146-E398	Bile Acid	C146-E428
Primary Metabolites	C146-E387	Modified Nucleosides	C146-E441
Lipid Mediators	C146-E381	PFAS in Drinking Water	C146-E455
Cell Culture Profiling	C146-E471	Sulfur Metabolic Profiling	C146-E468
DL Amino Acids	C146-E336	Glycosaminoglycans	C146-E457
Mycotoxins	C146-E351	Steroid Hormones	C146-E373
Toxicological Database	C146-E344	Sugars and Sugar Nucleotides	C146-E478

MRM Libraries

Type	Catalog No.
Metabolic Enzymes in Yeast	C146-E275
Phospholipid Profiling	C146-E314
Triglyceride	C146-E448

Product

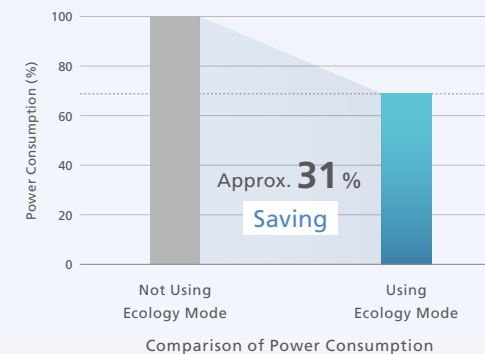


Minimizing Global Environmental Impact

Reliable Resilient **Responsible**

Highly Energy Efficient

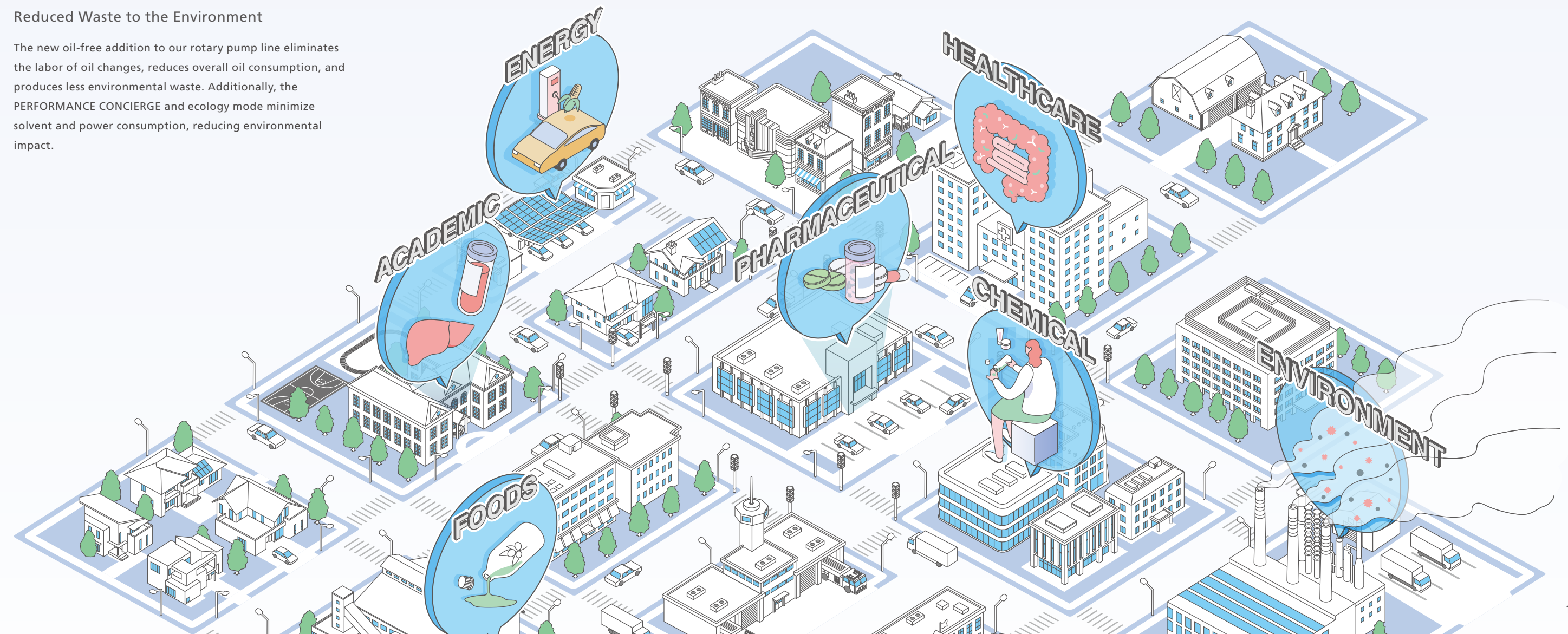
The LCMS-TQ RX Series prioritizes environmental responsibility with its built-in ecology mode. This mode monitors system usage and automatically shuts down the instrument when idle for extended periods, reducing electricity consumption by an impressive 31%. Additionally, powering down peripheral LC-MS/MS equipment during non-analysis periods further minimizes energy use. These features contribute significantly to lowering operating costs and CO₂ emissions while supporting the pursuit of a carbon-neutral future.



* Assumes operation of 5-days/week and 8-hours per day. Under normal conditions, the ESI probe remains powered on after analysis. Ecology mode allows the ESI interface to be powered off until activation the following workday.

Reduced Waste to the Environment

The new oil-free addition to our rotary pump line eliminates the labor of oil changes, reduces overall oil consumption, and produces less environmental waste. Additionally, the PERFORMANCE CONCIERGE and ecology mode minimize solvent and power consumption, reducing environmental impact.



LCMS-TQ RX Series: Unveiling a World of Possibilities

LC-MS/MS systems offer unique versatility, seamlessly transitioning between R&D and high-throughput analysis. Research continuously reveals new areas where science can unlock social and economic benefits. These systems play a vital role in translating research findings into practical applications across diverse fields like healthcare, pharmaceuticals, food science, environmental testing, chemicals, and energy.

However, wider societal adoption faces challenges. Complex operation, specialized maintenance expertise, and cost considerations can be hurdles. Overcoming these barriers will create a virtuous cycle: broader utilization of LC-MS/MS leads to more impactful measurements, driving further innovation and societal progress.

At Shimadzu, guided by our philosophy of "Contributing to Society through Science and Technology," we are committed to creating a future where high-quality data is readily accessible. We actively identify and address user needs, focusing on enhancing instrument usability and reliability. Our dedication extends to solving customer challenges at every step, ensuring that our instruments contribute to customer profitability and deliver true value to society.

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