OXFORD INSTRUMENTS

MQC+ QA/QC Analysers

Easier, faster, more accurate quality assurance

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Why choose the MQC+ analyser?

The MQC+ Time Domain Nuclear Magnetic Resonance (TD-NMR) analyser provides fast, easy-to-use and accurate analysis in the food, agriculture, petrochemical, polymer, textile and other industries.

MQC+ measures oil, water, hydrogen, fluorine and solid fat replacing wet chemical and physical methods of analysis. This results in more responsive manufacturing process control, and higher throughput analyses in quality control or testing laboratories.

It also measures materials' physical properties including polymer crystallinity and density. Simple, intuitive calibration ensures accurate and repeatable results independent of operator, location or environment, meaning users are up and running fast.

NO HAZARDOUS SOLVENTS OR CHEMICALS INVOLVED

More environmentally friendly and safer. Fewer risks for your staff.

ACCURACY

Measure all parts of the sample, not just the surface, even if they are opaque.

SIMPLE OPERATION, MINIMAL TRAINING

Multi-language software with step-by-step operator guidance.

RAPID ANALYSIS

From a few seconds to a few minutes for faster production control.

REPEATABLE & CERTIFIED RESULTS

Compliant with numerous international industry standards methods.

MINIMAL, NON-DESTRUCTIVE SAMPLE PREPARATION

Simply weigh and condition as required, analyse and re-use samples (if required).

COST-EFFICIENT

Low maintenance and running costs, just requires mains power.

Where can the MQC+ be used?

There are many different MQC+ applications used in a variety of industries including.

Food - Oil in snack foods, total fat in chocolate, fat in foodstuffs and Solid Fat Content (SFC).

Agriculture - Oil and water in oilseeds and their residues, oil in dried olive paste and oil in dried palm mesocarp.

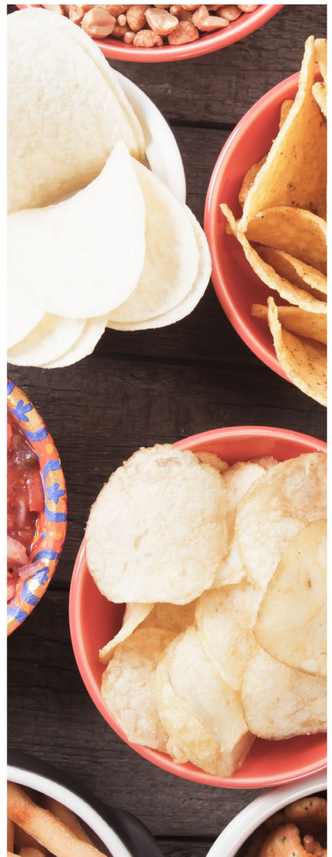
Textiles - Spin finish on fibre, also known as Oil Pick-Up (OPU), Finish on Yarn (FoY), lubricant and avivage. Lotion on nonwoven fabric. Rubber and fluorinated coatings.

Pharmaceuticals - Fluorine in toothpaste.

Petroleum - Hydrogen in fuel, oil in waxes and wax in petroleum products.

Polymers - Xylene solubles in polypropylene, plasticiser in PVC, polymer density and crystallinity, oil in rubber and fluorine content.

Other - Fluorine in powders (e.g. fluorspar, alumina) and limestone filler in asphalt.



Features & benefits

Easy to maintain, simple training
Rugged, robust hardware and simple calibration routines ensure consistent results independent of operator with industry-leading uptime. MQC+ can be controlled over the internet, or results and diagnostics can be directly emailed to our support team.

Versatility
MQC+ can be fitted with a variety of robust, fast exchange sample chambers to easily handle different applications and sample sizes.

A platform for the future
The modular design supports ongoing technology enhancements and expanding capabilities. This flexible approach allows MQC+ to evolve with future developments.

Fast and efficient
MQC+ can make over 100 measurements a day, which is up to 250 times faster than using wet chemical analysis.

Highest specification, small footprint
MQC+23 has a large sample chamber and high field strength, so it can be used to measure larger samples as well as offering high sensitivity.

Easy to calibrate
MQC+ measurements are generally insensitive to colour, particle size and other physical properties of the sample. Calibrations are always linear so you only need a handful of samples. Once established, the calibrations are robust and rarely need to be repeated.

Specifications

Time Domain NMR (TD-NMR) hardware		
Magnet field strengths (operating frequencies)	0.55 T (^{1}H 23 MHz, ^{19}F 22 MHz)	0.11 T (^{1}H 5 MHz)
Magnet set temperature	40°C (35°C option for Hydrogen in Fuel)	40°C
Magnet field uniformity	Better than 10 ppm FWHM over 26 mm x 30 mm long	Better than 50 ppm FWHM over 50 mm x 50 mm long
Sample volumes (subject to magnet strength)	**Hydrogen** 10 mm dia (1 ml abs. 2 ml ratio)* 18 mm dia (7 ml)* 26 mm dia (14 ml or 10 ml vials) **Fluorine** 26 mm dia (14 ml) *Liquid variable temperature option available	**Hydrogen** 40 mm dia (40 ml) 51 mm dia (80 ml)
RF Power	250 W maximum	
Electrical Requirements		
Supply Voltage	95 – 240 V (requires 2 standard mains sockets)	
Supply Frequency	50 / 60 Hz	
Power Consumption	500 VA maximum	
Internal PC		
Computer	Windows® 11 IoT Enterprise LTSC 64-bit (English UK version)	
Processor	Intel® Celeron® J6412 2 GHz quad core CPU	
RAM	8 GB	
Hard Drive	512 GB solid state	
Ethernet Ports	2 × RJ-45 LAN (one used for spectrometer)	
USB Ports	2 × Front, 4 × Rear (two rear ports used for keyboard & mouse)	
Serial Ports	1 × RS232	
Display	55 cm (21.5") wide-screen, 1920x1080 pixel resolution	
Weight & Dimensions		
Dimensions	Magnet unit: 360 mm wide × 360 mm deep × 330 mm high Note: Allow 50 mm behind for cables. Electronics unit: 300 mm wide × 340 mm deep × 410 mm high Note: Allow 150 mm behind for cables.	
Weight	Magnet unit: 50 kg (110 lb) Electronics unit: 15 kg (33 lb)	
Minimum benchtop footprint	Electronics unit under bench and display mounted on magnet box 750 mm wide x 750 mm deep	

Model options

Choose from two variants of the MQC+ optimised for inhomogeneous samples (40 – 80 ml sample volume) or sensitivity (1 – 14 ml sample volume).

Throughput may be increased further by adding our MQ-Auto sample automation system.

		MQC+23				MQC+5	
Applications		• Optimum configuration for many applications • High operating frequency for best sensitivity and large sample size (14 ml) for good reproducibility • Solid content • Fluorine content				Larger sample capacity gives best reproducibility for inhomogeneous samples e.g. agricultural produce	
Sample Chamber	**Tube diameter & nucleus**	10 mm $^{1}H^{*}$	18 mm $^{1}H^{*}$	26 mm ^{1}H	26 mm ^{19}F	40 mm ^{1}H	51 mm ^{1}H
	Maximum Sample Volume	2 ml	7 ml	14 ml	14 ml	40 ml	80 ml
Recommended Configuration		**Oilseeds (Small)** **Solid Fat** **Food** **Petroleum** **Textile, Polymer** **Fluorine**				**Oilseeds (Large)**	

* liquid variable temperature option available

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X-Pulse Benchtop NMR spectrometers

High resolution multi-nuclear NMR spectroscopy with flow and reaction monitoring.

Read more

MQC+ QA/QC Analyser

Fast, accurate analysis for food, agriculture, textile, chemical, polymer and other industries.

Read more

MQC-R TD-NMR Research

Develop applications based on relaxation, diffusion and 1D profile (MRI) measurements.

Read more

GeoSpec Rock Core Analyser

Core sample analysis of porosity, permeability free and bound fluid and T2 cut-off.

Read more

Ensuring lifetime **success**

MQC+ users often work in demanding, high pressure industries where every minute counts. To make sure our customers get comprehensive support whenever they need it, we have a worldwide fast response service network ready to help you.

With you every step of the way to maximise your uptime and manage your equipment lifecycle through our comprehensive range of service plans, on demand training, and upgrades securing performance continuity.

On-site support options

Tiered service plans

Global support available

Hardware and software upgrades

Approved consumables

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Need more information? At Oxford Instruments we are committed to finding the correct solution for you. With a dedicated team of technical advisors, we are able to offer you one-to-one guidance and technical support on all products.

To request more information please see: **nmr.oxinst.com/mqc**

Our Benchtop NMR systems are manufactured at our facility in High Wycombe, UK, and we have offices and support centres located worldwide.

Oxford Instruments,
High Wycombe, UK

Note
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Original document in English

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