



**Malvern  
Panalytical**  
a spectris company

# Hydro Insight

A window to deeper materials insights



## Dynamic particle imaging in real time

Scientists, researchers, and quality control managers around the world use laser diffraction for particle size analysis. But, to develop truly high-performance products, you often need deeper insights than laser

diffraction alone can provide. In particular, to understand what influences packing, flow, and dissolution rate, you need to understand how both particle size and shape affect your materials' behavior.



The Hydro Insight accessory provides this – combining Vision Analytical's dynamic imaging expertise with Malvern Panalytical's flow cell technology. Sitting alongside our Mastersizer 3000 laser diffraction system, the Hydro Insight provides real-time images of your liquid particle dispersions

and individual particles, as well as quantitative data on particle shape. This helps you understand your materials better, troubleshoot more easily, and develop particle sizing methods more quickly – ultimately improving the performance of your products.

## How does it work?

Particles dispersed by the Mastersizer 3000's wet accessories flow through the Hydro Insight, and are then photographed by a high-resolution digital camera at up to 14 frames per second. The camera takes images of the suspended

particles in the analysis cell, converts them to a digital format, and sends the information to the software for final analysis in real time. Individual particle images are viewed directly and captured as image files for post-run processing.

### Specifications\*

Parameter	Specification
Principle	Dynamic imaging
Illumination	Xenon Flashlamp
Detector type	CMOS Sensor
Detector	5 MP (2592 × 1944 pixels), pixel size 2.2 μm
Data acquisition rate	14 fps at 5MP (max 127fps)
<b>Measurable size range</b>	
Standard Magnification Lens	1 to 300μm**
Low Magnification Lens	10 to 800μm**
Size and Shape parameters	31
Typical measurement time	As per laser diffraction
Materials in contact with the sample***	Tygon® SE-200 FEP Inner lining, Stainless Steel 316, Quartz Glass Window, Glass n-BK7 (Glass Plug), Perlast® G60A FFKM Seals
Regulatory	RoSH and REACH compliant. EMC compliance to FCC, ICES and EN standards. LVD Safety compliance to EN standards 21 CFR Part 11

\* Wet dispersions only \*\*Sample dependent \*\*\*Hydro Insight only

### Be more confident in your product quality

Just a few oversized particles can make a big difference to your materials' quality. To detect them, some applications require a higher resolution than laser diffraction alone provides. Combining the resolution of imaging for larger particles with the wide dynamic range of laser diffraction means you can be completely confident of your materials' properties.

### Understand your materials better

Material behavior is often influenced by a combination of particle size and shape. To develop high-performance products, you need to understand both. The Hydro Insight gives you the full picture by providing shape data from imaging to complement the particle size distributions from laser diffraction.

### Optimize your method development

Perhaps you often need to develop and validate new particle sizing methods. The Hydro Insight's real-time imaging helps accelerate this process, since you can see your dispersion as you develop a new method. There's no need to prepare secondary samples, saving you time for other projects.

### Quickly troubleshoot unexpected results

Are your out-of-spec particle size results caused by oversized particles, agglomerates, or something else? With the Hydro Insight's particle images – of both your dispersion and individual particles – you can easily identify the cause, saving you valuable time.

### Speed up your method transfer

Switching from sieving to high-speed laser diffraction can be complicated, especially when non-spherical particles are involved. The Hydro Insight's particle width and elongation data make this process much quicker and easier, helping you understand how shape affects the way you measure your particles.



## Why choose us?

**When you make the invisible visible, the impossible is possible.**

Our analytical systems and services help our customers to create a better world. Through chemical, physical and structural analysis of materials, they improve everything from the energies that power us and the materials we build with, to the medicines that cure us and the foods we enjoy.

We partner with many of the world's biggest companies, universities and research organizations. They value us not only for the power of our solutions, but also for the depth of our expertise, collaboration and integrity.

With over 2200 employees, we serve the world, and we are part of Spectris plc, the world-leading precision measurements group.

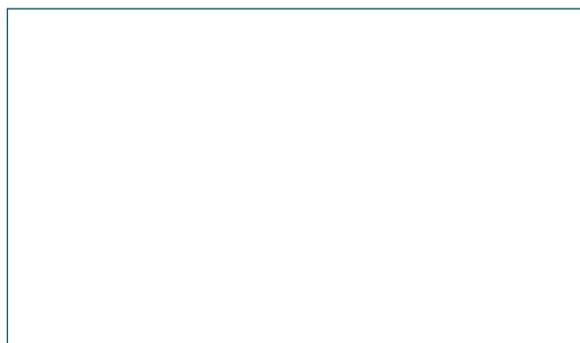
**Malvern Panalytical. We're BIG on small™**

## Service & Support

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy



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