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How InstaFlux Is Transforming Media Preparation in Food Testing Labs

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Oxoid Remel Microbiology, acquired from Thermo Fisher Scientific, introduced Thermo Scientific InstaFlux, an on-demand enrichment media preparation system designed to streamline laboratory workflows

Food microbiology laboratories are under increasing pressure to process more samples, improve turnaround times and strengthen traceability while managing labour, resource consumption and operating costs. Yet media preparation, a critical step in pathogen enrichment, continues to involve several manual processes, including weighing, mixing, sterilisation, cooling and dispensing. To address these challenges, Oxoid Remel Microbiology, acquired from Thermo Fisher Scientific, introduced Thermo Scientific InstaFlux, an on-demand enrichment media preparation system designed to streamline laboratory workflows.

In this interview with NUFFOODS Spectrum, Jani Holopainen, Head of R&D at Oxoid Remel Microbiology, discusses how InstaFlux combines automated dispensing with concentrated culture media to reduce hands-on preparation labour, optimise water and energy consumption, and improve sample traceability. He also shares insights into the evolving role of automation in food microbiology testing and the importance of integrating media preparation into a more efficient, digitally connected laboratory workflow.

What key challenges in conventional media preparation and enrichment workflows led to the development of Thermo Scientific InstaFlux?

We strongly believe that innovation starts with listening to our customers, and Thermo Scientific InstaFlux is a direct result of collaboration and co-creation with them. Food microbiology has improved considerably in recent years, particularly in detecting potentially harmful pathogens. Yet one critical step, enrichment media preparation, has remained mainly unchanged, and it's still one of the more manual parts of the food microbiology workflow.

Laboratories are still weighing powders, mixing, autoclaving, cooling, dispensing, performing quality control, cleaning and storing media. On top of all that, they have to predict how much media they will need in advance. Our customers told us they needed more productivity, greater flexibility, lower resource use and better traceability. The development of InstaFlux began with asking how we could simplify the workflow so people could spend less time preparing media and more time on value-add activities.

How does this media-on-demand workflow operate, and how does it differ from traditional batch-based media preparation?

InstaFlux replaces large batches of pre-made, single-strength media with concentrated media that's ready when technicians need to use it. This workflow is particularly relevant for labs that use buffered peptone water in routine enrichment workflows where staffing, space, preparation time, traceability and waste can create operational constraints.

The InstaFlux workflow comprises InstaFill peristaltic pump, InstaDose gravimetric diluter and InstaPrep 10 times concentrated culture media bag.

The InstaDose system automatically dispenses the water and concentrate based on gravimetric dilution and according to the selected program. This workflow makes it possible for labs to hydrate, connect and run samples rather than following a lengthy, manual process of preparing, sterilizing in an autoclave, cooling, decanting and, finally, storing before use. The concentrated InstaPrep bag is hydrated and provides the equivalent of 100 liters of ready-to-use, single-strength buffered peptone water from one compact 10-liter bag. The key difference is that the media is produced at the point of use and according to actual sample demand.

What specific productivity gains can laboratories expect from a system designed to reduce media preparation labor by more than 80 per cent?

InstaFlux is a system designed to reduce hands-on labor associated with media preparation. The 80 per cent figure relates specifically to labor associated with media preparation*. It doesn't mean the solution would be reducing total laboratory staffing by that amount. By automating powder weighing, mixing, autoclaving, transferring and cleaning, technicians can focus on more value add tasks like sample processing and analysis instead.

Ultimately, InstaFlux increases the laboratory's productivity, enabling food microbiology labs to handle samples more easily and process more samples with existing resources.

What factors determine the reported 35 per cent cost savings and up to 90 per cent reduction in water and energy consumption?

Preparing an instant prep bag takes about 30 minutes, with roughly 10 minutes of hands-on time. Once the bag has been prepared, it has a 14-day shelf life and a five-day in-use life, so a single preparation supports ongoing sample processing rather than repeated batch preparation.

The savings are heavily reliant on how the laboratory prepares media today, so we are looking at the total workflow cost, rather than just the price of the culture media itself. Our calculations include factors such as labor costs, annual media volume, media purchase costs, autoclave usage, media preparation equipment, associated service and maintenance, quality control, consumables and more.

The true cost of media preparation is hard for lab managers to see because it's spread across budget lines that are never totaled together. InstaFlux brings those costs to light and can reduce or eliminate a number of those activities. The 35 per cent saving reflects the overall workflow, rather than just the cost of culture media*.

Regarding water and energy reduction, the main drivers are media autoclaving, heating and cooling cycles, washing reusable containers and cleaning media preparation equipment. The exact reduction percentage will vary from lab to lab.

How does InstaFlux enhance sample traceability to improve quality control and data management?

Traceability is built directly into the workflow. Each InstaPrep bag has a 2D barcode, and scanning the bag transfers key information into the InstaFlux system, including media identity, batch number and concentration. This removes a step where information is collected manually.

During dispensing, the system records information such as the user ID, program used, sample ID, sample weight, concentrate added, water added, among others. It also monitors the dispensing operation in real time and can flag results outside of the defined tolerances, so a deviation is caught in the moment rather than later in the workflow.

From a compliance and traceability perspective, the data can be exported electronically and used with a laboratory information management system (LIMS) to reduce manual recording and support a more complete digital audit trail.

How do you see automation and on-demand workflows shaping the future of food microbiology testing, and what role does InstaFlux play in Oxoid Remel Microbiology's broader strategy?

Automation is becoming more critical to the industry because food microbiology laboratories are increasingly being asked to do more with less. They must process more samples, deliver results faster, manage labor constraints, improve traceability and reduce waste simultaneously. As I mentioned earlier, detection technologies have advanced significantly in recent years, but there is still a lot of manual activity at the front end of the workflow. The next evolution brings more automation into media preparation, sample preparation and pathogen enrichment.

However, we must use automation with a clear goal in mind. In food and microbiology labs, that goal is to remove repetitive work, reduce human error, standardize workflows and automatically capture data. InstaFlux is part of that evolution, and it connects to our broader ability to support the entire workflow from sample preparation through enrichment, detection and, finally, confirmation.

Performance results are based on internal testing, workflow modeling or defined-use evaluations and may vary based on laboratory workflow, sample volume, media type, equipment configuration, operating practices and local validation requirements. Claims regarding reductions in labor, workflow time, water use, energy use, packaging or waste are based on comparison with defined conventional media preparation workflows under specified conditions. Customers are responsible for validating workflows in accordance with applicable laboratory, regulatory and quality requirements. LIMS integration and data-transfer capabilities depend on system configuration and compatibility.

On August 12, 2026, Astorg announced the completion of its acquisition of Thermo Fisher Scientific's global microbiology business. The business now operates as an independent company under the name Oxoid Remel Microbiology, Acquired from Thermo Fisher Scientific. Astorg is a leading pan-European private equity firm with deep healthcare expertise, including in life science tools and diagnostics. InstaFlux launched on July 24, 2026.