InnoMatch

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EIC INNOVATION PROCUREMENT PROGRAMME

StrokeViewer

case study

Microfluidics Innovation Center

with the support of

inside Therapeutics

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PILOT: Microfluidics Innovation Center & Inside Therapeutics

Galileo Flow Sensors & EasyFC Control | Life Sciences, Pharmaceutical Manufacturing, and Nanomedicine

<5% ERROR	80 to 87%	0% WASTE	TRL 7.5
HIGH FLOW SENSOR ACCURACY	**ENCAPSULATION EFFICIENCY**	**ZERO STARTUP MATERIAL LOSS**	**ADVANCED INDUSTRIAL MATURITY**
Real-time flow measurement accuracy below 5% under high-frequency pump vibration	Maintains high drug payload trapping efficiency across all synthesis runs	Eliminates expensive fluid waste during pharmaceutical formulation startup	Validated on live nanoparticle production equipment in industrial lab

PILOT PROFILE

EIC Awardee: Microfluidics Innovation Center (MIC)

Solution: Galileo Flow Sensors & EasyFC Control

Partner: Inside Therapeutics (Pharmaceutical Formulation Equipment Manufacturer, France)

Testing Ground: NanoPulse Alpha lipid nanoparticle production platform operating in an industrial pharmaceutical formulation laboratory

Sector & Challenge Focus: Life Sciences, Pharmaceutical Manufacturing, and Nanomedicine

The Challenge

Manufacturing lipid nanoparticles (microscopic fat bubbles used to carry genetic material in mRNA vaccines) requires mixing liquids with extreme precision. Pumps used in microfluidic mixing rigs produce tiny pressure vibrations (pulsations) that cause uneven fluid flow. This leads to inconsistent nanoparticle sizes and wastes expensive liquid ingredients during startup, driving up vaccine manufacturing costs.

The Solution

Galileo Flow Sensors are high-precision microfluidic sensors paired with EasyFC automated closed-loop control software. Connected directly into nanoparticle production rigs, the system measures liquid flow rates in real time, automatically adjusting pumps to smooth out vibrations and eliminate fluid waste during startup.

Objectives

The pilot aimed to integrate two Galileo flow sensors onto the NanoPulse Alpha production rig, achieve real-time flow measurement accuracy below 5%, and verify closed-loop control during live nanoparticle synthesis.

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Constrains

Sensors had to measure fluid rates accurately despite rapid pump vibrations (100 to 500 Hertz) while meeting pharmaceutical purity standards.

Performance

The sensors achieved measurement accuracy below 5% across all vibration frequencies at Technology Readiness Level 7.5. The automated control system maintained encapsulation efficiency between 80% and 87% while eliminating startup fluid waste completely.

Partner Operational Improvements

Elimination of high-value raw material waste, consistent nanoparticle batch quality, and automated closed-loop formulation control.

> *"The program was successful in developing and assessing the viability of an innovative product in an industrial setting. From our (the buyer) perspective, this was an excellent opportunity."*
>
> **— Inside Therapeutics**

SUCCESSFUL PILOT VALIDATION

Inside Therapeutics is purchasing Galileo sensor units for upcoming Beta platform production ahead of a commercial licensing agreement in 2027.

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