

DROFEN Machinery Releases Engineering Guide to 99.5% Yield in High-Speed Pen Injector Final Assembly Machine

New DROFEN guide details how force-displacement monitoring and RFID traceability reach a 99.5% qualification rate in pen injector final assembly.

SHANGHAI, SHANGHAI, CHINA, June 28, 2026 /EINPresswire.com/ -- [DROFEN MACHINERY](#) EQUIPMENT CO., LTD has released a technical white paper on high-speed pen injector final assembly, the production stage where a pre-filled drug cartridge is joined with an assembled mechanical pen body. Titled "Complete Engineering Guide:

Selecting and Implementing High-Speed Pen Injector Final Assembly Systems," the guide is written for pharmaceutical engineers, CDMO operations directors, and procurement teams expanding capacity for GLP-1 and insulin therapies.

Demand for cartridge-based injection pens keeps climbing, and final assembly has become the hardest part of the chain to scale. The white paper makes the case that final assembly is a different engineering problem from pre-assembly. Reject a unit during pre-assembly and the cost is a few plastic parts. Reject a unit during final assembly and a filled drug cartridge goes in the bin with it. That single difference is why first-pass yield, not raw speed, should drive the choice of an [injection pen final assembly](#) machine.

The guide walks through how a 99.5% assembly qualification rate is reached at speeds up to 160 parts per minute. Much of it rests on a modular 2-cell architecture that contains a fault inside one cell instead of stopping the whole line, the same design logic DROFEN carries across its insulin pen assembly line and [pen injector pre-assembly equipment](#).

"Final assembly is where the risk concentrates," said Jordan Xu, Managing Director at DROFEN MACHINERY. "Half a percentage point of extra rejects sounds small until it is multiplied by millions of filled cartridges a year. The white paper shows how force-displacement monitoring

The DROFEN logo, featuring the word 'DROFEN' in a bold, black, sans-serif font, with a blue underline.

DROFEN MACHINERY — Turnkey Project-Delivery Partner for Injection Pen Assembly Lines

and dimensional checks keep that number down while still inspecting every single unit."

How does a final assembly system stop a defective pen from ever reaching a patient? The white paper answers this directly. During the cartridge press-fit, piezoelectric load cells and a linear displacement transducer trace the full force curve and compare it against a validated envelope. A peak-force check alone would pass a housing with an internal micro-crack; the full curve catches it. High-precision LVDT measurements then confirm the dimensions hold at each critical step.

Traceability is handled at the level of the individual unit. Each pallet carries an RFID tag, every station writes its result back to a specific nest, and the finished record runs from incoming component through to the packed device. That record feeds the electronic batch report and supports submissions under FDA 21 CFR Part 11 and EU Annex 11.

Other sections get into the practical decisions that separate a line that works from one that fights itself. Why pre-filled cartridges are fed on a conveyor rather than shaken through a vibratory bowl. Why cam-driven transport stays repeatable after millions of cycles. Why a single PLC over a deterministic ethernet backbone keeps the vision sensors, servo press, and reject gate in step instead of chasing each other with a few milliseconds of lag.

The guide also puts numbers behind the buying decision. Over the life of a line, the money lost to a higher reject rate can quietly outweigh whatever was saved on the purchase price. Co-developing the pen body and the assembly process, rather than buying them from two unrelated vendors, is presented as the most reliable way to keep that reject rate low, which matters most to CDMOs moving into GLP-1 biosimilar production.

DROFEN MACHINERY works as a turnkey project-delivery partner. It supplies the injection pen device platform, the pre-assembly and final assembly equipment, and the validation documentation as one coordinated package, so a customer is not left stitching together three vendors and hoping the interfaces line up.

The full white paper on injection pen final assembly is posted on the company's official website.

About DROFEN MACHINERY:

DROFEN MACHINERY EQUIPMENT CO., LTD is a turnkey project-delivery partner for pharmaceutical manufacturing equipment, with a focus on injection pen assembly lines and pre-filled syringe filling systems. The company connects mechanical engineering with pharmaceutical compliance for CDMOs and drug manufacturers worldwide.

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