



All-Scale Manufacturing Solution for mRNA



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d All-ScaleFlow™ platform equipment

Plug & Play

Raw material independent

Compatible with class D clean room

Limited Single Use parts

Flexible
400 b to 10 000 b m/saRNA

Small footprint : 4m²
Only 30 m² required

Robust end-to-end Process
Closed Process
No hold time
CIP, D&RNAse inactivation, SIP onboard

Scale up free
15mL in hours ⇒ 6 L in 5 days (IVT mix)
2 500 doses in hours ⇒ 1M doses in 5 days
120 mg ⇒ 50 g of mRNA
10g/L IVT titer recipe & 50 µg doses

All hook-ups on one side (pure stream, WFI, power & network, cold water, process air, waste)

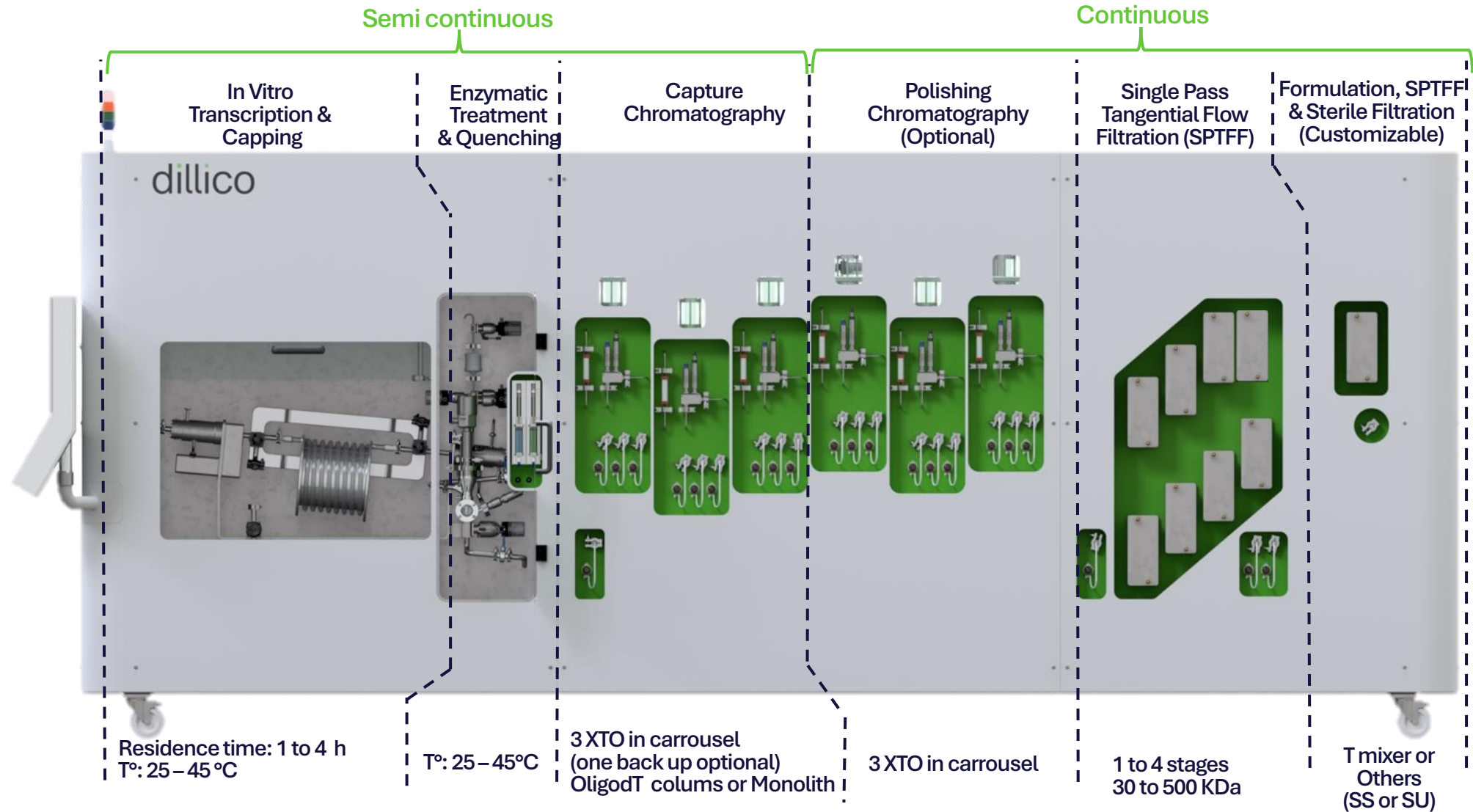
15 mL

6 L

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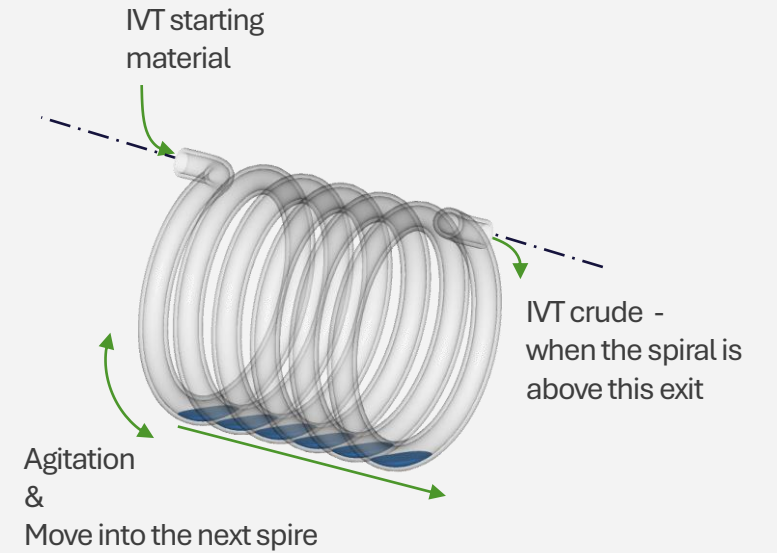
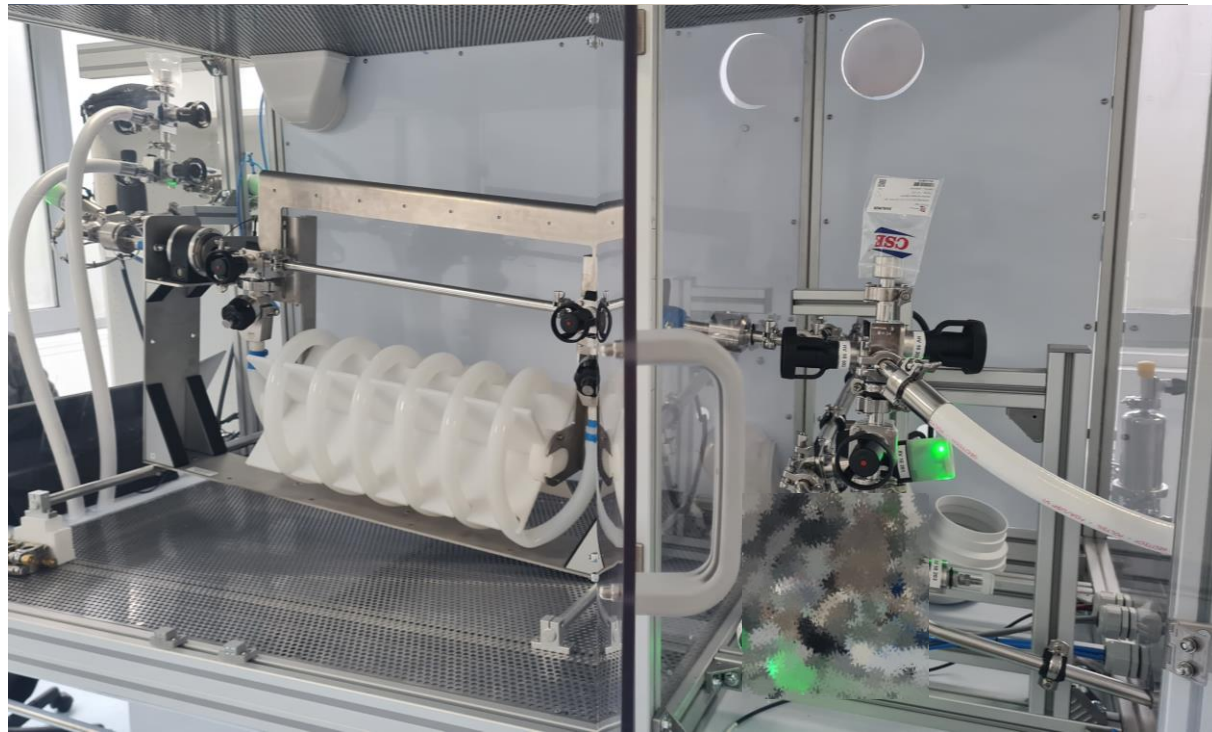
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d Our solution to unleash the potential of mRNA : a continuous end-to-end process platform



IVT Spiral Reactor

Enabling full scalability



15 mL unitary volumes every 20'

d Example of All-ScaleFlow™ platform installation

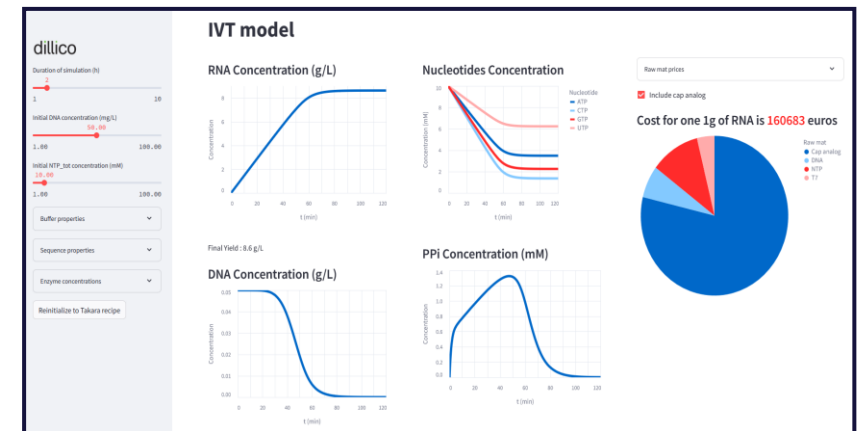


d Analytical Platform



Luciferase mRNA	Typical Results
Co-capping IVT mRNA titer (g/L)	11.3
Post IVT Integrity (%)	87

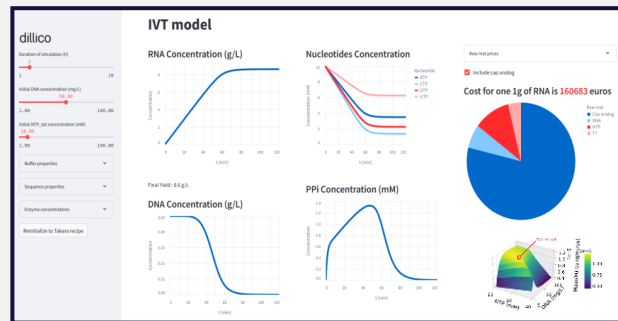
- ✓ In agreement with the USP Pharmacopeia Analytical Guidelines
- ✓ To support and assess platform development
- ✓ For non-GMP mRNA internal production for partners & customers
- ✓ To generate data for modeling activities



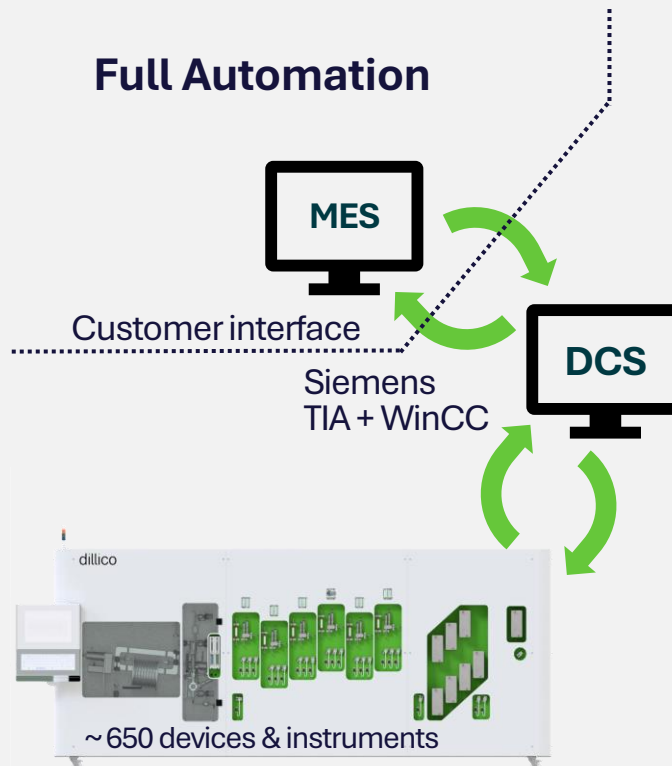
Offline Digital Twin

Mechanistic model of the full process

- ✓ to speed up optimal process design
- ✓ to develop a Model based DoE
- ✓ to simulate & understand deviation



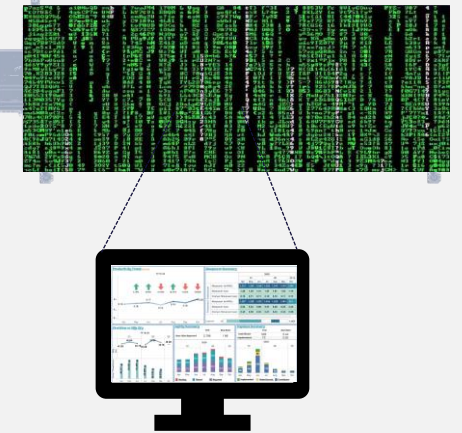
Full Automation



Inline Digital Twin

For in-line & real-time monitoring

Inline sensors & PAT
with Context (devices)

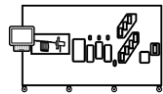


Human data driven decision



mRNAufacturing™ Solution

The agile mRNA-LNP manufacturing solution at all-scale with a GMP-ready process:



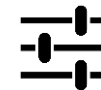
Core Platform

- All-ScaleFlow™ manufacturing platform
- Reliance package (maintenance)
- Single-Use Spiral



Customized Expert Support

- Digital Tools and Services for Process Development
- Manufacturing Science Services



Other Services

- Exploration package
- Pre-clinical manufacturing services



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Thank

You