

# M++ UltraPilot

Tech Transfer Starting From Benchtop



# Introducing M++ UltraPilot



cGMP



Modular



Multi-Functions



DCS / S88



L3 Interfaces



M++ is a cutting-edge innovation in downstream bioprocessing, a pilot-scale modular benchtop system that can run Chromatography, TFF, Depth Filtration (NFF), SSTFF, Inline Dilution (ID), and various process intensifications (PI) including 4C Continuous chromatography and many cycle-time-reducing integrated processes.

M++ features industrial cGMP compliant ASME BPE hygienic flow paths, innovative configurations for inline buffer exchanging and unclarified feed loading for chromatography, and industrial DCS control platforms, all for built-in scalability from benchtop to commercial production. Common data management framework on top of DCS provides much desired support for CMC submission and is aligned with the industrial trend towards digital transformation.

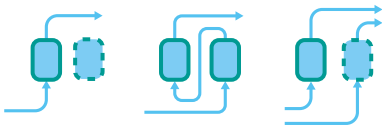
## M++ Functions and Features

- 60-750ml/min, 6bar, Tubing ID 3.2mm
- Multi-Functions: CHR/NFF/TFF/SSTFF/RT-F/CinBE/IDC/4C/Holding
- Connected and Continuous Capability (Multi-Units on Same DCS)
- Intensification Strategies Readily Available (Powerful Integration Capability)
- Hygienic/Self-Cleanable/ASME BPE Design for All Flow Paths
- cGMP Compliant DSP System/Perfect for CGT Production
- Scalability From Pilot Scale (M++ Blocks/DCS/S88 Recipe)
- CMC Data Support From Pilot Scale (Historian/Reporting/Analytics)
- Digital Transformation (Digitization/Common Data Frame/L3 Interfaces)

# M++: Configuration Language for Process Intensification (PI)

## Basic Process Configurations

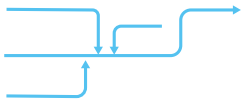
Standard Chromatography (Gradient)



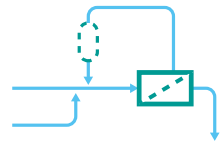
Standard NFF/Depth/Nano Filtration



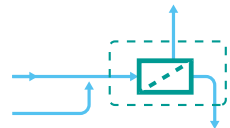
Inline Dilution Buffer Prep (4 Way)



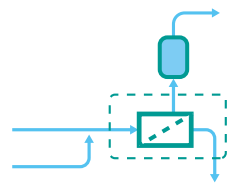
Standard TFF (Tubular/Tankless)



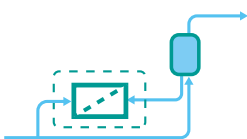
Steady-State Continuous TFF for UF/DF (SSTFF)



Direct Chrom Loading Using IBE (SSTFF/SSF)

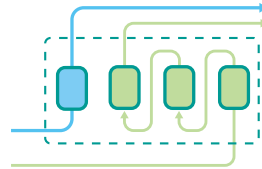


Direct Chrom Loading with Unclarified Feed

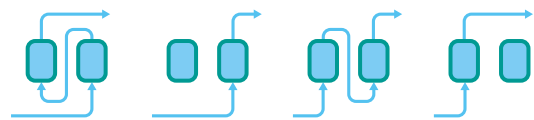


## Intensified Configurations

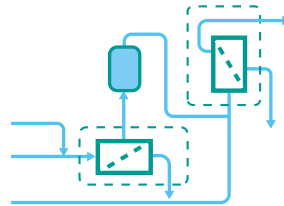
Multi-Column (4C) Continuous



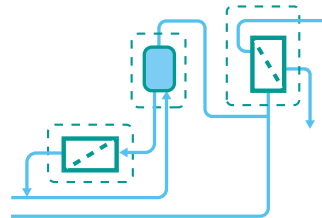
Multi-Column Loading (2C)



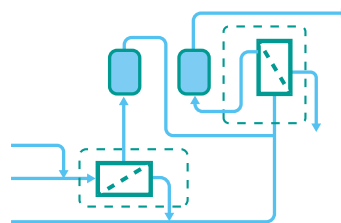
Integrated Process Combining 3 Steps



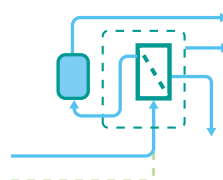
Integrated Process Combining 3 Steps



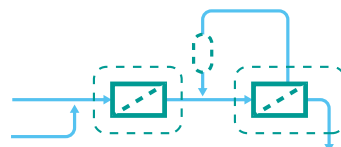
Integrated Process Combining 4 Steps



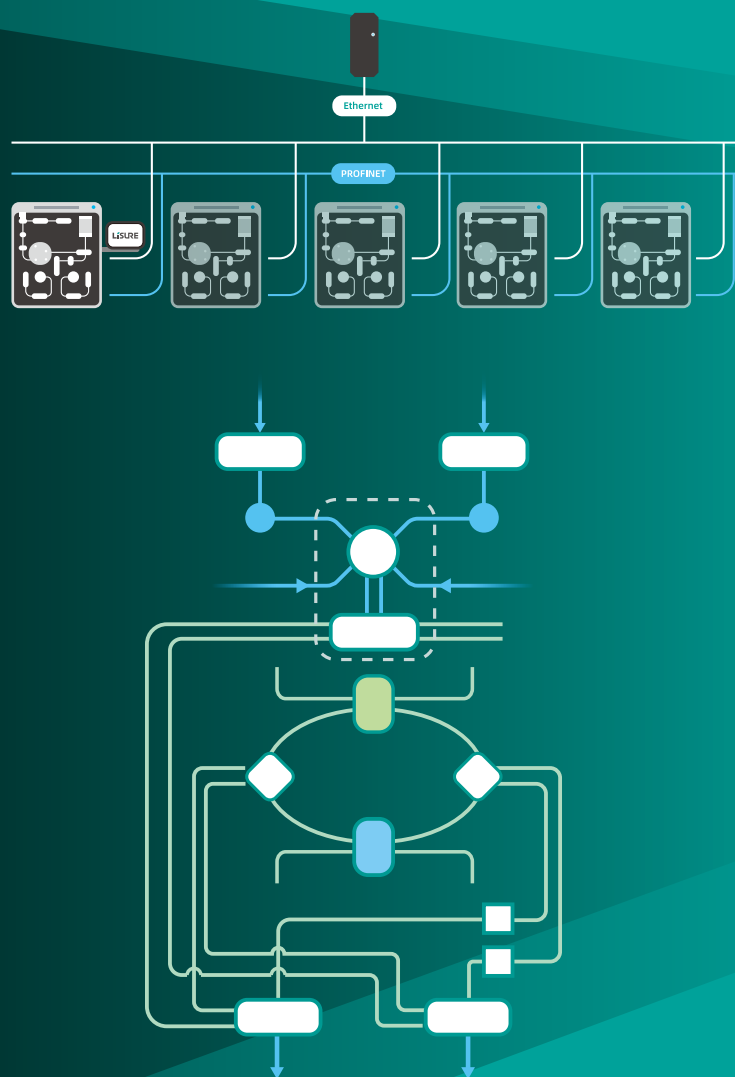
Integrated Process Combining Up To 6 Steps



Combine Virus Filtration (NFF) & Final UF/DF (TFF)



# M++: Where R&D and Production Meet



Developing M++ was a journey. M++ is developed to specifically address one of the well recognized challenges in today's drug technology transfer: the lack of communications, the disconnections, and the silos, caused by different methods and platforms in different phases and different organizations throughout the drug development pipeline. It is our intention that M++ will enable PD and MSAT scientists to develop intensified and integrated processes on benchtop and to be able to work with production and engineering to implement their most effective, economical, and innovative processes to manufacturing floors by applying ASME BPE, DCS, S88, industrial data management framework at the earliest possible stage in the pipeline.

At Lisure, we believe innovation thrives through collaboration. Your insights and partnerships are vital in driving transformative advancements in the fast-evolving biopharmaceutical industry.

Connect with us today—Let's Shape the Future of biopharmaceutical industry together!

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