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mixing + reaction solutions

Modular continuous processing systems

Flow reactors • Dosing systems • Lab & pilot equipment
Modular skids & scalable assemblies

Extended with Contiplant Easy-GMP

Neftenbach, Switzerland

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What we deliver for pharma

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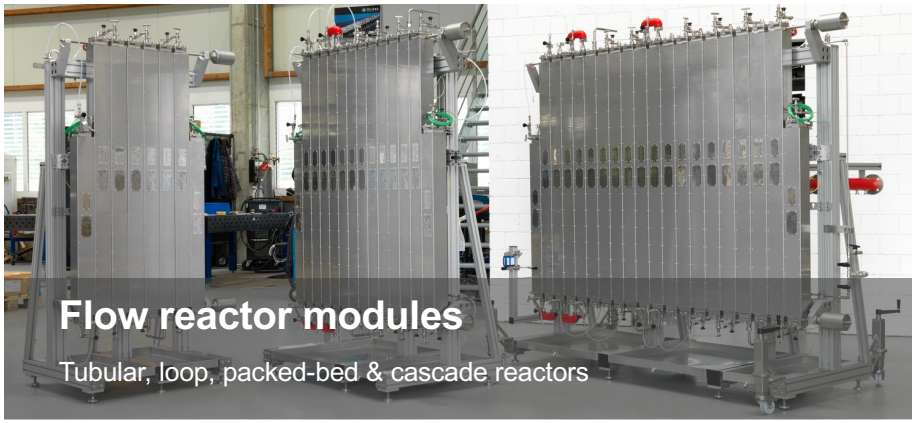
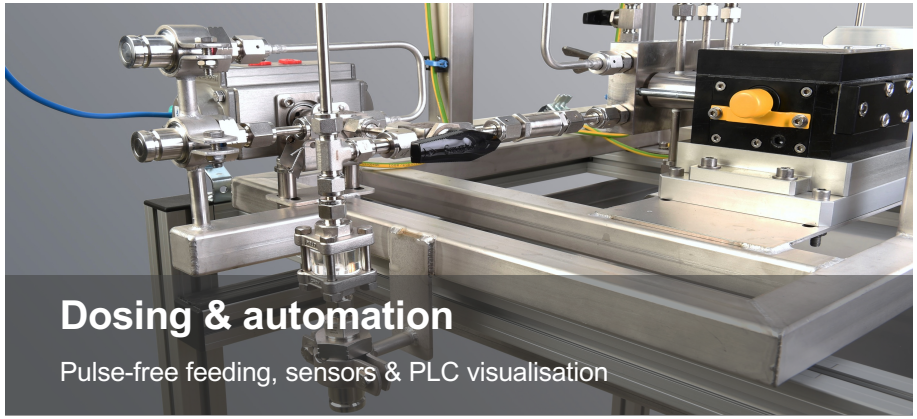
A modular platform for continuous mixing, reaction and scale-up



Flow reactor modules

Tubular, loop, packed-bed & cascade reactors

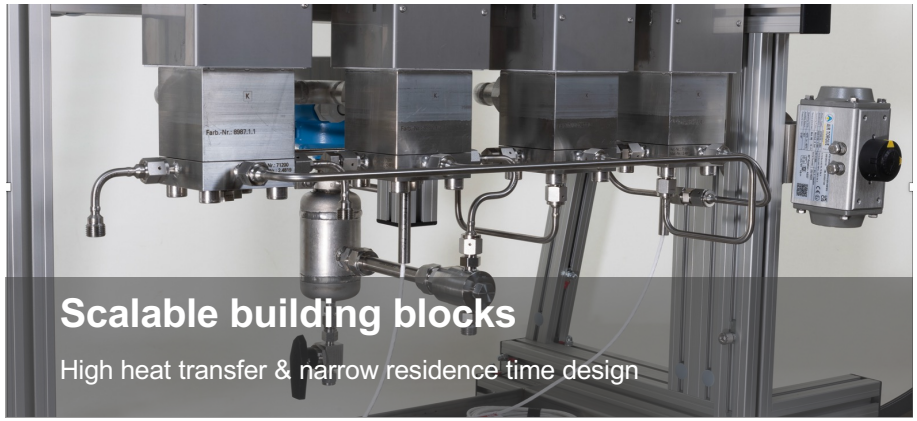


Dosing & automation

Pulse-free feeding, sensors & PLC visualisation

Modular skids

Lab → small-scale production racks



Scalable building blocks

High heat transfer & narrow residence time design

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Why continuous flow in pharma?

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Typical drivers behind flow reactors and modular skids for pharmaceutical manufacturing

When batch reaches its limits, flow can unlock:

- Highly precise control of temperature, pressure and reaction time
- Consistent product quality (consistent particle size, purity and yield)
- Faster process development and easier scale-up using modular building blocks
- No downtime for filling, emptying or cleaning large reactors
- Compact footprint for lab, pilot and production skids

Typical progression

ContiplantLAB
Process development

→ contiplantPHARMA by fluitec

Pilot equipment remains available where needed, but the default pharma route shown here is Lab → contiplantPHARMA.

Sterile & GMP-oriented design

Reaction systems in sterile design for the pharmaceutical, biotechnology or cosmetics industry

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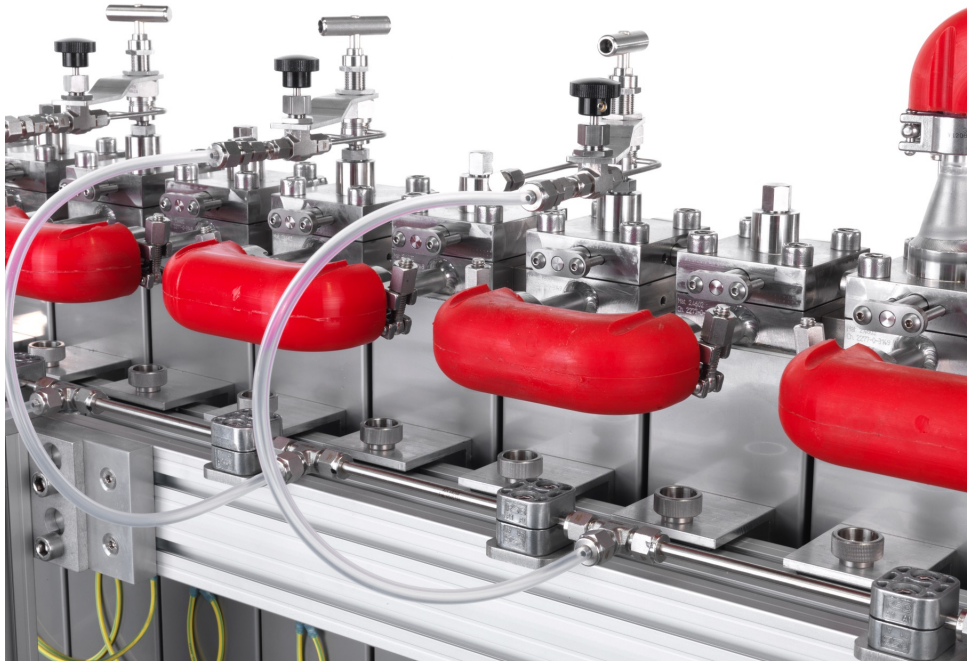

Designed for high requirements

- A sterile technology approach for GMP, surface quality, CIP/SIP and FDA-oriented applications.
- Qualified, standardized assemblies
- Polished static mixing elements available, including those with a very small nominal width.
- Material options: 1.4435 / 1.4435 BN2 / 1.4404 / Hastelloy C-22 and other high-alloy grades
- Focus on critical processes: dosing, mixing, temperature control, residence time, and cleaning

Note: Compliance requirements and documentation are project-specific and aligned with your quality system.

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The modular platform approach

Build the optimal configuration from compatible modules

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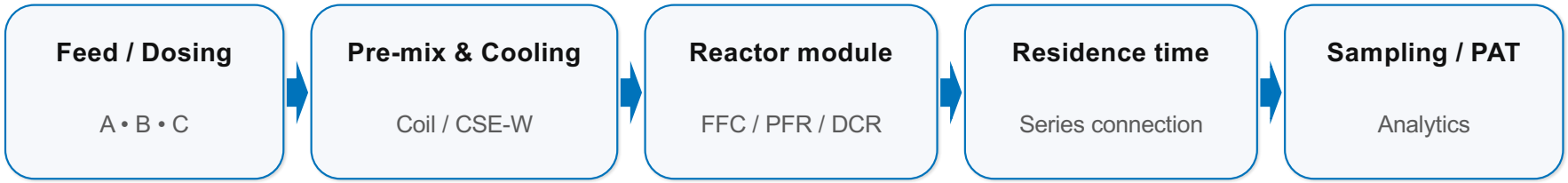

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with qualified, standardized assemblies

Peripherals that enable controlled, reproducible pharma development

- Sensors and actuators developed for monitoring reaction exotherms along the reaction path
- Injection valves, dosing points, rinsable sampling valves, axial multipoint temperature sensors
- Pressure sensors with minimal dead spots, bursting discs and safety instrumentation
- Self-developed dosing systems and PLC with process visualisation

Dosing systems & automation

Accurate, robust feeding is a prerequisite for repeatable flow chemistry

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Key points for pharma use cases

- Pulse-free dosing to match laminar static mixing requirements
- Designed to prevent clogging and to support cleaning / validation concepts
- Sensors and peripherals designed to avoid detrimental impact on RTD and heat transfer
- Self-developed PLC with process visualisation for transparent operation

Typical integration (example)

Dosing station → reactor module → sampling/PAT → product hold

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Contiplant Easy-GMP

One decentralized controller per module

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The same logic can be used for flow reactors, loop reactors, flow calorimeters, dosing systems, DCR reactors, flash evaporation and crystallization units.

Stand-alone / manual GMP start

- Fastest route to market with a qualified package and minimal site integration
- Manual GMP operation with approved SOPs, checklists and batch / operating records
- FAT, SAT and early campaigns are used to learn hydraulics, control behavior and operating windows
- Local controller handles the package; the operator performs GMP assessment and documentation

Integrated / automatic GMP operation

- The same module is connected later to host PLC / SCADA without changing the basic package concept
- Central alarms, interlocks, recipe handling, data history and operator guidance can be added step by step
- Automation is built on real process knowledge from the manual learning phase
- Typical later validation focuses on the automation / interface delta rather than restarting from zero

Why this matters for pharma teams

Easy-GMP combines modular package control, early GMP-capable operation and a later path to full automation — without giving up speed in the first launch phase.

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A pragmatic GMP approach with Easy-GMP

Start fast, learn on the real module, then automate on a stable process basis

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Stepwise operating model

- 01 Deliver a pre-qualified module with package control, FAT records and core technical documentation
- 02 Commission and start manually during SAT and early campaigns to learn the real flow behavior
- 03 Run early GMP production in manual mode with approved SOPs and controlled documentation
- 04 Freeze process windows, warnings, alarms, recipes and interface logic based on real operating experience
- 05 Integrate the same module later to host PLC / SCADA and perform focused delta validation for automation and interfaces

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Why this can save time to market

- The customer does not need to wait for the final plant automation architecture before starting GMP-capable operation.
- The same qualified module supports both the first market entry phase and the later automation upgrade.

What later validation usually focuses on

- Host PLC / SCADA interfaces and data handling
- Recipe management, central alarms and interlocks
- User roles, historian / records and site-specific operating procedures
- The integration delta — not a full restart of module understanding

Manual start-up is not a dead end — it is the structured learning phase that makes later automation more robust.

How we work

A typical engagement from first call to installed equipment

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1

Scope & fit check

- Chemistry
- phases
- heat release
- viscosity
- GMP / sterile constraints
- materials

2

Feasibility in ContiplantLAB

- Lab tests
- Calorimetry / temperature profiles
- Initial mass & heat transfer window
- Select reactor concept

3

Pilot & scale-up plan

- ContiplantPHARMA configuration
- Residence time & safety strategy
- Interface to downstream unit ops

4

Build, FAT & commissioning

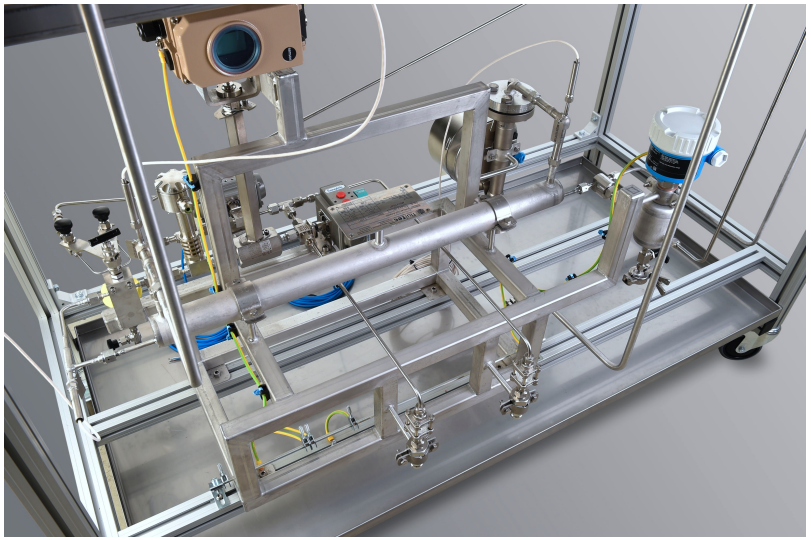
- Skid manufacturing
- Automation & documentation set
- Support for qualification activities

Why Fluitec

A partner for mixing, heat transfer and in-line reaction technology

What customers value

- Swiss engineering and manufacturing in mixing + reaction technology (since 1993)
- Deep expertise in static mixers and mixer / heat exchangers (heat + mass transfer)
- Modular Contiplant system: fast process development with clear scale-up paths
- Sterile design options for pharma/biotech/cosmetics applications
- Broad material portfolio including high-alloy grades (e.g., Hastelloy)



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Let’s talk about your process

Send a short brief — we’ll reply with a first module concept and suggested next steps.

Helpful input for a fast first concept

- Reaction scheme and phases (liq/liq, gas/liq, solids)
- Target throughput & residence time window
- Temperature / pressure range and heat release (if known)
- Viscosity, fouling or clogging risk, particle size (if solids)
- GMP/sterile constraints and material preferences

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