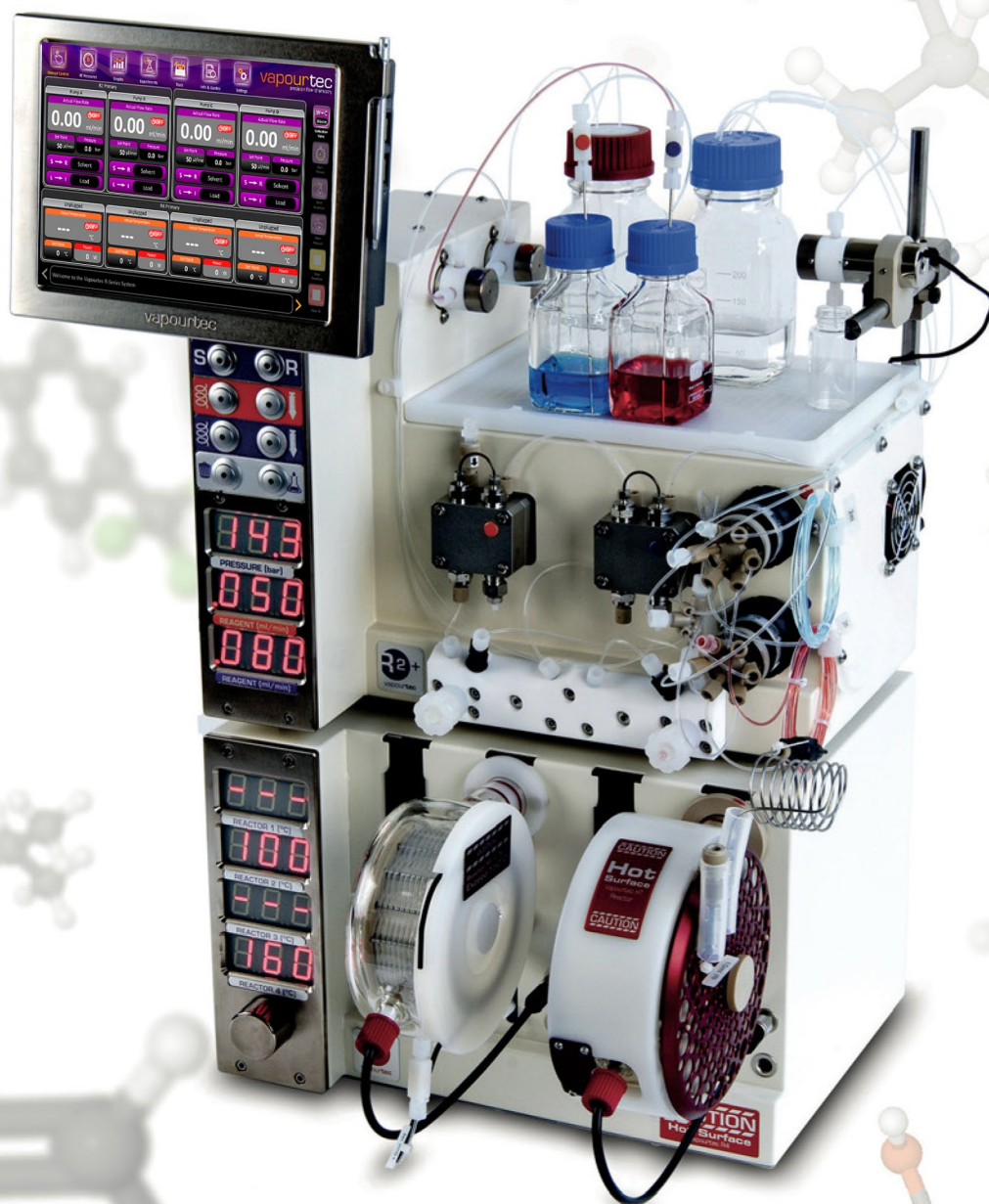


The Flow Chemistry System You Won't Outgrow

Flexible, Precise, Productive



The Vapourtec R-Series is a reliable, well proven, high performance modular system that allows you to expand your flow chemistry capability as your needs develop. This makes the most of your investment now while leaving your options open for the future.

Three key reasons for choosing Vapourtec

Unique Flexibility: Select the combination of reactors that meets your needs and add more reagent feed channels as required.

High Precision: Flow rates are guaranteed by automatic pump monitoring. Temperature control is best in class.

High Productivity: An unlimited number of reactions can be queued for unattended execution. Reaction temperatures are achieved rapidly.

The flow chemistry choice for the future

Pumping module choice

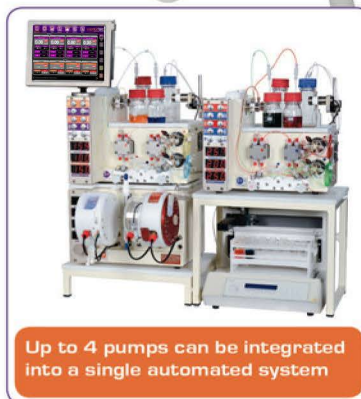
Vapourtec offer a range of options for feeding reagents into the reaction. Combining 2 pumping modules can give up to 4 reagent channels.

All pumping modules use our unique continuous automatic monitoring system to:

- Monitor performance of pumps to ensure accurate reporting of flow rates
- Shutdown safely in the event of a leak or blockage

Options include:

- sample injection loops
- strong acid capability
- slurry/suspension pumping capability



Up to 4 pumps can be integrated into a single automated system

Optional
R-Series
control software
and touch screen

Simple manual
interface

R2xx Pumping
Module

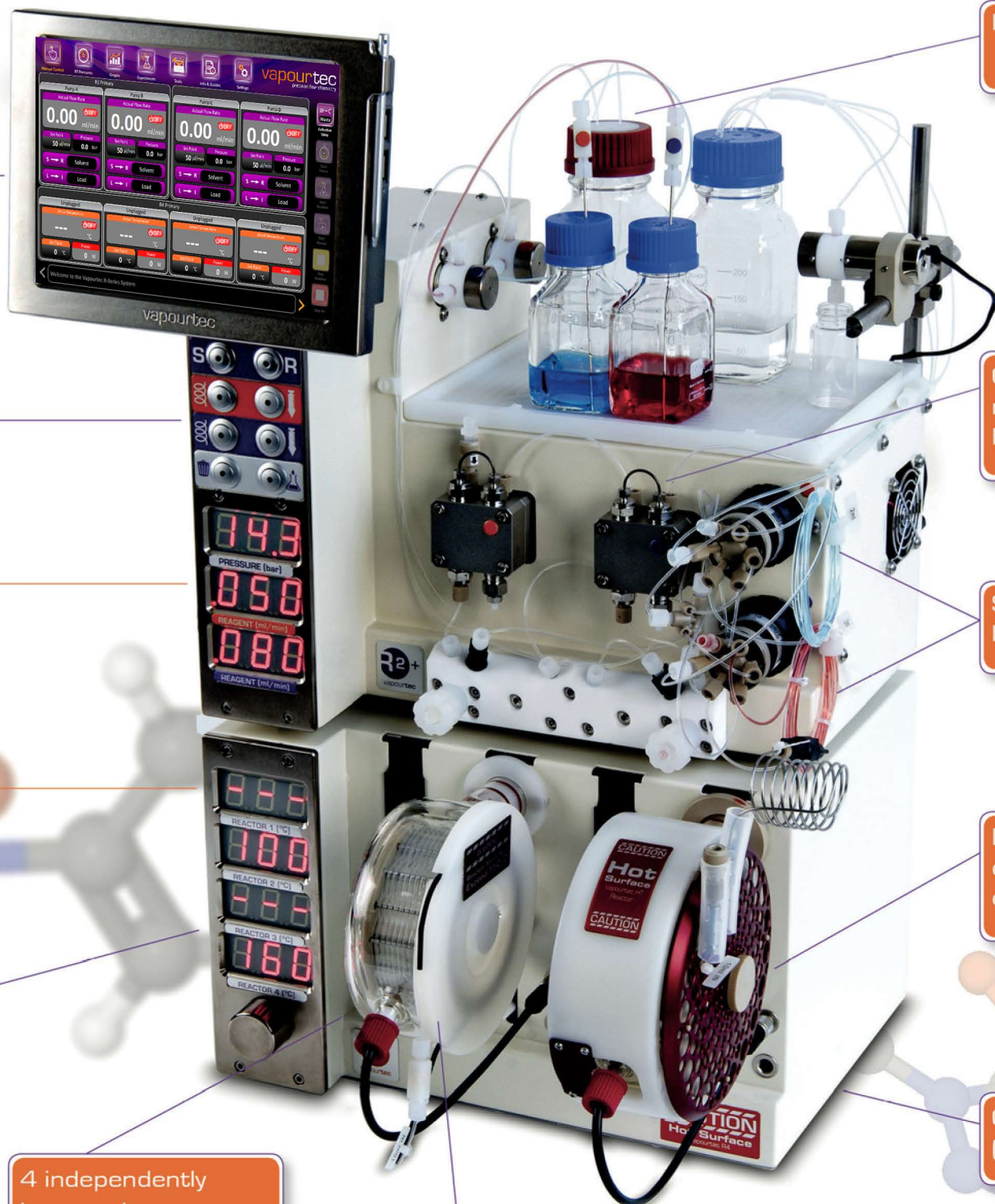
R4 Reactor
Module

Large bright display,
visible from across
the laboratory

| Pump model | Number of channels | Sample injection loops | Max reaction pressure | Strong acid resistance | Slurry pumping |
|------------|--------------------|------------------------|-----------------------|------------------------|----------------|
| R2 | 2 | X | 42 bar | X | X |
| R2 Plus | 2 | ✓ | 42 bar | X | X |
| R2 C | 2 | X | 42 bar | ✓ | X |
| R2 C Plus | 2 | ✓ | 42 bar | ✓ | X |
| R2 HP | 2 | X | 200 bar | X | X |
| R2 HP Plus | 2 | ✓ | 200 bar | X | X |
| R2 S | 2 | X | 10 bar | ✓ | ✓ |
| R2 S Plus | 2 | ✓ | 10 bar | ✓ | ✓ |
| R2 HF | 2 | X | 42 bar | X | X |
| R2 HF C | 2 | X | 42 bar | ✓ | X |

Modular system builds as required

The R-Series architecture enables modules to be combined to create the exact system required. Pumping modules, reactors and collection equipment are simply added as the need arises, giving a tailored system of proven high performance components, all in a compact easy to use system.



Integral reagent tray

Continuously monitored HPLC pumps

Sample loops with large injection ports

Different reactors for different situations, changed in seconds

Compact footprint (Smaller than A3)

4 independently temperature controlled reactor positions

Forced convection heating system, full reaction visibility

Reactor choice

The R-Series system allows separate temperature control of up to 4 reactors. These reactors can be combined for multi-step synthesis or used to allow increased total reactor volume, for higher throughput or longer residence times.

Reactors can be changed in seconds without the need for tools. Each is held securely within an insulated manifold.

The novel forced convection system ensures clean, accurate and efficient operation:

- Superb reaction visibility
- Clean and simple reactor setup
- Temperature measured at reactor wall, controlled to $\pm 1^\circ\text{C}$ across the full temperature range
- Rapid cooling and transition between temperature set points

The range of reactors allows easy set up of even more complex reactions.



Reactors can be changed in seconds, no tools required

Standard PFA coiled tube reactor

- Ambient to 150°C
- Strong acid resistance
- 2, 5, 10ml reactor sizes
- Residence times from 10 seconds to 200 minutes



High temperature coiled tube reactor

- Ambient to 250°C
- Coils in 316 stainless steel or Hastelloy®
- Rapid cooling for safe handling after use
- 2, 5, 10ml reactor sizes



Cooled coil reactor

- Ambient to -70°C , fully programmable
- Strong acid resistance
- No external recirculating chiller required
- Precooled reagent feeds
- Cooled mixing
- Cooled post reaction quenching



Standard column reactor

- Ambient to 150°C
- Ideal for scavenger resins, immobilised catalysts, solid supported reagents
- Accepts standard Omnifit glass columns
- Full visibility of column contents
- Precise temperature control



Micromixer chip reactor

- -40°C to 150°C
- Borosilicate glass reactor chips
- 7 reactor configurations available
- Up to 4 reactors at one time



Options for expanding the R-Series



RS-100 - Manual Control

- Entry level R-Series system
- Ideal for academic research
- Completely modular. Add further modules as required
- Two independent pumps
- Four position reactor heater
- Manual control



RS-200 - Automated Control

- R-Series system with automated control
- Ideal for medicinal chemistry and process research
- Two independent pumps
- Four position reactor heater
- Range of cooled and heated reactors available
- Can be expanded as required
- Automated control



RS-300 - Multiple Reactions Automated

- Automated R-Series system with 4 pumps
- Ideal for medicinal chemistry and process research
- Four position reactor heater
- Range of cooled and heated reactors available
- Product collector
- Can be expanded as required
- Automated control



RS-400 - Automated Reagent Addition

- R-Series system with 4 pumps and autosampler
- Ideal for library synthesis and catalyst screening
- Four position reactor heater
- Range of cooled and heated reactors available
- Autosampler/collector
- Fully automated control

Continuous innovation

The R-Series flow chemistry system is designed and manufactured by Vapourtec, a technology company located near to Cambridge in the UK. Strongly focused on R&D, Vapourtec consistently leads the market in the development of new capabilities in flow chemistry, often years ahead of other vendors.

With the modular R-Series platform, new developments are always backwardly compatible, ensuring that all Vapourtec users have guaranteed access to the exciting future of flow chemistry.

Vapourtec's commitment to sound engineering ensures that reliability and robustness is built in from the start. This is reflected in the satisfaction of our customer base, many of whom have already returned to place repeat orders.

