The Revolutionary E-Series Flow Chemistry System
Robust, Easy to Use, Affordable

The new Vapourtec E-Series range of flow chemistry systems offers a breakthrough in simplicity and robustness while providing unprecedented value for money.

Flexible
Up to 3 reagent pumps, and 2 reactor positions which each accept the full range of tube and column reactors from the popular and well proven Vapourtec R-Series platform.

Robust
Simple, reliable and smooth pumping across a wide range of flow rates. Capable of pumping strong acids, organometallic reagents, even light suspensions.

Easy to use
Clear, intuitive touch screen user interface. Pumps that self prime. Adjustable acid compatible back pressure regulator. All up and running in seconds.
Choose the options that suit your needs.

Using the same extensive set of reactors that are available for the high-end Vapourtec R-Series system, the **E-Series** offers the flexibility to take on a wide range of applications.

- Simple intuitive touch screen interface
- Low pressure inert gas manifold
- Chiller for cooled reactors
- Collection valve and gantry
- Two reactor positions, independently temperature controlled
- Manually adjustable back pressure regulator
- Wide range of reactor sizes and types, changed in seconds
- Excellent Reaction visibility in tubes or columns
- Robust, smooth, self priming pumps
- Optional 3rd pump
A Simple but Powerful User Interface

The **E-Series** touch screen offers a simple clear interface for immediate use with little or no learning curve.

The facilities offered by the interface range from the basic **easy-Scholar** to the more sophisticated **easy-Medchem**.

All models come with useful tools such as:

- Solvent Vapour Pressure Calculator
- Arrhenius Reaction Rate Calculator
- Residence time calculator
- Dispersion and residence time distribution tool

Robust and Reliable Pumping

At the heart of every **E-Series** system is the innovative new Vapourtec **V-3** pump, which offers

- 0.100 to 10ml/min flow rate
- Up to 10 bar delivery pressure across whole flow rate range
- Smooth continuous flow
- Automatic push-button priming
- The ability to easily pump
  - Strong acids
  - Organometallic reagents
  - Light suspensions
  - Consecutive immiscible solvents
Reactor choice

Each E-Series system has two reactor positions and each position can accept the full range of reactors available for the high-end Vapourtec R-Series.

Reactors can be changed in seconds without the need for tools. Each reactor coil or column is held securely within an insulated glass manifold, where the novel forced convection system ensures clean, accurate and even heating or cooling.

- Superb reaction visibility
- Clean and simple reactor setup
- Temperature measured at reactor wall, controlled to ±1°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

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**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

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

**Cooled column reactor**
- Ambient to -40°C
- No external recirculating chiller required

**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

**Gas/Liquid “tube-in-tube” reactor**
- Ambient to 150°C
- 15ml liquid volume reactor sizes
- Simple control of gas by pressure regulation (not included)
- Ideal for carbonylation, hydrogenation.

**Other Reactors**

**Heated Mixer Manifold**
- Used when reagents must be at operating temperature before mixing takes place
- Accepts the same spare coils as cooled reactor

**Simple Stainless Steel Reactor Coils**
- Ambient to 150°C
- Used when reactor must not permit any O₂ ingress, e.g. for some polymerization

**Split Coils for cooled reactor**
- Enables 2 reaction steps in one reactor housing
- Available in
  - 1ml:9ml
  - 3ml:7ml
  - 5ml:5ml

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*Reactors can be changed in seconds, no tools required*
One Product, Multiple Configurations

The E-Series is available in a number of configurations for different applications.

All models come ready to use with a touchscreen interface, reagent bottles, tubing, mixer(s), back pressure regulator and reactor(s). Systems can be purchased with 2 or 3 reagent pumps. There are also a range of upgrade possibilities for enhanced functionality.

Available Configurations

- **easy-Scholar**
  - For undergraduate teaching and basic research
  - Basic interface for teaching flow chemistry principles
  - Standard tube reactor manifold with 10ml PFA coil

- **easy-Polymer**
  - Continuous polymerization and nanoparticle synthesis
  - Enhanced touchscreen interface for more productive operation
  - Collection Valve Kit
  - Stainless steel reactor for \( \text{O}_2 \) free polymer synthesis

- **easy-Medchem**
  - Quick access to flow for reaction exploration and scale-up
  - Enhanced touchscreen interface for productive walk up operation
  - Collection Valve Kit
  - Heterogeneous column reactor
  - Organometallic reagent kit

Upgrade Options

- **Additional Pump**
  - Convert from 2 to 3 pumps
  - 3rd Pump and mounting plates
  - 3rd Solvent/Reagent valve
  - 3rd Reagent bottle
  - Extra tubing kit and mixer

- **Cooled Reactor Upgrade**
  - All that’s needed to run sub ambient reactions
  - Cooled reactor with 5ml reactor coil
  - Chilled gas generator

- **Collection Valve Kit**
  - Automated separation of product/waste output
  - Collection valve and cable
  - Retort stand and gantry
  - Collection tubing kit
  - Waste bottle

- **Organometallic Reagent kit**
  - 3 long septum piercing aspiration needles (and tubing) for pumping air sensitive reagents
  - 3 short septum piercing needles (and tubing) for introducing inert gas blanket to reagent bottles
Continuous Innovation

Vapourtec has been at the forefront of lab scale flow chemistry development since 2007 when the R-Series modular system was first launched. Designed and manufactured by Vapourtec in the UK, the modular R-Series has consistently led the market, offering new continuous chemistry capabilities, yet always maintaining backward compatibility so that even the earliest users could still take advantage of the latest developments.

The new E-Series system continues that innovative trend, combining the R-Series forced convection reactor heating system with the robust and easy to use V3 pump design, making simple flow chemistry accessible to a broader range of users, and with a much reduced learning curve.

Vapourtec’s continued commitment to sound engineering ensures that reliability and robustness is built in from the start.

This is reflected in the satisfaction of the Vapourtec customer base, many of whom have already returned to place repeat orders.

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