

New E-Series Flow Chemistry System Released

Vapourtec are pleased to announce a revolutionary new flow chemistry system, which makes meso-scale flow chemistry available to all.

The E-Series is a new range of self contained flow chemistry systems which are

- Simple to use
- Robust
- Very cost effective

Available variants include:

the **easy-Scholar**

- for teaching and basic research

the **easy-Polymer**

- for polymer and nanoparticle synthesis

the **easy-Medchem**

- for rapid access to flow reactions in a medicinal chemistry environment

The variants differ in the range of feature supplied as standard, and in the different versions of user interface included.

The E-Series system combines the unique Vapourtec forced convection reactor heating system and reactors (as used by the high end R-Series system) with a revolutionary new pump, all in a compact self contained package.

Robustness and ease of use make it ideal for walk up and teaching use.

The V3 Pump

At the heart of the E-Series lies a new pump which offers

- smooth flow
- strong acid compatibility
- tolerance of gas bubbles and light suspensions
- automatic push button priming

All E-Series systems can be purchased with 2 or 3 pumps, and a 2 pump system can be easily upgraded to 3 pumps later.



easy-Medchem system shown with cooled reactor kit



Forced Convection heating



V3 pump technology

Easy to Use

The E-Series system has been designed with ease of use in mind.

The touch-screen user interface (placed at an ergonomically ideal height with full tilt adjustment) gives simple, intuitive access to all the system functions without any programming.

Built in tools enable the user to

- determine axial dispersion for a given reactor setup
- estimate reaction time reduction at elevated temperature
- ensure sufficient pressure is available to prevent solvents boiling at elevated temperatures



The V3 pump offers unmatched ease of use.

- It can be primed at the start of the day with a single push button.
- There's no need to pressurise the reagent bottles
- The lack of manual priming makes for a very simple tube layout on the system.

Furthermore, the V3 covers the full flow rate range from 100µl/min up to 10ml/min without any need to change components.

All these factors make the system ideal for walk-up / open-access use.

And because both tube and column reactors offer full visibility during the reaction, it's very easy to see exactly what's going on during your reaction.

Robust

The V3 pump is key to the system's robustness:

- It can pump immiscible consecutive solvents without any interruption
- It is even possible (though unlikely) to switch directly from pumping water to pumping an organometallic reagent such as BuLi with no interruption in flow and no detrimental effects on seals or valves
- Light suspensions can be pumped without pump damage or loss of flow rate accuracy

Flexible

Like the high end R-Series system, the E-Series can be configured with whatever combination of tube or column reactors is required. Each of the two reactor positions can accept any reactor type, be it tube or column, heated or cooled, making it an ideal platform for simple exploration of previously unknown reaction areas.

What can the E-Series system be used for ?

The E-Series systems can take on a wide variety of chemistry, as it covers the same range of reaction temperatures as the more sophisticated R-Series system.



**Standard reactor
(+150°C)**



**High temperature Reactor
(+250°C)**



**Cooled reactor
(-70°C)**

And with the same proven heat transfer and removal capability as the R-Series, the system takes exothermic reactions in its stride.



Column Reactor

- ◀ And The E-Series is not just for homogeneous reactions. It supports the use of columns (both heated or cooled) for solid supported catalysts and reagents.

The ease with which the V3 pump handles moisture or air sensitive reagents and the availability of a low temperature reactor makes the system ideal for organometallic chemistry especially cryogenic reactions.

Like the R-Series, it features a built in inert gas blanketing system including a low pressure regulator and distribution manifold.



Inert gas blanketing

Finally - Flow Chemistry Within Reach

To many researchers in academic departments, a flexible flow chemistry system with real scale-up capability has simply been out of reach.

The E-Series changes that. A 2 pump easy-Scholar system costs a similar amount to a typical lab microwave synthesizer.

And for medicinal chemists, who want a simple tool for exploratory experiments but whose annual budget is limited, the E-Series offers a hitherto unavailable stepping stone.

FAQ

Q What reactors are available for the E-Series ?

A All of the same reactors which are available for the high end R-Series system can be used with the E-Series, including

- acid resistant PFA reactor coils, for reaction temperatures from -70 up to +150°C
- stainless steel reactor coils, for reaction temperatures up to 250°C
- glass columns for solid supported catalysts or reagents from -70 up to +150°C
- the Vapourtec gas/liquid tube-in-tube membrane reactor

Q So if I have an R Series already they can share reactors ?

A Yes

Q Are there any restrictions on reactor types/positions ?

A No, both E-Series reactor positions can accept heated, cooled or high temperature reactors

Q What solvents can the E-Series system handle ?

A The robust V3 pumps can pump a full range of organic solvents, strong mineral and acids, Note, however that

- the high temperature (up to 250°C) stainless steel reactors cannot accept strong acids
- for some very volatile solvents, there will be a limiting temperature above which the V3's 10 bar maximum pressure is not sufficient to prevent solvent boiling.

A free charts is available at <http://www.vapourtec.co.uk/bpchart>

Q What can the R-Series do that the E-Series can't do ?

A The R-Series is a high end system for highly productive optimization and scale-up offering capability as follows:

- pressures up to 50 bar or 200 bar for the high pressure system (whereas the E-Series systems are limited to 10 bar)
- up to 4 reactors
- up to 4 pumps
- sample injection loops
- All the benefits of FlowCommander™ software, including full reaction automation, logging, charting and reporting
- integration with fraction collector or autosampler for automating multiple reactions
- integration with UV or IR sensors
- external interface for control by external supervisory software
- offline programming for more efficient use of shared system

So the E-Series does not “replace” the R-Series.

Q When is the E-Series available ?

A First deliveries will be in Q4 2012

Q Is the E-Series available through my local distributor ?

A Not at this time. It will be sold by Vapourtec directly.

Q How much does it cost ?

A That depends on the configuration chosen. Contact Vapourtec for details.