

I N T E R O D U C I N G

# ***EVOLUTION***

Purge & Trap Concentrator

***The Best Just Got Better***



**EST**  *Rely On Us*  
analytical 

# Evolution 2 Purge and Trap Concentrator

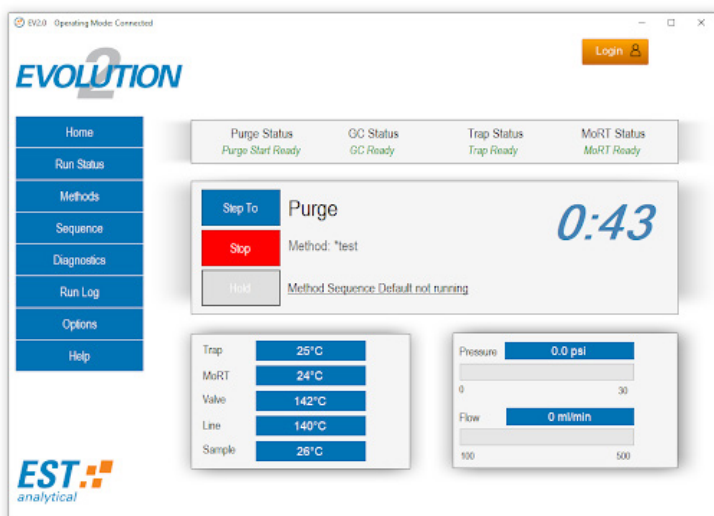
## Key Features

The Evolution 2 (EV2) was designed from the beginning with the user in mind. The system provides high productivity, stability, reliability and fast maintenance to meet the needs of today's laboratory.

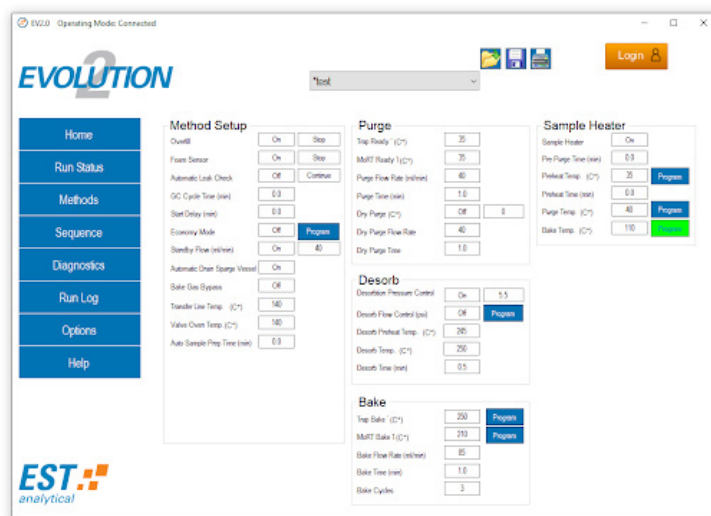
- ✓ Low carryover (unique patented feature)
- ✓ High resolution (unique patented feature)
- ✓ Easy maintenance and diagnostics
- ✓ Superior moisture control
- ✓ Faster trap cool down times
- ✓ Enhanced Software

## Enhanced Software

The EV2 includes enhanced software features that make its operation easier. The updated user interface provides the user with increased navigation and landscape to view methods on one screen. The draggable and resizable screens allow the user greater efficiency making routine operation simple and easy.



Run Status Screen



Methods Screen

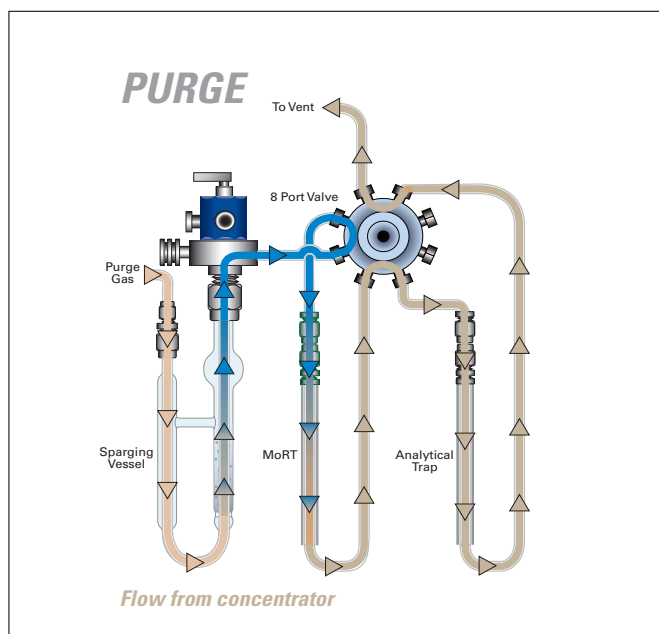
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## Unparalleled Stability and Moisture Control

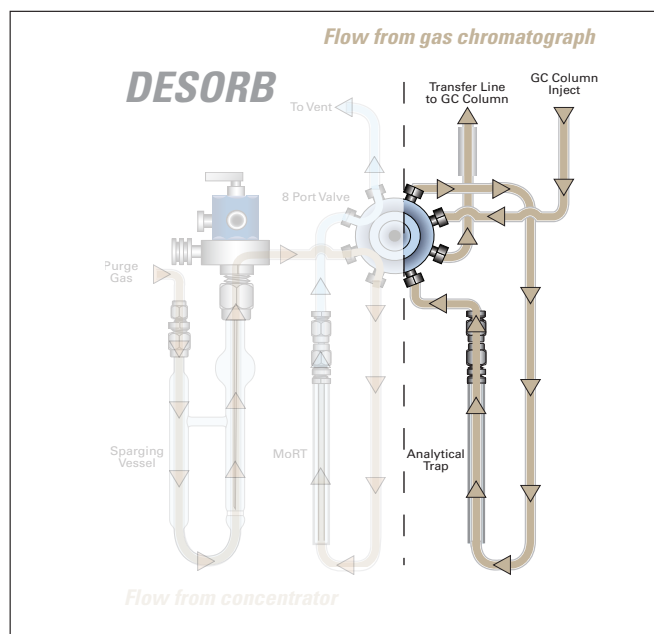
As detection limits have been pushed lower, and Mass Spectrometer systems are more sensitive, moisture control is key to the overall stability of the complete system. Other systems collect the analytes and water on the analytical trap, then, during desorb, the sample flows through a moisture removal system on the way to the GC. When evaluating these systems, one problem quickly became apparent. If you are going to remove moisture during the desorption step when your flow is controlled by the GC, the effectiveness of this design will be determined by many different factors. Desorption flow rates can range from 5ml/min to over 100ml/min depending upon GC/MS models, columns, split flows, head pressures etc. and no system can be effective over this wide range of flow rates.

## Smaller Footprint

The EV2 is 26% smaller than the Evolution for those labs where bench space is a premium



Moisture control performed during purge



8-port valve separates the desorb flow from the GC away from the moisture control, decreasing the sample path length between the trap and GC

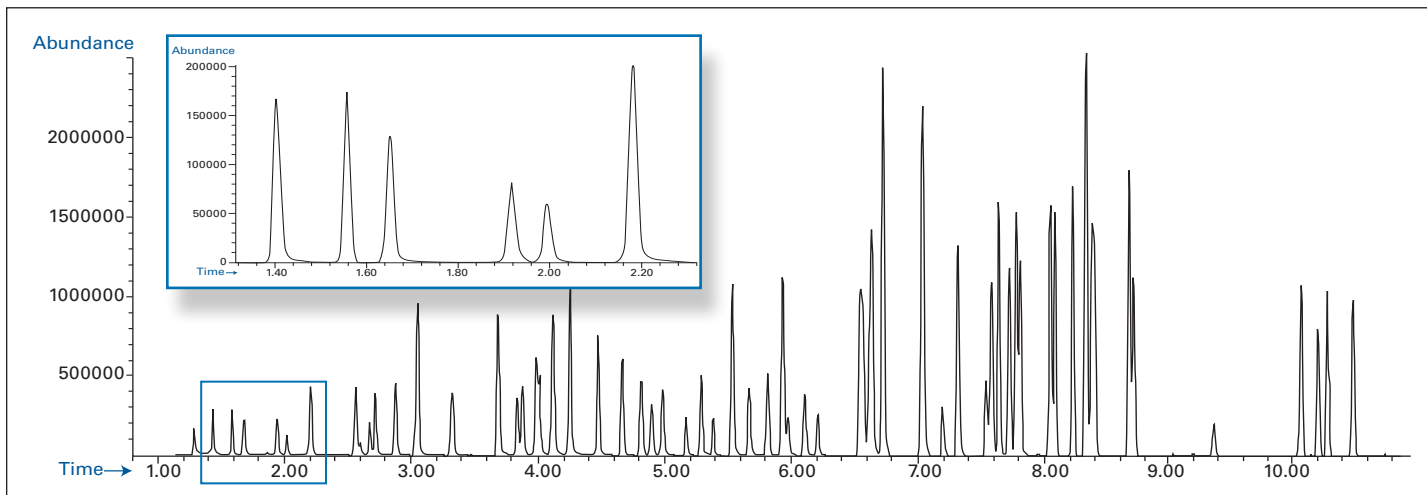
## Upgraded Electronics

The EV2 includes cutting edge electronics ensuring sustainability and conductivity for future innovation. Reducing older electronic components with newer ones helps drive sustainability to ensure long term success with fewer fail points that can result in a lower cost of ownership.

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## Patented Desorb Pressure Control Provides Superior Chromatography

In an effort to improve GC run times and resolution, many laboratories have gone to very narrow bore GC columns. To run these columns, high column head pressures must be used. This can be a challenge to the purge and trap system. After purging, a typical purge and trap has an internal pressure of <3 psi. If the GC is running a head pressure of 20 psi, this can cause a tremendous pressure pulse that travels into the trap which, in major cases, can cause trapping material to come out of the trap and in minor cases, can cause peak broadening by moving the gases around inside the trap. Desorb Pressure Control (DPC), after purging is completed, builds the pressure inside the system to a programmed set point. By increasing the pressure inside the system to balance the pressure coming in from the GC, the pressure pulse is avoided.



50 ppb EPA Method 8260 on a 6890/5973 GCMS. Front end gases showing improved resolution are highlighted.

## Improved Shell Design

The EV2 offers easier routine maintenance when changing traps. The system is designed for easy on off covers for quick and easy access to the traps.

## Advanced EPC Design

The system is designed without the need for back pressure from a vent restrictor. This results in a lower cost of ownership.

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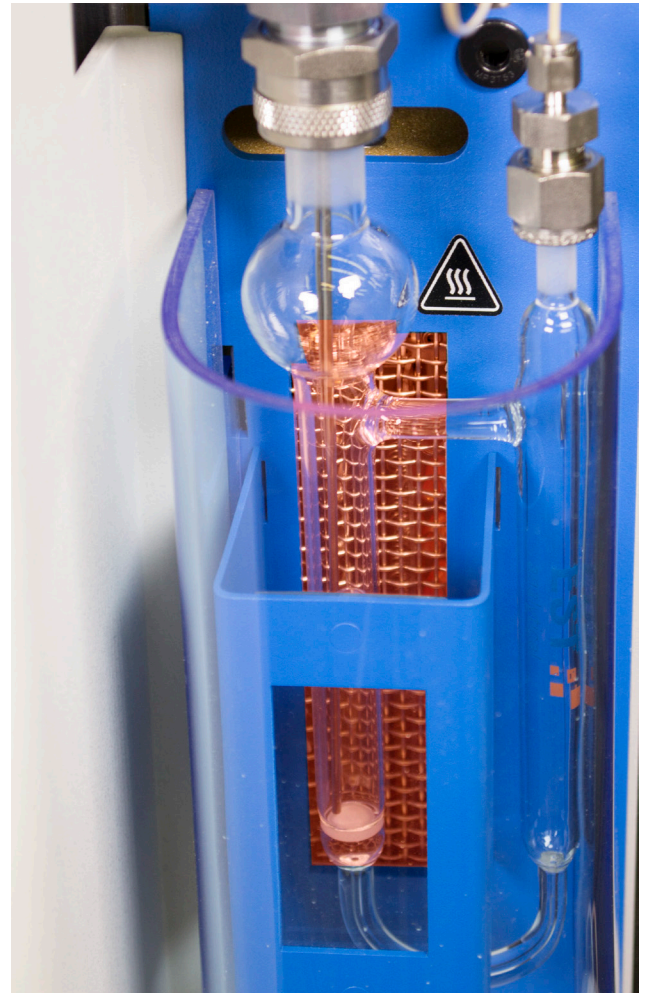
## Optimize Productivity

- ✓ Maximize billable sample runs per day.
- ✓ Speed up cycle times with improved cool-down times.
- ✓ Decrease carryover with patented Carryover Heater option

## Reduce Carryover

Re-running samples due to carryover can limit overall productivity in the laboratory. From the beginning, the EV2 was designed to improve carryover. A study was undertaken to determine what was contributing to carryover in purge and trap systems today. When a high level sample is run, then a blank follows, all concentrators will exhibit some form of carryover. However, if you run a high level sample, replace the glassware, then run a blank, the run will be almost completely clean. Even though systems are connected to autosamplers that rinse the glassware, the glassware is still the largest contributor to carryover.

EST Analytical patented a process on the EV2 where there are two flows that go through the system during bake; one flow is directed across the trap and another separate flow goes through the glassware. Other systems actually have the bake flow travel through the trap then through the cold glassware, depositing heavy compounds on the cold glassware surface to be seen on subsequent runs. By separating the flows, the EV2 avoids this problem and by heating the sparger vessel up to 120 °C during the bake sequence, carryover is reduced dramatically.



## Faster Trap Cool Down Times

New engineering design for enhanced ventilation results in reducing trap cool down times by 40% over previous models.

\* Cool down times vary and are impacted by individual laboratory temperature

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## Specifications

### Major Features

- Carryover heater (patented in Bake mode)
- Sample foam sensor
- Moisture control during purge
- 8-port valve isolates the moisture control pathway from the desorb pathway
- Precise temperature control
- Siltek™ sample pathway
- Patented Desorb Pressure Control

### Dimensions

- 43.2cm x 27.94cm x 40.6cm
- 15"H x 9"W x 17.25"D

### Weight

- 30lbs (13.6kg)

### Programmable Time Ranges

- 0 - 999.9 min for all timed events

### Programmable Temperature Ranges

- Trap: ambient to 350 °C
- Transfer line: ambient to 250 °C

### Trap

- Standard EPA-specified traps
- Conductive heating/replaceable insert
- Various sorbent materials available for US EPA methods and other applications

### Valve

- Electrically actuated
- 8-port, 45° rotation
- Replaceable valve rotor

### Transfer Line

- Siltek™ tubing, 0.020 ID
- 60" standard

### Glassware

- Standard 5ml fritted sparge vessel
- Optional fritted sparge vessels
  - 15ml and 25ml available
- Optional unfritted sparge vessels
  - 5ml and 25ml available

### Power Requirements

- Standard unit 100-130VAC (+/-10%)/50/60Hz (10A)
- Optional unit 230VAC (+/-10%)/50/60Hz 6.3A

### Gas Supply

- Ultra-high purity (99.999%) pure Helium or Nitrogen
- Incoming gas pressure
- 60-80 psi

### Instrument Control

- Windows ® 7 or Windows ® 10. Via USB



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