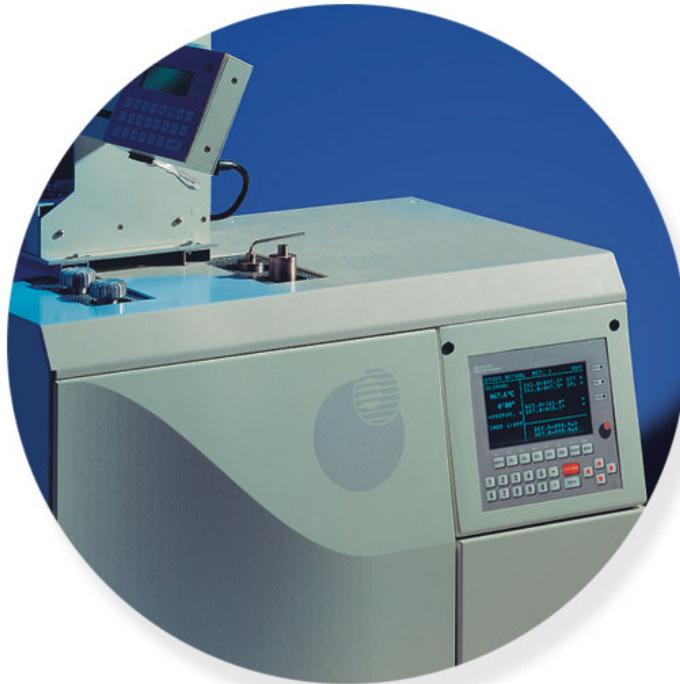


KONIK HRGC 4000

The result of 30 years of experience in designing and manufacturing HRGCs



KONIK HRGC 4000® 1





The universe of molecules...
The world of KONIK

more than **25 YEARS** of
CREATIVE INNOVATION

www.konik-group.com

**The power of sample
preparation, separation
and identification**

KONIK-Tech is an
ISO 9001 Certified Company

EUROPE +34 93 590 28 40
USA 305 557 22 12

KONIK HRGC 4000 B series



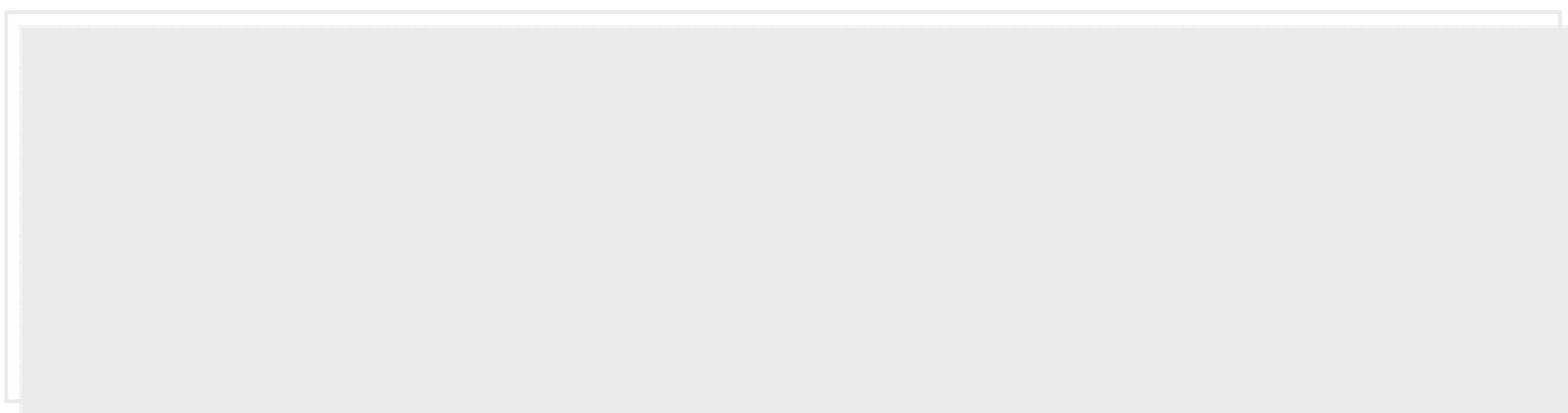
**Fast, Reliable,
Accurate & Productive**

Dual Standard and Fast Chromatography
Oven with $\pm 0.01^\circ\text{C}$ stability
Cold Septum, Purge-less Injector
Electronic Flow Controls



Evolution?... No! Revolution!

- Since 1978... Persistant specialization and commitment to an innovative design concept based in the integral modularity of: chassis, pneumatics, microprocessor, injectors, detectors, data systems,...



KONIK HRGC 4000® 3



Upgradable, retrofittable, expandable, versatile, ergonomic, powerful...

- Modules are easily retrofitted from one model to another
- Low maintenance
- Low obsolescence
- High residual and permanent value
- Ecological (modules are always re-used)

Microprocessor Module



KONIK HRGC 4000® 5

- Large LCD menu-driven display
- Interactive
- User friendly
- Flexible customized options
- Available in most roman alphabets



Microprocessor Module **CRASH THROUGHS**

- Large graphical and interactive LCD screen
- Temperature program and output chromatograms displayed in real time
- 10 methods storage and method linking. Unlimited number of methods in PC hard disk
- 3 password levels
- Power fail memory protection
- Control of temperatures of 8 isolated blocks
- Overheating protection
- Autodiagnostics and self-testing.
- Autoswitch on/off.
- 4 extra timers control

- Fastest heating and cooling oven

Oven CRASH THROUGHS

- High performance and low thermal inertia oven design with expanded temperature range (from -90°C with cryo option to 490°C in 0.1°C steps)
- Optimized control of two oven flaps for near ambient.
- Up to 15 ramps upon request (5 ramps standard) from 0.1°C/min to 40.0°C/min in 0.1°C/min steps (up to 100.0°C/min optional)
- Temperature resolution: ± 0.01°C and accuracy: ± 0.1°C PID controlled
- RAC® (Ready Active Control)
- Allows ensambling up to 5 automatic valves for multidimensional chromatography and MS and FT-IR interfaces

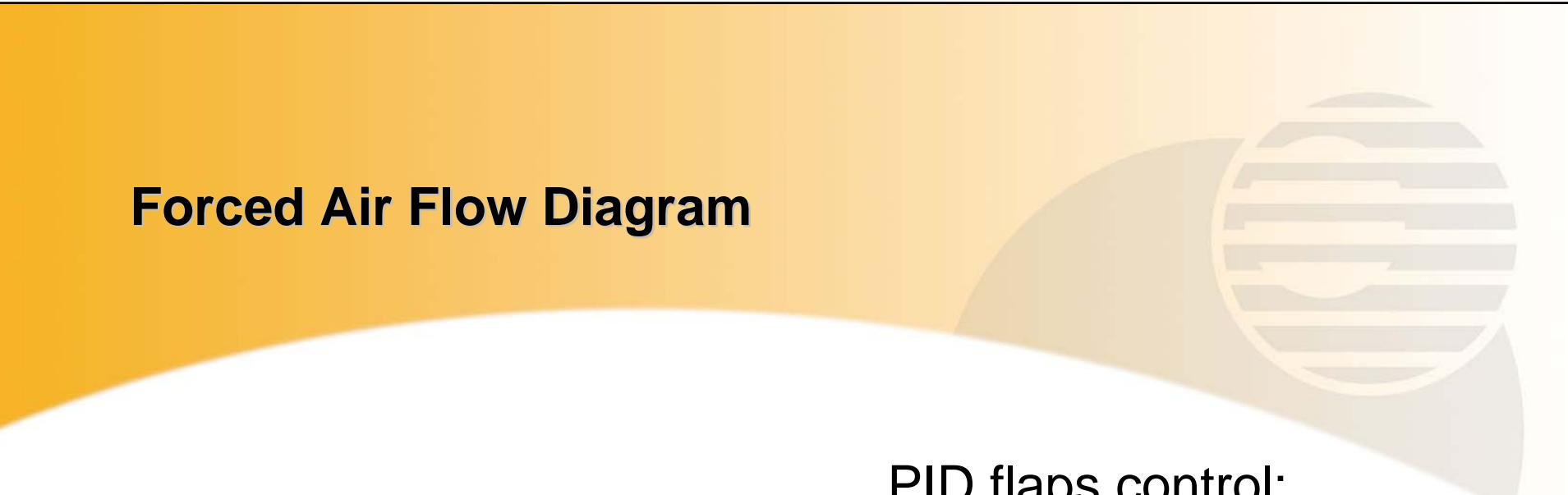
Forced Air Flow

- Two ovens: one inside another guarantees maximum accuracy. Maximum stability: $\pm 0.01^{\circ}\text{C}$. Displayed: $\pm 0.1^{\circ}\text{C}$
- Fast forced air cooling from the bottom to the lateral flap
- Minimum cooling time between runs: from 250°C to 50°C in less than 5'

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Forced Air Flow Diagram



PID flaps control:
maximum stability even at
temperatures close to
room temperature

Minimal thermal inertia

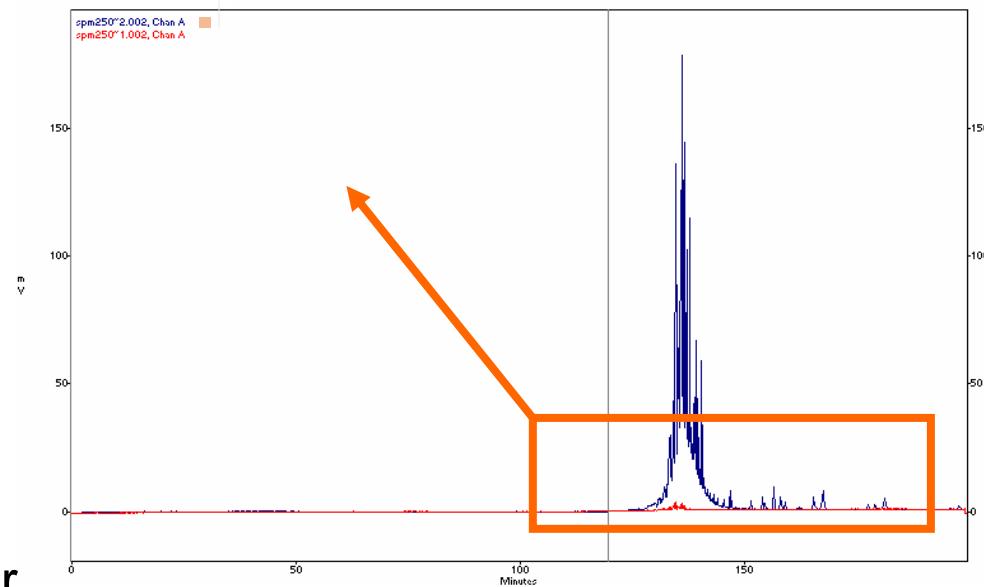
KONIK HRGC 4000® 10



Injection Systems

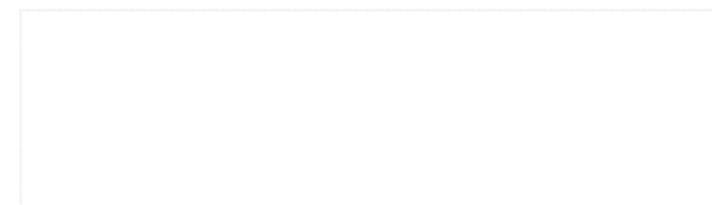
- Cold septum, purge-less multimode and universal injector. The guarantee for sample integrity from low boilers to high boilers and gas savings
- All injection options available for any type of column: capillary, megabore, packed, PTV, ...
- Temperature: 25 to 490°C in 0.1°C increments (450°C advisable)
- Accuracy: 0.1°C PID controlled
- Overheating protection
- Purge-less capillary injector with 5 operational modes
- Programmable splitless time and ratio
- Control RAC® sets on/off “ready” signals

Cold Septum Purge Less Tight Injector



With forced air

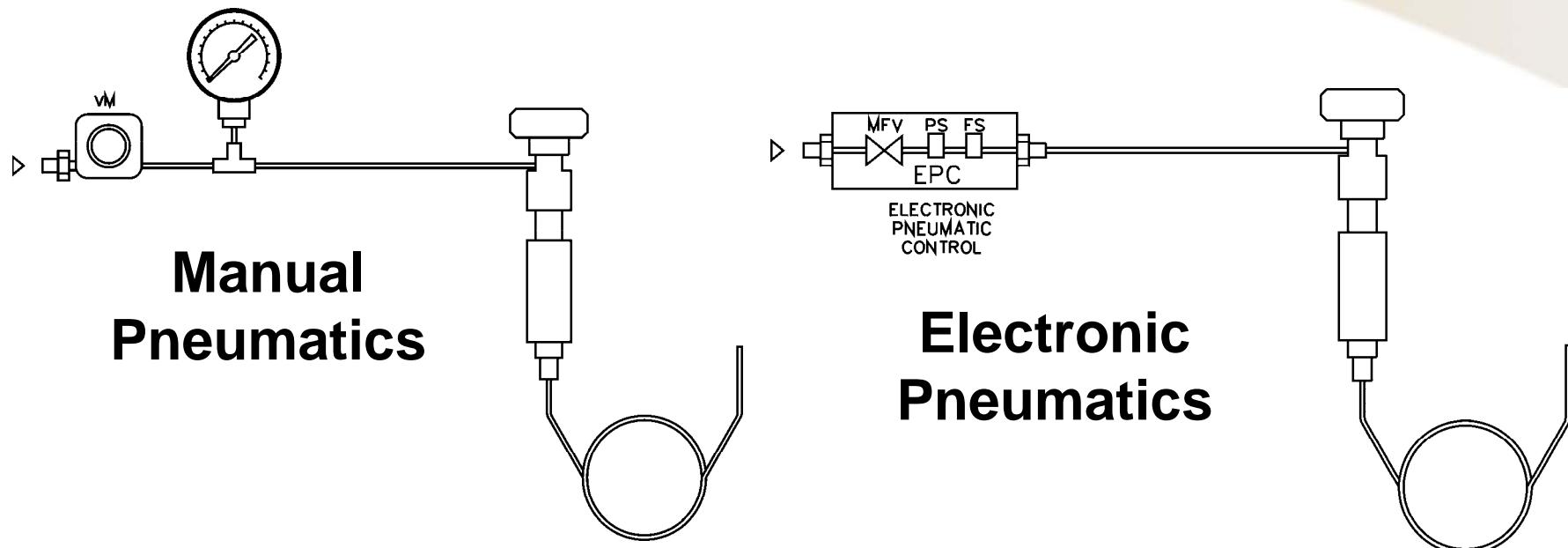
Without forced air



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KROM+MASS

Injection Systems: Conventional and On-column

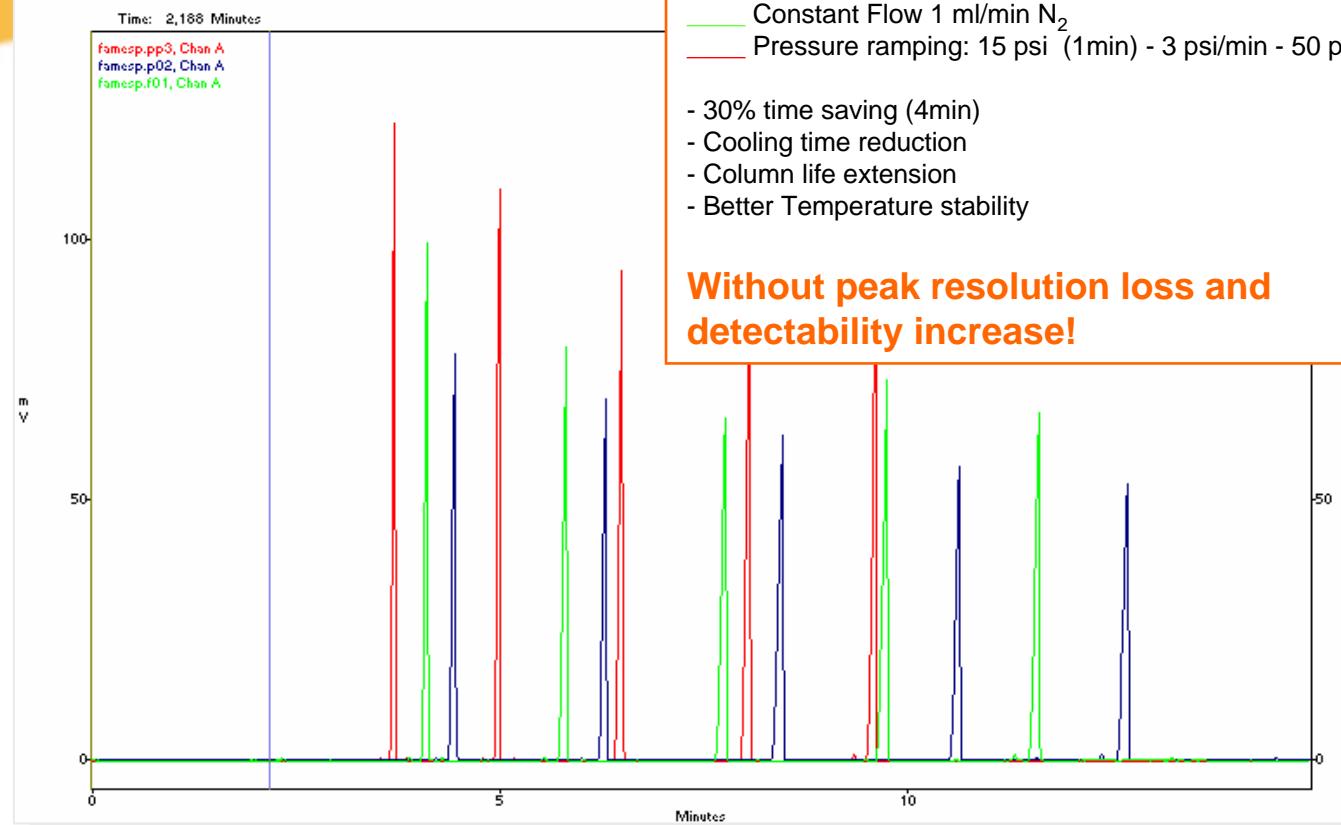


With **Electronic Pneumatics** you get better reproducibility
and positive and/or negative pressure and flow programming.

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Temperature/Flow Programming (+/+) ULTRA-FAST CHROMATOGRAPHY



KONIK HRGC 4000® 15

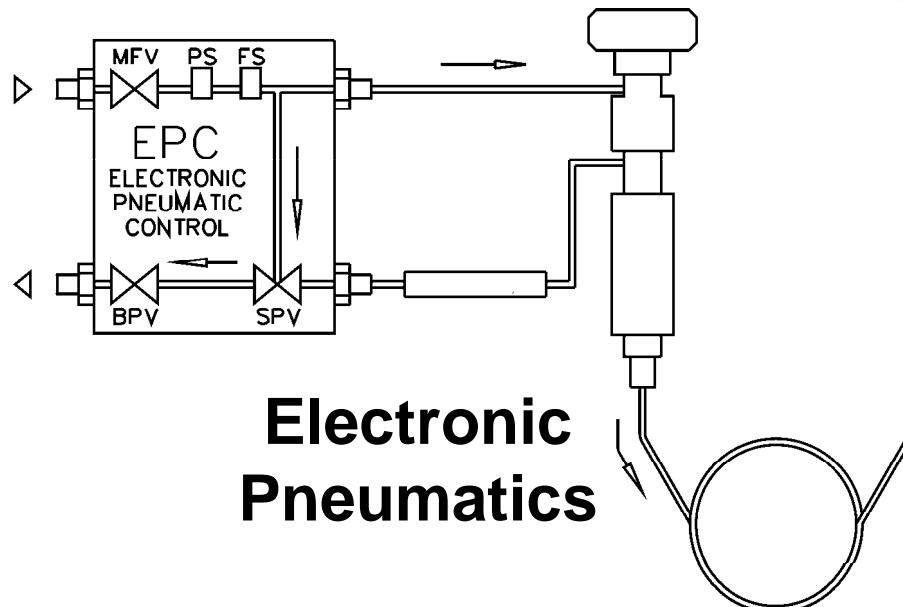
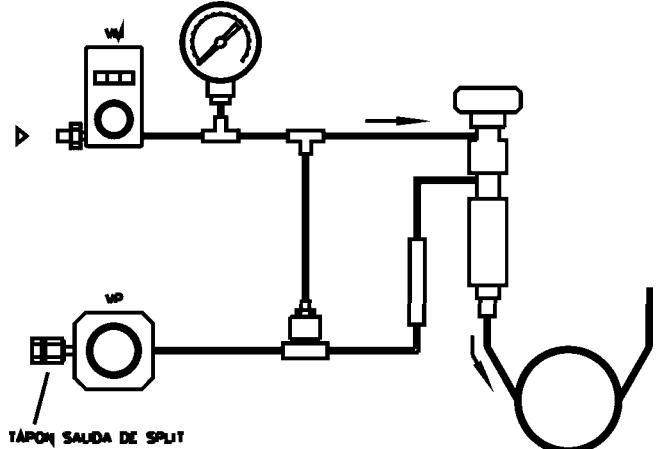
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Injection Systems: Capillary Injector

Manual Pneumatics



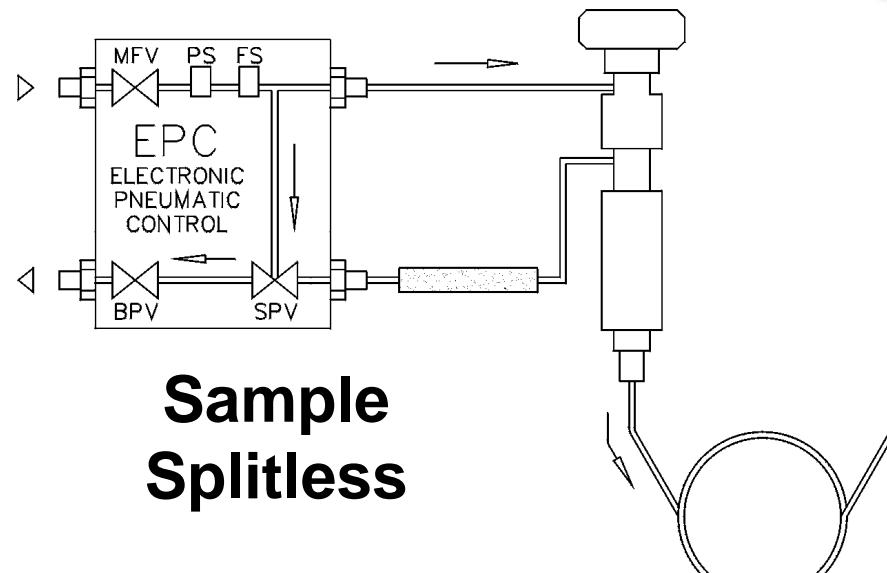
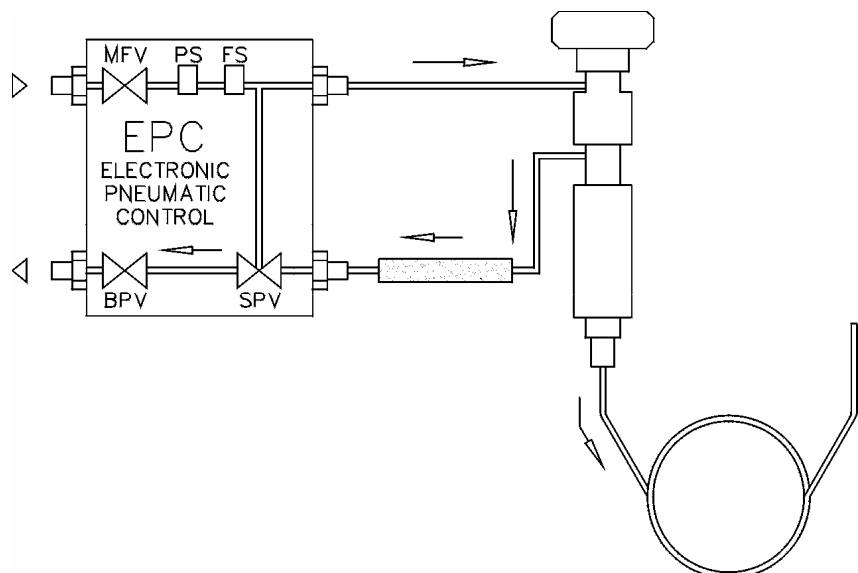
Electronic Pneumatics

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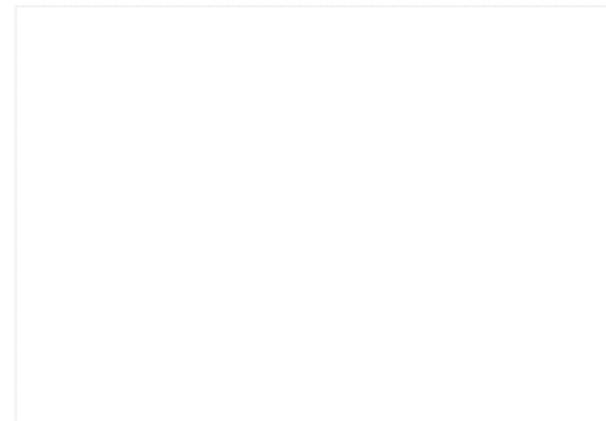
Injection Systems: Capillary Injector

Sample Split Mode



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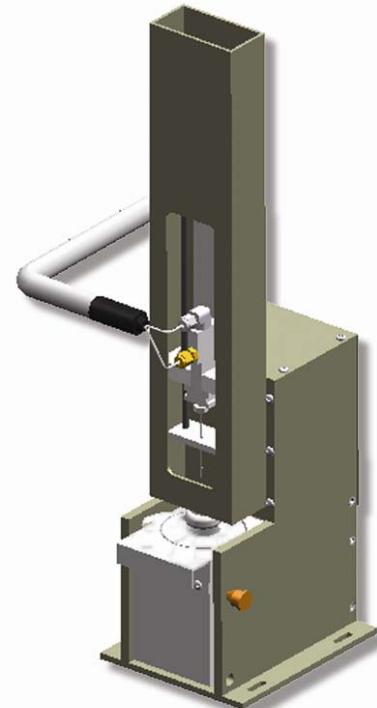


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Injection Systems: HS Monovial

- Sample preparation method for complex matrices.
- Analysis of volatile compounds in vapor phase in equilibrium with liquid/solid phases.
- 6, 10 or 20 ml vials.
- Different injection volumes: programmable injection time.
- EPC Control of Carrier and Pressurization Gas.



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Detection Systems

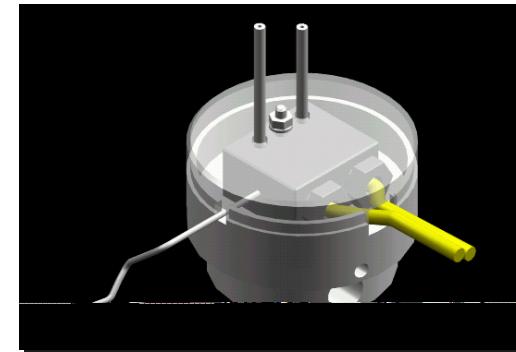
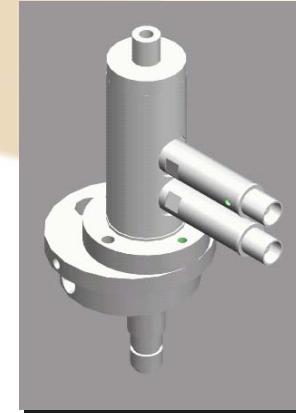
- Full range of digital detectors: FID, TCD, ECD, NPD, FPD, FPD/FID, PID, DID, HECD, OLFACTORY, PDHID/PDECD, MASS
- Modular and interchangeable with digital electrometers / amplifiers for any type of column
- Independent temperature programming from ambient to 490°C in 0.1°C steps
- Overheating protection
- RAC® sets on/off “ready” signals
- Automatic autozero
- Highest detectability



Detectors: FID and TCD

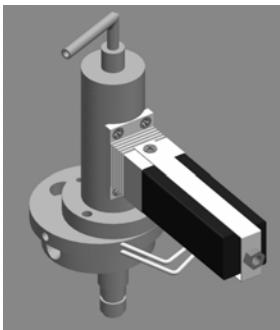
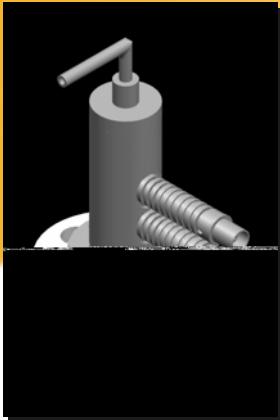
- **Flame Ionisation Detector - FID**
 - Extremely sensitive. Exhibits a very wide linear dynamic range.
 - Universal detector: used for analysis of organic compounds (C-H groups).

- **Thermal Conductivity Detector - TCD**
 - Great universality and linearity.
 - Analysis of permanent gases and organic/inorganic compounds (CO_2 , CS_2 , H_2O , H_2 , N_2 , light hydrocarbons ...).
 - Rhenium/Tungsten; Gold/Tungsten filaments.
 - Non destructive detector. Possibility of coupling with other detector.



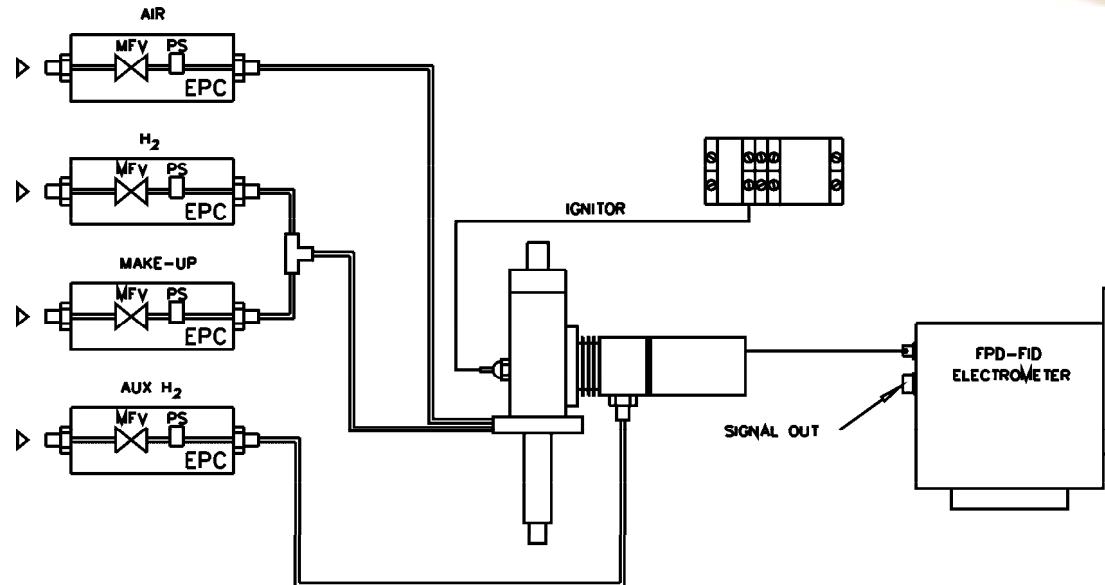
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Detectors: ECD, NPD and FPD (FID/FPD Dual)



- **Electron Capture Detector - ECD**
 - Extremely sensitive and highly specific.
 - Ideal choice for analyzing halogenated compounds: chlorinated pesticides, (PCB), trihalomethanes,...
- **Nitrogen Phosphorous Detector - NPD**
 - Very sensitive and specific to Nitrogen/Phosphorous containing compounds.
 - Alkaline bead thermostatically controlled.
- **Flame Photometric Detector (FID/FPD Dual)**
 - Photometric detector.
 - Great sensitivity and selectivity to Sulphur and Phosphorous containing compounds.
 - 393nm (S), 525nm (P) filters
 - Dual FID/FPD.

Diagram of the Detection System



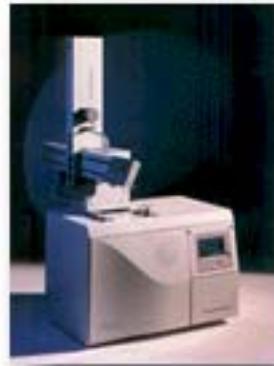
With **Electronic Pneumatics**: Digital setting and control of make-up gas
and digital control of all detector gases

Versatile and Innovative

- All the injectors: No septum purge required
- EPC: EPC of carrier, make up and detectors gases controlled and regulated through microprocessor and software. Independent pressure and flow programming
- Complete range of detectors: Maximum sensitivity and linearity



- **User friendly:** Easy menus via LCD graphic display
- **Configured at will:** Optimizable for any application
- **Complete range of peripherals:** Data Systems, Autosamplers, Head Space, Pyrolyzers,...
- **Total automation and control:** RS232 & RS485



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Total Automation

In Sample Preparation
Static and Dynamic
Head Space, SP μ E,
Thermal Desorption,
Multi-vial instrument

In Autosamplers both
for HRGC and HPLC

In Integration and
Control Software
Konikrom Plus®

