

# PROChem OPENLAB CHEMSTATION MONITORING SOFTWARE

## PROChem adapts lab GC to industrial environment requirements

By favouring the integration of Agilent Technologies laboratory chromatographs in an industrial environment, PROChem enables to combine process operation requirements and analytical performance.

The software's basic functionalities include the control of selection valves, the programming of intelligent sequences with anticipation of the next channel under analysis and the possibility to select different analytical methods.

PROChem also simplifies the operator interface and results visibility by minimizing the actions required by the user thanks to automatic calibration, integrated calculation programming, integration of external sensors.

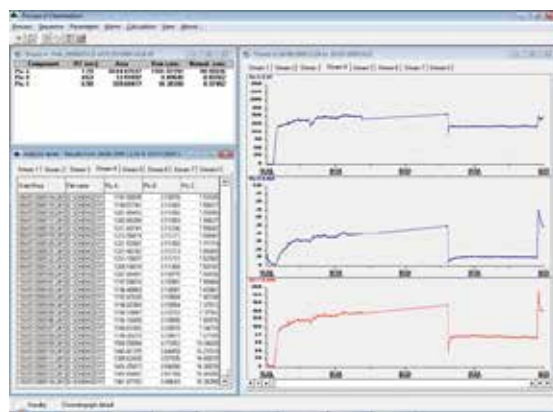
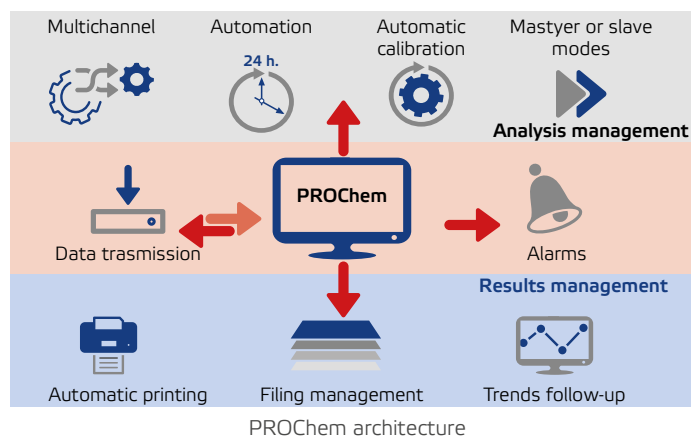
## Analysis management

The programming of analysis sequences makes it possible to define, for each analysis, the selected channel, the purge time, the analysis method, the number of injections per sample channel. PROChem can thus anticipate the purge of the next channel during analysis in order to optimize the cycle time.

It is possible to program the sequences to start the analyses continuously, at a given time, for example, sequence 1 at 14h, sequence 2 at 16h30.

## Sampling management

PROChem allows the control of multiposition valves, electrovalves but also pumps or auxiliary gas ejectors with programmable pumping time. The atmospheric pressure or the isolation of the sample is made possible by a programmable delay time.




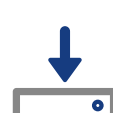



Main page of the software

## Data recovery

At the time of injection, PROChem can retrieve the results of additional sensors or analysers such as pressure, temperature, flow rate or values of a hygrometer or infrared (NO<sub>x</sub>, H<sub>2</sub>O, etc.) by reading analog or Modbus inputs.

The results are integrated with those of the analyses and can be used in post-analytical calculations.

<p>Application fields:</p>  <p>Process Chemical Pharmaceutical Research Biogas, biomass Coupling etc.</p>	<p>On-line analysis</p> 	<p>Many features</p> 	<p>Data transmission</p> 	<p>Automation</p> 
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# PROChem

## Technical specifications

### Analytical calculations

PROChem recovers the values calculated by the Openlab Chemstation integration method: retention time, gross concentration, peak area and any additional results (temperature, pressure) in order to carry out programmed calculations.

Calculation results can be included in the final report for printing. Specific calculations: NGA/RGA according to ISO 6976:1995 or GPA 2261 and GPL according to ISO 8973/ ISO 7941/ ISO 6578 or customised calculations.

### Alarms

PROChem allows you to:

- Program 16 concentration alarms on all peaks.  
Ex: 10% pre-alarm, then Alarm 2 to 15% etc. or Alarm on the sum of peaks or any other read value.
- These alarms display the red color results on the screen.

PROChem can optionally combine these alarms with relays.

- Change the analysis sequence (method or sampling channel) in the case of an alarm presence.

### User interface

PROChem allows you to visualize:

- All results in the form of a table of values directly exportable in Excel®.
- Display of results in the form of trends: up to 8 graphs of any value over time by channel of analysis.
- Calculation of hourly or daily averages or over a programmable range (0-9999h).

### Backup and filing

Creation of archive files by channel as the analyses progress. Date and time of injection in hourly format and different results (Excel® compatible).

### Data transmission

As an option, PROChem can communicate all results in ASCII file, 4-20mA, Modbus, Profibus, Profinet.

### Compatibilities

PROChem is compatible with the following software versions:

- Chemstation GC B.04.03 and previous versions
- Openlab CDS Chemstation C04.07 Sr3 and previous versions
- Chemstation MSD E.02 and previous versions
- Masshunter for GC/MS

PROChem is compatible with the following instruments:

- GC Agilent 5890,6890,6850,7820,7890
- MSD Agilent 5973,5975,5977
- Interface 35900E

Component	RT [min]	Area	Flow conc.
CO <sub>2</sub>	0.81	38.53636	0.10
methane	1.15	3022.8957	47.43
ethane	1.29	261.77825	2.14
ethylene	0.00	0.00000	0.00
propane	1.83	2.02407	0.01
propylene	0.00	0.00000	0.00
i-butane	2.94	52.74057	0.26
n-butane	3.08	64.01337	0.26
propadiene	0.00	0.00000	0.00
acetylene	0.00	0.00000	0.00
trans-2-butene	0.00	0.00000	0.00
1-butene	0.00	0.00000	0.00
i-butylene	0.00	0.00000	0.00
nco pentane	4.06	6.49023	0.02
cis-2-butene	0.00	0.00000	0.00
i-pentane	4.39	70.87443	0.26
n-pentane	4.42	79.32979	0.26
1,3-butadiene	0.00	0.00000	0.00
methyl acetylene	0.00	0.00000	0.00
trans-2-pentene	0.00	0.00000	0.00
2-methyl-2-butene	0.00	0.00000	0.00
1-pentene	0.00	0.00000	0.00
cis-2-pentene	0.00	0.00000	0.00
oxygen	0.00	0.00000	0.00
nitrogen	2.70	457.30603	0.52
carbon dioxide	4.17	453.03458	0.54
methane	4.58	33956.32563	47.77
carbon monoxide	0.00	0.00000	0.00
hydrogen	0.92	80.98452	0.27
helium	2.86	4173.31592	0.14

ISO/DIS 6976 1995 and experimental norm X20-522  
 Temperature 0 °C  
 Molar weight : 5.46 g/mol  
 Real density : 0.244 kg/m3(m)  
 Real CV : 12.13 MJ/m3  
 Real SCV : 13.50 MJ/m3  
 Wobbe index : 32.00 MJ/m3

Results report with calculations according to ISO 6976:1995

Configuration sampling 1

Number of stream: 3

Sampling time minimum (sec): 20

Selection valve control:

- None
- By electrovalves
- By BCD multiposition valve - step by step
- By BCD multiposition valve - electrical control
- By BCD multiposition valve - serial control
- By Modbus electrovalves

Sampling channel configuration window

Configuration of alarms

Name	Stream	Followed value	Min value	Max value	N° alarm
None	All	None	0.00	100.00	0
None	All	None	0.00	100.00	0
None	All	None	0.00	100.00	0
None	All	None	0.00	100.00	0
None	All	None	0.00	100.00	0
None	All	None	0.00	100.00	0
None	All	None	0.00	100.00	0
None	All	None	0.00	100.00	0

Alarm configuration window



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