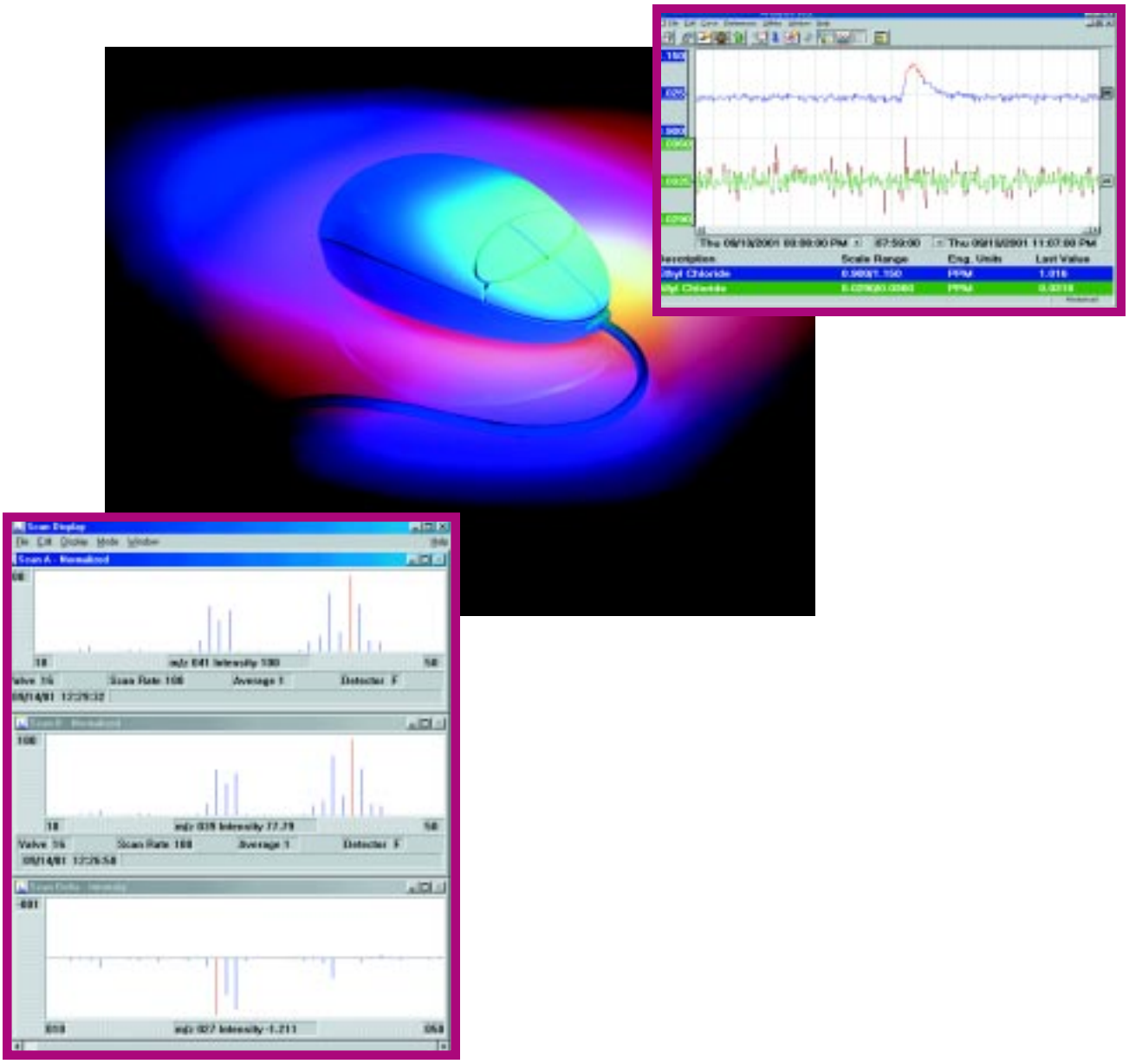
# Process Mass Spectrometer

## *SMARTware Software*



## Process Mass Spectrometer SMARTware Software

The heart of the ABB Process Mass Spectrometer is the SMARTware™ Software. This innovative SMARTware platform is designed to make operation of the system fully automatic. With its familiar point and click Microsoft ® Windows™ environment, even the most advanced features are easy to use.

**Change operating modes with a click of a button.**

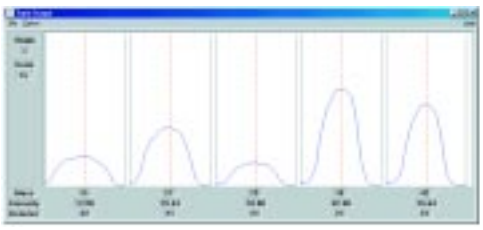

## No MS Expertise Required

With both automatic and manual mass spectrometer tuning, you have complete flexibility in optimizing your system. SmartTune's™ automatic tuning facilitates setup, assures repeatability of conditions, and eliminates the need for an operator skilled in tuning a mass spectrometer.

**Tuning is easy with SMARTune.**


Five analysis masses can be viewed at one time. The resolution and mass position can be individually set for all masses. This feature enhances the ability of the system to distinguish between a large mass peak and a small adjacent mass peak without sacrificing the signal intensity of other important components. This results in improved low level detection, abundance sensitivity and better repeatability.

**Individual mass resolution control optimizes performance.**



## Automatic Analysis

With the flexibility and power of the Automatic Sequence Mode, it may seem as if the instrument can think for itself. This is not quite true, but the familiar Windows interface makes programming the sequences easy. A sequence is defined by simply choosing actions from a list.

- Automatic sequences can include several types of actions including: Analysis, Survey Scans, Calibrations, Derived Values and SMARTunes.
- These actions can be combined using 3 types of event triggers:
  **Stepped** - sequenced actions. Each event will be performed and then the sequence will go to the next step.
  **Timed** - an action that will be executed on a timed basis. For example, you could choose to calibrate every week or month.
  **Alarmed** - an action that is performed if a component or instrument variable exceeds a defined limit.

## SMARTfeatures

***SMARTune*™ automatically tunes for optimum peak intensity and position. A tune can be performed manually or as part of an automated sequence. With SMARTune, no mass spectrometer expertise is required to tune the system.**

***SMARTrange*™ improves the precision and dynamic range by automatically choosing the appropriate detector range for each component. With SMARTrange, both ppb and percent level components can be analyzed with one instrument.**

***SMARTlogger*™ automatically records any operation error or alarm condition. This valuable tool aids the technician in troubleshooting and record keeping.**

***SMARTswitch*™ automatically switches to a spare filament in the event of a filament failure and sends an error message to SMARTlogger. Since the operator does not have to manually switch to a spare filament, downtime is prevented.**

***SMARTpick*™ evaluates the process stream and selects the best analysis mass for each component using the Stream Evaluator application. SMARTpick takes the guesswork out of choosing appropriate analysis masses.**

## Get a Complete Picture

Scan the entire mass range to get a peak intensity profile. Displayed in graphical or tabular format, this scan is useful during upset conditions or for detecting contaminants in a sample.

- Type in a "Note" to remember what occurred during the upset condition.
- Use the Smartcursor ™ tool to point at a mass peak and display its intensity.
- Two scans (Scan A and Scan B) can be displayed simultaneously in separate windows.
- Use the Delta Scan (A minus B) to subtract background spectra at different times.
- Use the Survey Scan Extractor to choose only those masses of interest to export to a spreadsheet. This allows you to pull out only the information you need from large data files.

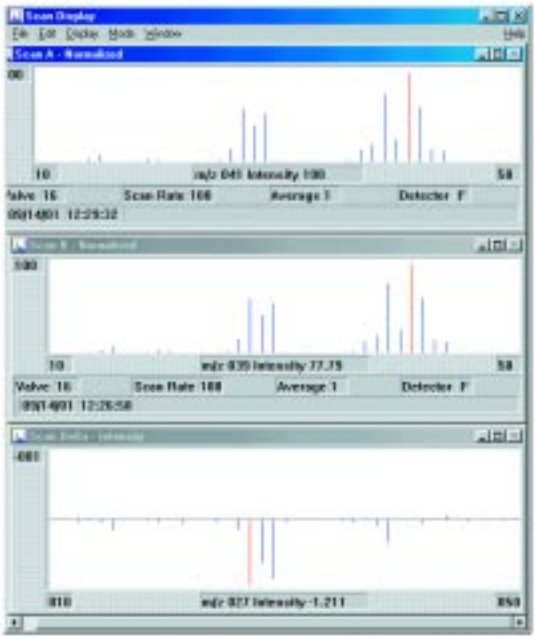
***SMARTmethod*™ automatically creates the method from the Stream Evaluator — just choose the detector and create any necessary calibration procedures.**

***SMARTsequence*™ allows the operator to define stream selection, analysis and calibration methods, survey scans, and SMARTunes on a step, time and trigger event basis. With the familiar point and click environment, setting up an analysis sequence is as easy as choosing a button and filling in the blanks.**

***SMARTstart*™ automatically restarts the system in the event of a power interruption. Non-volatile memory will remember the mode of operation and return to that mode.**

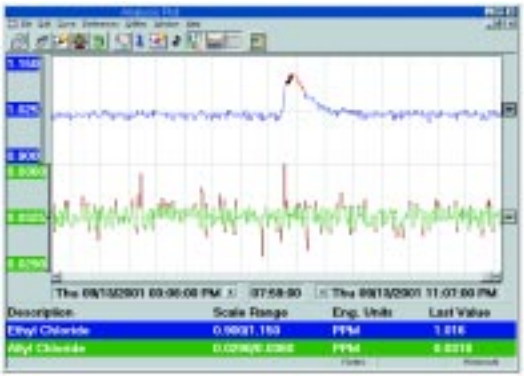
***SMARTlink*™ allows ABB Analytical Service Centers to take remote control of your system by using a modem on each end. This saves time and money by eliminating unnecessary service visits. With SMARTlink, the Service Centers can see everything that the user sees on his screen, so troubleshooting and diagnostics can begin immediately. It is even possible for service personnel to tune the system right over the telephone lines.**

**Analyze a complete mass range with Survey Scan. Compare the difference in spectra using Delta Scan.**



## Flexibility at Your Fingertips

- All **calculation modes** can be displayed at one time: concentrations, scaled concentrations, unnormalized concentrations, intensities and intensity ratios.

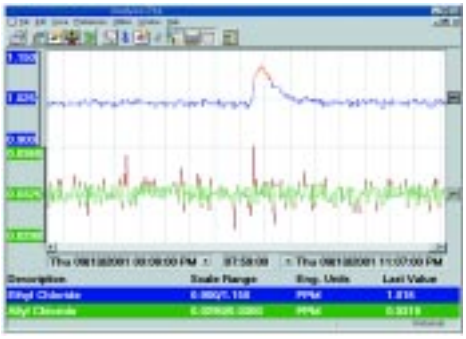


**Use colorful trends to monitor multiple components. Type in a "Note" to highlight important data.**

- **Analysis plot** allows the user to view real time and historical data in a colorful graphic format. This application has advanced features such as autoscaling, statistical process control (SPC), and statistic functions that compute averages and standard deviations quickly on large amount of data.

- **Derived values** - calculate and store customized values. This powerful feature often eliminates the need for additional software programs for data manipulation.

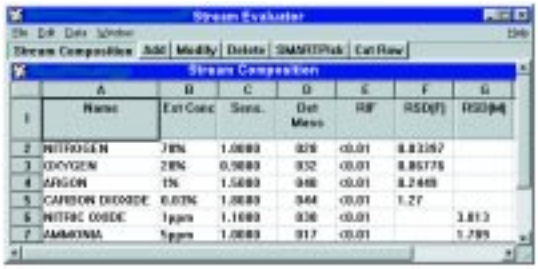
- Track the results of multiple components using multi-colored, easy to read **trending plots.**
- Use **Multivariant Analysis** to quantitate components in difficult gas matrices by using multiple analysis peaks.



**While trending, use the statistics function to determine if a component goes out of range.**

**Notice how ethyl chloride turned red when it exceeded predetermined boundaries.**

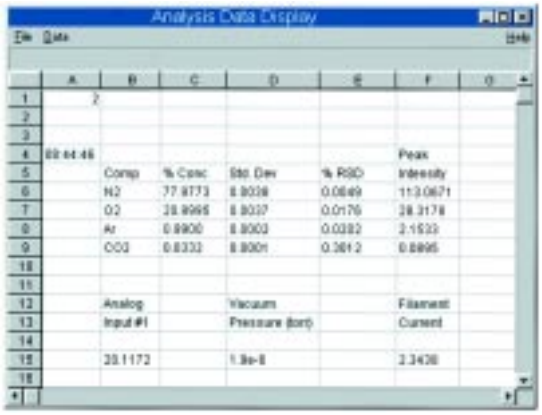
**SMARTpick will automatically select analysis masses for you and build an analysis method.**



- Build an Analysis method by entering the stream data into the Stream Evaluator application. **Stream Evaluator** gives you an indication of the relative interference factor and the % Relative Standard Deviation for each component before you even connect your stream.

- Import data such as temperature or flow measurement using **analog inputs**. This information can then be used to calculate a derived value, trended or stored with the component data.
- **Mappable data outputs** allow the user to store only the data required, minimizing data storage. The user can also store derived values and instrument parameters.
- Output is available in **DDE** (Dynamic Data Exchange) format for easy transfer to other Windows programs and spreadsheets.

**A flexible spreadsheet format allows you to display your analysis just as you want it.**



**The instrument status window clearly indicates important operating parameters.**

SMARTpick will automatically evaluate the process stream entered into the Stream Evaluator, select the best analysis mass for each component and automatically build an analysis method.

- The **Instrument Status Screen** keeps the user updated to the current operating state. Filament status, vacuum pressure, temperatures, mode of operation and current sequence step can be seen in a single window.
- Use the component **Library** to display the components and their fragmentation patterns. The library is expandable to suit your application.

*Specifications subject to change without notice.*


**ABB Inc.**

843 N. Jefferson Street
Lewisburg, WV 24901
USA

304-647-4358 voice
304-645-4236 fax

**Mass Spectrometers**
**Sales Engineering**

412-963-7530 voice
412-963-6578 fax

www.abb.com/analytical



BUASCMS9-2-103