Data System Upgrades for Mass Spectrometers

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LabX buyers and sellers realize the tremendous value of vintage instrumentation. In particular, many older mass spectrometers remain good performers, generating excellent data. The leading cause of obsolescence in these instruments is typically the computer based data system. To maximize your instrument investment, you can replace the original data system with new technology.

A data system consists of these elements:

- Computer
- Acquisition software and electronics
- Data processing package

Obsolete data systems lower laboratory productivity for several reasons, including:

- Data system maintenance and repair costs
- Limited storage space
- Limited or non-existent networking
- Non-standard user interfaces
- An outdated data processing package

By replacing the elements above with current state-of-the-art components, a data system upgrade protects your instrument investment by increasing its usability, robustness, and performance.

The performance gained by replacing the original data system's computer with today's personal computer (PC) is astounding. New PCs now have 64-bit dual or quad core processors along with very large hard drives. Current hard drive capacities (500 to 750GB) would require decades to fill with GC/MS data! Consider these additional PC advantages:

- Ease of networking
- Ease of printer sharing and PDF generation
- Data archival via back-up servers, or media such as CD-R, DVD±R, and tape

Upgrading the GC/MS data system to a new PC and modern operating system provides excellent return-on-investment and can significantly extend the working life of your instrumentation.

Note: Data systems based on older PC technology typically cannot take advantage of today's PCs, due to hardware, driver, or timing issues. A major issue when migrating from older PCs is incompatible interface buses, i.e., moving from an ISA bus to a PCI or PCI Express bus. Lack of hardware device drivers inhibits migration to new operating systems. Hardware timing issues are also common when migrating to faster PCs. *Data system upgrades overcome these issues by introducing new software and/or electronics.*

Data system upgrades are available from the original vendor or from companies specializing in GC/MS data systems. Check with the original vendor of your GC/MS instrumentation. If a data system upgrade is available from them, this is usually the best upgrade path to follow. Typically this upgrade route applies only to recent instrumentation.

A limited number of vendors offer GC/MS data system upgrades. Look through the LabX vendor listings or use your favorite search engine. Search with phrases such as "replacement GC/MS data systems" or "GC/MS data system upgrades." You'll find that Adron Systems is one of the leading vendors offering replacement mass spectrometer data systems for a variety of ion trap and quadrupole instruments.

A replacement data system can improve instrument performance depending on the specific upgrade. A combination of improved mass scanning electronics, more sensitive and less noisy ion input electronics, signal averaging, and signal filtering can contribute to increased mass spectrometer performance.

Additionally, today's PC offers greatly improved I/O speed and processing power compared with the original data system. Increased I/O speed allows data from the instrument to be pulled in more rapidly. Less time pulling in data means more time is available for scanning, signal averaging and filtering.

A replacement data system needs to have access to a strong data processing package. The Adron *Vx Acquisition System*™ provides a unique solution since it can generate target data in a variety of GC/MS formats. This allows your laboratory to standardize and optimize its data processing package, independent of hardware.

A flexible data system upgrade should take optimal advantage of your lab's instrument inventory. The Adron *Vx Acquisition System* is adept at supporting a wide range of mass spectrometers, chromatographs and autosamplers. These components can be mixed and matched from various vendors.

Helpful tips to consider before investing in a replacement data system for your GC/MS instrument:

1. *Invest only in solid instruments!* If your instrument performs well, is reliable, and generates good data, consider a data system upgrade.
2. *Invest only in strategic instruments!* Consider the role this instrument plays in your organization. Is this role improved with the addition of a new data system and data processing package?
3. *Consider the condition of the original data system.* Older data systems based on out-of-date PCs or mini-computers are difficult and costly to repair. Considering maintenance and downtime, it is often cost effective to replace these data systems.
4. *Consider the features of your current data system.* Does the processing package generate the type of results and reports required by your clients? Is the processing system easy-to-learn and use?
5. *Consider the investment made in personnel and training.* Laboratories that are successful using older instrumentation generally provide their own in-house service and preventive maintenance or have access to a qualified service engineer.

In summary, a data system upgrade for your GC/MS system is a cost effective way to:

- Maintain your instrument investment
- Extend instrument life
- Enhance performance via:
    - PC and new operating system
    - New and improved acquisition electronics
    - Upgraded data processing from vendors such as Agilent, Thermo-Fisher, and Varian

Data system upgrades provide an attractive solution for laboratories seeking low cost entry into GC/MS technology. The cost of a used or refurbished GC/MS with a new data system and processing package is significantly less than the cost of new instrumentation.

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