

Development of Instrument Software for Flash Chromatograph

The Client

The customer is a leading North American manufacturer of chromatography instruments and water pollution monitoring products.

The Challenge

The client was looking for a strategic embedded systems provider to outsource application development for its automated flash chromatography instruments. The objective of the partnership was to lower development and maintenance costs for new and existing products, achieve quicker time-to-market, and drastically reduce the total cost of ownership (TCO). The client's avowed goal was to ensure high productivity while minimizing user intervention and monitoring.

The automated Flash chromatography instrument comprises of several hardware and software subsystems viz. chromatographic column control, automatic detection, component processing and unattended operation. This required multiple components of the software system to operate reliably and in sync. The software had to cope with several complexities while presenting the user with an intuitive interface.

The Solution

Mindteck developed the feature-rich control software, supporting higher throughputs, user-friendly accessibility, and flexibility of scale and separation methods.

The software is based on the multi-tier client / server architecture. The chromatography system could be controlled and monitored locally via a touch screen and remotely via the Internet. The user receives email alert when a separation process is complete. Backed by a user-centric and aesthetic UI design, the system was highly intuitive. The instrument allows real-time method control. All method parameters could be altered during the run.

By automatically detecting column sizes, the auto method configuration feature eliminates errors related to column change. Conversions from normal to reversed phase can be completed quickly with minimal action. An optional feature detects solvent volumes in each reservoir ensuring that the system never runs out of solvents and thus facilitates rapid change of solvents. As part of the engagement, Mindteck maintained and enhanced existing product lines such as optional solvent management modules, regular automated flash chromatography instruments and high-capacity versions of the organic purification system.

The major enhancements include:

- Enhancing printing options – touch screen companions support USB flash drives for printing data
- Changing all-run parameters on-the-fly
- Rf to gradient conversion
- Method scaling
- Purity determination for dual wavelength detection
- Detection wavelength for peak detection
- Monitoring Wavelength for monitoring separations at different wavelengths

- Diverting to waste

The Benefits

Partnering with Mindteck gave the client the ability to cost effectively meet the development and maintenance tasks of software aspects of the product. Other significant benefits include:

- Feature-rich, user-friendly control software developed by Mindteck facilitates higher throughputs, and flexibility of scale and separation methods.
- Mindteck's talent pools with deep domain and multi-technology expertise enabling rapid knowledge-transfer and retention.
- In a continuing partnership for over five years, Mindteck's dedicated development team has been offering multiple services to the customer at different levels of the product development lifecycle, including end-to-end product development, reengineering and sustenance engineering services.

The Technology

Ajax, C, C++, HTTP, Apache server and run on Red Hat Linux.