

Customer Focused System Integration for Process Monitoring

Product design and integration requires many tools and many skills. A good product has a certain balance of technologies with no particular technology carrying too much of the load. Software, hardware, firmware, optics, chemistry, fluid handling, electro-optics, sample handling, and packaging should work in harmony to meet the customers intended requirements. Components working together that meet customer goals – that's the key. A good systems integrator knows how to build a system that is simple in design but elegant in operation.

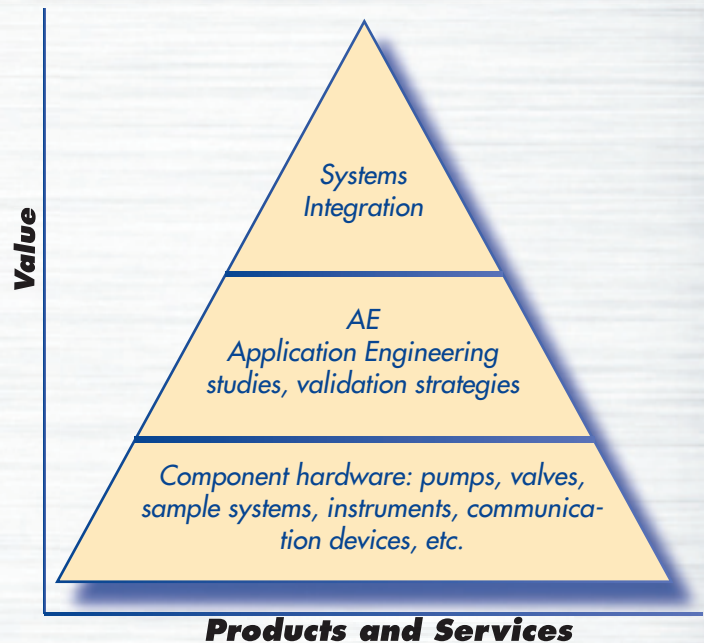
Problems with most On-Line Products

Instrument manufacturers typically have a talented core of engineers and scientist that deal with their respective analysis. These suppliers can give solid rationale and examples of their products performance under ideal conditions. Instrument manufacturers that sell their products into process markets typically have limited experience with installations across a broad range of industries because they tend to focus on selling into niche markets and never fully capture a broad knowledge base necessary to solve global system integration problems. Sample handling systems and sample interface devices become the responsibility of the buyer and most of the time this is the root cause of the product failure.

The consequence of on-line monitoring is not to install a sophisticated, technologically superior, set of tools that are expensive to purchase and operate but rather a system that will return your investment over and over for years to come.

CST addresses these issues with an initial *Gap Analysis* study of your application. We audit your current applications and based on the types of compounds you produce we make recommendations as to what analytical tools to incorporate into an on-line, or portable monitoring system. We work closely with instrument and component vendors to select the best available technology that can meet the goals of the application. Once we have reviewed the stream composition, the analytical instrument requirements, the sample handling system requirements, communication and packaging requirements and balance them against a set of specifications we can then present our findings to the customer.

Our Business Model



The CST business model, shown above, describes three important elements to any integrated system, hardware, application engineering, and proper systems integration. When all three work together the customers benefit through product yield, process improvements, reduction in waste products, and an overall efficiency.

Our goal is clear, we want our customers to have successful applications that meet economic targets. We work with our customers to:

- Develop an action master plan
- Identify and target areas of improvement
- Help select analytical techniques to monitor a variety of compounds that will meet the respective requirement of sensitivity, specificity, precision and accuracy
- Help determine ROI and break-even point
- Develop validation strategies for installed products

Sample Handling Systems

Process stream composition, physical properties, and chemical reactivity are the key elements to consider when specifying methods to introduce samples to a measurement device. Careful selection of the correct sampling approach improves the efficacy of the analytical measurement. Sample handling systems are provided by CST as a means of interfacing to your process and sampling representative gases, liquids, or solids.

The table below represents the degree of difficulty we experience with process streams. Successful strategies have been developed that address each of these levels. Having over 100 years of collective experience with process sample handling systems, Custom Sensors and Technology is a very good partner to choose for your next process analytical application.

Easy	Moderate	Hard
Hi/Low Pressure	Dilution of sample, marginal pressure	Gases with pulsating back pressure
Hi/Low Temperature	Vaporization of liquids	Condensing gases
Dry Gas	Removal of condensables	Two phase Rx
Solid particulates	Wet solids	Wet gas with particulates

Simple Rules of Process Monitoring

Over the years we have developed several “rules” of monitoring process streams that are guides to us when we make recommendation to our customers. Here are a few important ones to remember;

- Remember anything that moves...fails
- Avoid dead legs
- Rules for hardware selection change due to a sample concentration and stream condition POV
- Don't transport saturated gases or boiling liquids
- Know the variables affecting sample transport
- Control analysis variables prior to introduction to analytical device
- Understand the “real” process, not the ideal process

Application Engineering

At the heart of the system is application engineering. This is a necessary element of the overall project that happens prior to any hardware selection or systems integration. Application engineering starts out by developing a master plan that meets the requirements of the intended application including; analytical instrument selection, sample system design, communication requirements, diagnostic requirements, packaging requirements, and installation/training requirements.

Application engineering is the very foundation for what we provide and is reviewed at several steps with our customers to insure successful operation once the system has been installed.

Specification of System

Items to be specified will depend on the initial investigation of customers analytical requirements, software/operator interface requirements, electrical requirements, communication requirements, hardware requirements, documentation requirements, and commissioning and training requirements.

Please consult the factory for any questions you may have. We can be reached at:

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