



THE EFFICIENCY OF NIR TECHNOLOGY IN PROCESS OPTIMIZATION

Ronny McMurray, R&D, Modcon-Systems Ltd, Acco, Israel

Gregory Shahnovsky, President, Modcon-systems Ltd, Acco, Israel

Tal Cohen, Vice-president R&d And Bd, Modcon-systems Ltd, Acco, Israel

The objective of modern process plant is manufacturing the high value and on-specification products at optimal cost. On-line qualitative and quantitative measurements of physical properties and chemical composition are indisputable requirements.

Adequate and full process control is of major importance to ensure the process to proceed at maximum capacity and quality of required products. It prevents unnecessary re-processing or giveaways.

Full monitoring of physical and chemical properties in process streams by conventional analyzers is expensive. It requires investing in many different analyzers and in costly maintenance.

A sophisticated solution has been developed to successfully control chemical processes by using NIR spectrometry. It is based on the correlation of NIR spectral response with quantified physical properties. Fast measurements and data processing allow instantaneous to quantify a variety of physical properties by one single measurement.

Process streams correlate with each other. Effective control of the entire process requires simultaneously to monitor each process stream. Multiplexing transfers NIR signals by standard optical sieves to and from eight different measuring cells, mounted on pipes. These are allocated up to 3 km away from the analyzer, which is placed in the central control room. It allows operators to validate the process and making decisions to ongoing optimize process conditions.

Incorporated specialty software guarantee accuracy of the predicted results by continuous verification, validation and correlation with analytical results obtained from standardized laboratory tests or discrete on-line analyzer.

The "all in one" solution of NIR process analytics is successfully implemented in various kinds of process industries, such as refineries, organic and inorganic chemical processes.

Simultaneous on-line monitoring of multiple physical properties in various process streams, and centralization of analytical data in the control room allow efficiently to operate the process. Maximized process efficiency reduces operating costs and increases production rates of in-spec material. Definitely, this increases the revenue and profit of the entire plant.