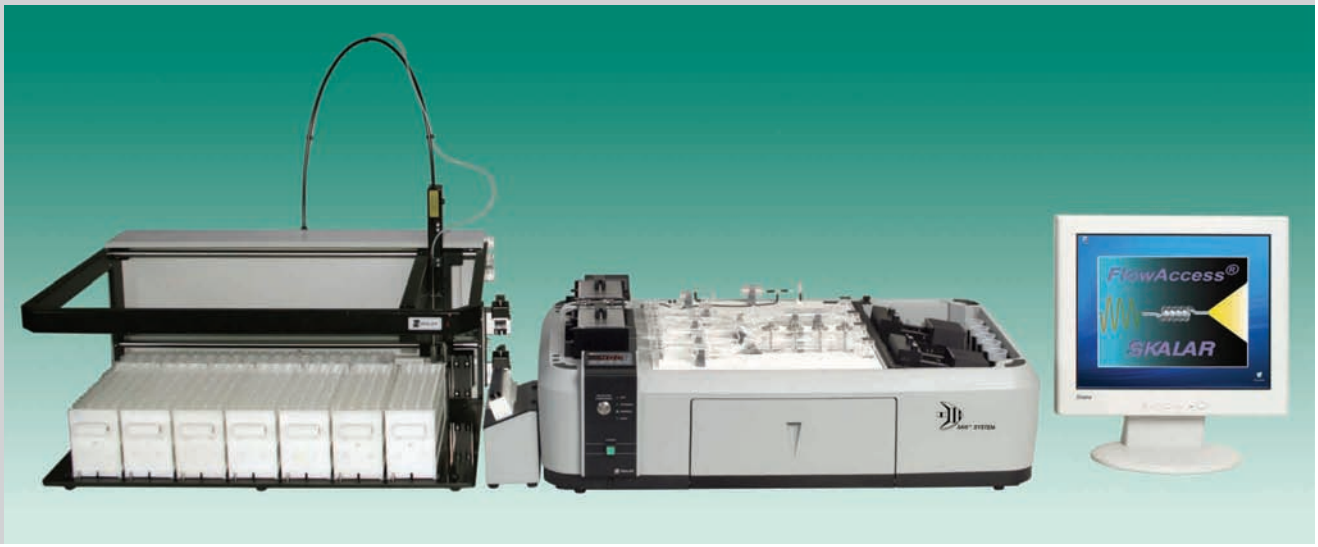
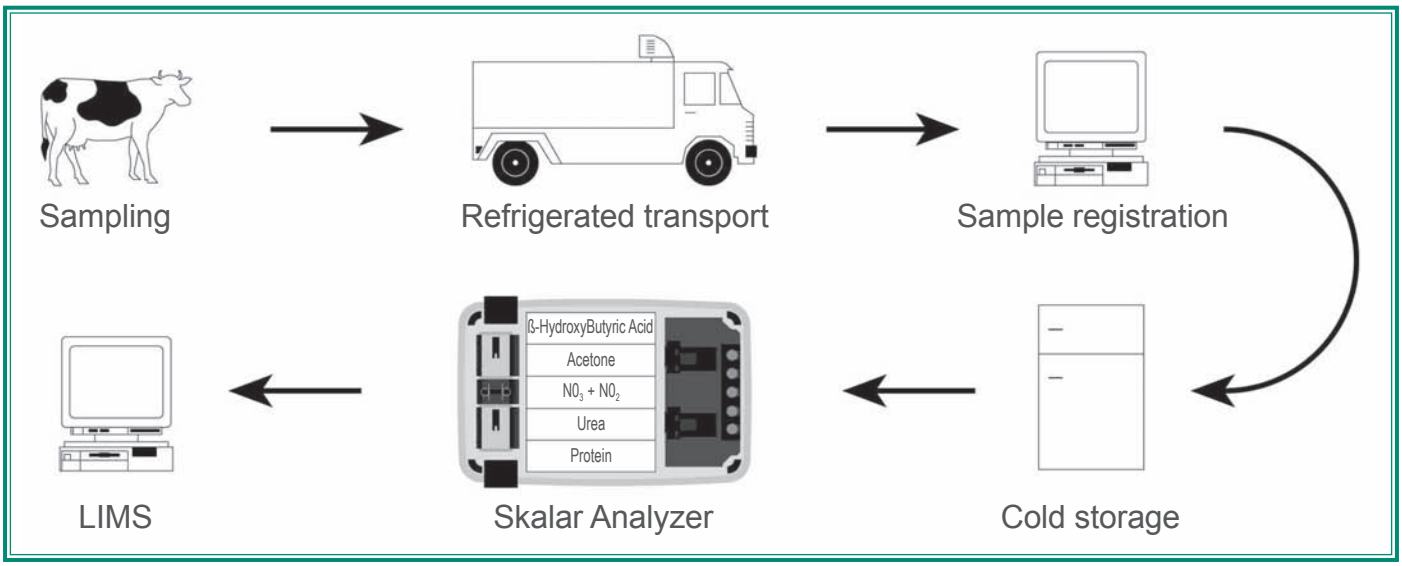
Urea analysis in milk with the San^{++} analyzer



Quality control of raw milk is essential to farmers, to insure the milk produced is of an acceptable quality, and to safeguard against disease in the dairy herd. Only when the herd is healthy will it produces top quality milk, and therefore high standard milk products. The analysis of Urea in milk is recognized as a good guide to the health of the herd. This information, received on a regular basis, is vitally important to the profitability of both the farmers and the dairy producers. Specialized laboratories have been located in many rural areas to provide farmers with this essential information.

The “Landeskontrollverband Brandenburg E. V.” in Waldsieversdorf Germany is a leading institute specializing in the supply of analytical services to the dairy industry. The institute works strictly according to the accredited DIN norm EN 45.001. This norm controls the chemical and physical analysis of raw milk. The institute’s fully structured organization deals with all the various analysis stages, from sample taking at the milking station through to sending the sample data, with advice, back to the farmer. The institute handles samples from approximately 220,000 cows every month, a number which is constantly increasing due to the growing realization of the importance of quality control.

The large number of samples handled at the institute needs not only good organization but also automation to insure a fast reliable service. The Skalar San^{++} Segmented Flow Analyzer is an important part of this automation. The analysis of Urea and Ammonia is carried out on 60,000 to 80,000 samples annually. To analyze the daily work-load of about 300 samples takes the operator approximately 45 minutes. The system operates independently and needs minimum operator skill.



A schematic diagram showing the milk analysis procedure

Urea analysis in milk with the San^{++} analyzer

The original sample tubes, as used at the milking station, can be placed directly on the sampler. The sampler holds up to 120 sample tubes, arranged in batches of 10 and placed in a stainless steel tray. Individual batches can be removed or the entire tray. The sample throughput is 120 samples per hour. The flexibility of this system not only saves time but also avoids unnecessary handling mistakes.

The applications are based on wet chemistry reactions and photometric detection. Full analyzer control is gained with the aid of the Skalar Data Handling Package which enables the operator to start the analyzer directly from the keyboard. Minor routine maintenance to keep the system clean is carried out every 2 weeks (or 120 - 150 hours of operating time) and takes about half an hour.

Sample transport service at the Control Institute

The samples to be analyzed are registered in the database of a Laboratory Information Management System. The working list is up-loaded from the LIMS by the operator and after the analysis is finished 1st line quality control is carried out before the data is down-loaded back to the LIMS. To run in conjunction with the Management System Skalar also provides an Analytical Quality Control Program (AQC). The quality control samples are automatically analyzed in the AQC program against preset limits. The Skalar AQC program, not only calculates the quality control samples, it also keeps track of the performance of the system itself, as described in ISO norm 8466.

The Skalar San^{++} Segmented Flow Analyzer can handle a wide range of parameters, those available for typical milk analysis are:- **Urea, Ammonia, Nitrate, Nitrite, Protein, Acetone and ß-HydroxyButyric Acid (3-HBA).**

Skalar's Headquarters
Tinstraat 12
4823 AA Breda
The Netherlands
Tel. +31 (0)76 5486 486
Fax. +31 (0)76 5486 400
Email: info@skalar.com
Internet: www.skalar.com

USA
Skalar, Inc.
5995 Financial Drive, Suite 180
Norcross, GA 30071
Tel. + 1 770 416 6717
Toll Free: 1 800 782 4994
Fax. + 1 770 416 6718
Email: info.usa@skalar.com

United Kingdom
Skalar (UK) Ltd.
Breda House,
Millfield Industrial Estate,Wheldrake
York, YO19 6NA
Tel. + 44 (0)1904 444800
Fax. + 44 (0)1904 444820
Email: info.uk@skalar.com

Belgium
Skalar Belgium bvba
Antwerpsestraat 126
2850 Boom
Tel. + 32 (0)3888 9672
Fax. + 32 (0)3844 3441
Email: info.belgium@skalar.com

Germany
Skalar Analytic GmbH
Gewerbestraße Sud 63
41812 Erkelenz
Germany
Tel. + 49 (0)2431 96190
Fax. + 49 (0)2431 961970
Email: info.germany@skalar.com

Austria
Skalar Analytic GmbH
Am Anger 22
A-7451 Oberloisdorf
Austria
Tel. + 43 (0)2611 2023411
Fax. + 43 (0)2611 2023412
Email: info.austria@skalar.com

France
Skalar Analytique S.A.R.L.
79, Avenue Aristide Briand
94110 Arcueil
Tel. + 33 (0)1 4665 9700
Fax. + 33 (0)1 4665 9506
Email: info.france@skalar.com

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