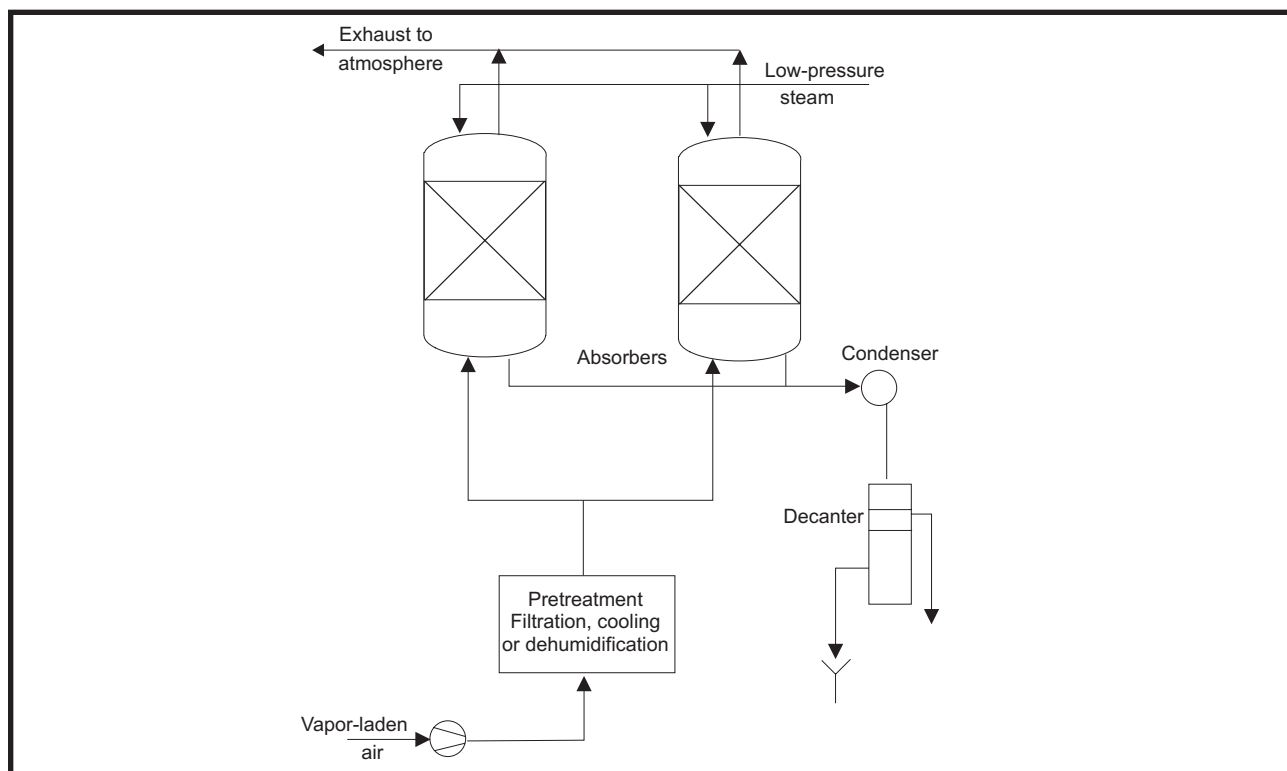


THE MEASUREMENT OF WATER FOR THE QUALITY CONTROL OF SOLVENTS IN PHARMACEUTICAL & FINE CHEMICAL PLANTS



Process

Organic solvents such as Acetone, MEK, and alcohols are used in very large quantities especially as reaction media or for extracting products in pharmaceutical and fine chemical plants. Since these solvents are expensive, they are often recovered by a solvent recovery system and distilled to a pure form for re-use in the process.

Application

Solvents are generally recovered by either filtration using carbon bed adsorbers or centrifuging and are often contaminated with water coming out of a solvent recovery plant. A batch distillation process may be employed to purify the recovered solvent to an acceptable quality for re-use in the process. In order to determine the endpoint of the distillation process, water is measured online to assure that the quantity of water in the recovered solvent is acceptable before the solvent is injected into the process. The continuous, online measurement is an improvement to laboratory methods where grab samples must be taken from the process and

carried to a lab for analysis. For one, the sample may accumulate more moisture during transport to the lab and secondly, an intermittent sample may not capture what is actually happening in the process over a period of time. An online measurement will detect the increase in water and allow the plant operator to make adjustments to the process instantaneously therefore virtually eliminating the possibility of a wasted batch of solvent not properly distilled. By determining the quality of the solvent during the process instead of after the process, the plant can save money and time by avoiding wasted batches of out of specification recovered solvents.

Solution

The continuous, online measurement of water in solvents can be achieved using a Servomex 2500 infrared analyser and liquid sample conditioning system which can be located close to the sample take-off point for fast speed of response. The 2500 analyser is ideal for measurement from 0-50 ppm to percent levels of water in solvents. As the sample is completely isolated from the infrared

source and the detector, the corrosivity of the sample is not a factor thus insuring long operating life and maximised online time with minimal maintenance. The sample cell is typically manufactured out of stainless steel but can be made out of Hastelloy C, Monel or other exotic metals to provide added resistance to corrosive samples. The microprocessor based 2500 analyser (Figure 1) is equipped with sample temperature compensation, which assures an accurate and repeatable measurement with varying sample temperatures.

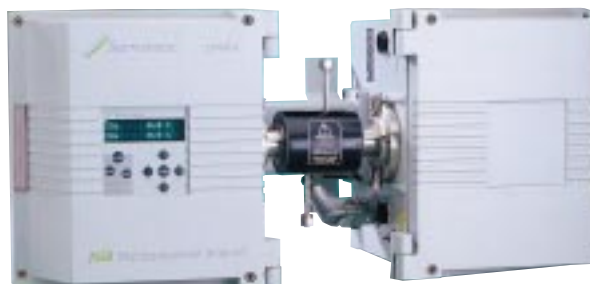
Calibration checks are done using the Karl Fischer laboratory titration method and comparing the measurements to the analyser's output. No other calibration method has sufficient accuracy and reliability.

Servomex can supply a complete analysis solution utilising a liquid sample conditioning system. Typically this comprises of a manual isolation valve

to shut-off flow to the system as well as an excess flow control valve, which detects if the flow going through the system is too high and shuts down flow to the analyser in an upset condition. Liquid flowmeters are provided to regulate sample and by-pass flow to optimise system response time and the system is designed for vent to a low pressure drain. An auxillary sample outlet can be provided so that calibration samples are not vented to the process or for venting water and/or Nitrogen for cleaning and drying out the system prior to performing any maintenance.

The system can be supplied in a NEMA 4X (IP66) steel or fibreglass enclosure with a corrosive gas purge which maintains the enclosure free of corrosive gases that may be present in the atmosphere.

Fig.1



Visit www.servomex.com for technical data sheets, application and technology information for all Servomex analysers.

Servomex has a policy of constant product improvement and therefore reserves the right to change specifications without notice.



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