

Integration of Single Use Equipment: Hybrid Technology and Automation

The hybrid systems that are created by the combination of single-use (SU) systems and stainless steel technology offer a range of benefits in terms of process control. The efficient connection of SU equipment to a stainless steel backbone is particularly valuable in terms of clarity, operability, ergonomics and cleanability of the system. Special solutions for the automation of SU systems enable seamless integration into an existing automation environment. By means of hybrid technology, and intelligent automation strategies, the implementation of customer-specific standards is facilitated. The SU equipment, the stainless steel frame and the appropriate automation concept are thus combined to form a coherent entity. This integration yields real added value for process control.

Technical Application Note: Utilization of a Novel kLa Measurement Procedure for Bioreactor Characterization and Optimization to Assist with Compliance of Regulatory Guidelines

The mass transfer coefficient (kL) and the value of the interfacial area (a) is used to characterize bioreactor systems for their oxygen transfer capability. The kLa value and the mixing time are amongst the most important performance indicators for bioreactors. Their calculation and modeling is extremely complex in highly aerated systems. This paper describes a new methodology for measuring the kLa value to accurately determine the coefficient. The valuable insights obtained allow for improved bioreactor characterization, thus, making it easier to meet regulatory requirements. Furthermore, examples outlining the benefits in the practical application of the new methodology are presented.