Spring 5-10-2016

Monitoring live biomass in disposable bioreactors in range of vessel formats

Dan Kopec
Sartorius Biotech, dan.kopec@sartorius-stedim.com

MONITORING LIVE BIOMASS IN DISPOSABLE BIOREACTORS IN RANGE OF VESSEL FORMATS

Dan Kopec, Stuart Tindal, Jochen Scholz Sartorius Stedim Biotech, Germany
Dan.Kopec@sartorius-stedim.com
John Carvell, Aditya Bhat - Aber Instruments Ltd., UK

The detection of biomass is one of the most requested parameters in industrial cell cultivation. The knowledge of the biomass progress during cultivation gives deeper process knowledge and control capabilities in order to define harvest or infection points.
Offline methods like visual cell counting or semi-automated systems still dominate the biomass detection in industrial cell cultivation. But these offline methods based on taking a representative sample cannot practically monitor the process continuously.

The radio frequency (RF) impedance method for online in-situ detection of viable biomass has already become well established in biopharmaceutical applications using traditional reusable stainless steel equipment. On the other hand, industrial cell cultivation tends more and more to single use (SU) bioreactor equipment. This poster shows comprehensive results of a standardized online biomass measurement solution for SU bioreactor systems which is fully integrated into the standard local control system and tailored to the SU bags

Sartorius BioPAT® ViaMass viable cell volume sensors, integrated in a range of single use rocking motion (RM) and stirred tank reactors (STR) from 10L up 1kL were used to demonstrate the performance and capabilities in fed-batch CHO cultivation. These systems use RF impedance based method (Aber Instruments Ltd) to determine the biomass in the single use bioreactors. The capacitance signals of the BioPAT® ViaMass sensors were compared with offline analytics from the Cedex HiRes.