

Process Analytical Technology for upstream process

Oxygen sensor COS81E, focus on fermentation

Your sensor for all hygienic applications

Safety for your product and process:

- EHEDG and ASME BPE design
- Measuring results 100% consistent
- Suitable for hazardous areas

Reliable measurements from lab
to manufacturing:

- Long-term stability
- Reduces blockages and adherence of air bubbles

Easy to use and fully traceable:

- Compliant and traceable
- Easy to maintain



The oxygen consumption depends on the cell type and its concentration in the bioreactor. How well, healthy and quick the cells can grow has to do with our ability to deliver oxygen to the cells. The rate of transfer of the oxygen in solution and the rate of the oxygen consumption by the cell are of highly importance.

The role of oxygen The best performing cell clone is selected during extensive tests. The metabolic characterization and the critical optimization takes place in the lab with the use of the bench-top fermenters.

The cell clone fermentation is characterized through the use of oxygen, pH, temperature and sometimes carbon dioxide. There are two types of fermentation: aerobic and anaerobic. The first type of fermentation takes place only if an oxygen source is available (eg. mammalian cell

fermentation), the latter only in absence of oxygen (eg. yeast fermentation). In the anaerobic fermentation oxygen is also measured in order to ensure that only the required end product is produced and no other unwanted metabolic pathways are activated. Therefore oxygen plays, independent on the fermentation type's, a key role.

Your life science partner

Endress+Hauser has developed and produces a line of PAT dedicated to the upstream and downstream processes. Important key feature of the offered PATs is the usability across the process life cycle in development phase as well in the production phase. An example: an oxygen sensor can be used for the 3L batch reactor but also for the 2000L single-use bag or the stainless steel bio fermenter. Without any doubts a real advantage when it comes to scale-up, process validation and risk assessment.



Memosens COS81E oxygen sensor

The optical oxygen sensor Memosens COS81E is specifically developed to offer long term stability. Besides stability is the regular autoclavability and sterilization of each sensor expected by the scientists and process technologists. The oxygen sensor has an integrated temperature sensor which as soon it reaches stability provides an excellent fast response time ($t_{98} < 20s$).

Moreover high accuracy and guaranteed reproducibility are attributes of interest and very appreciated during the PAT-standardization test.

Calibration in GxP environment

In addition to the specific analytical performance that COS81E offers, it is

worth to mention its installation flexibility. The sensor can be installed in any position (0 to 360°), the Pg13,5 connection allows for the simple usability in bench-top fermenters and further in the process, the sensor can be used with the existing pH assemblies. As every Endress+Hauser PAT's the sensor is produced with FDA (Food and Drug Administration) certification and USP Class VI (United States Pharmacopoeia) suitable materials. Each optical oxygen sensor Memosens COS81D is delivered with corresponding documentation that supports your validation process.

The oxygen sensor is easy to calibrate in the lab as well as in the workshop thanks to the Memosens technology and the use of Memobase Plus

CYZ71D-software. The software is suitable for use in GLP/GMP work-environments because comply to FDA 21 CFR Part 11 guidance. According to the guidance the electronic recording device must have a multi-level access control and secure electronic signature records.

 More information:
www.nl.endress.com/COS81E

 Watch the movie titled:
Dissolved oxygen
measurement or use the link:
www.youtube.com/watch?v=y7zblEaPAs

Nederland

Endress+Hauser BV
Nikkelstraat 6
1411 AJ Naarden
Postbus 5102
1410 AC Naarden
Tel. +31 35 695 86 11
Fax +31 35 695 88 25
info@nl.endress.com
www.nl.endress.com