Dissolved Oxygen System Avoids Environmental Issues

The production of organic monomers in flocculant manufacture requires low oxygen levels to avoid possible environmental problems and to maintain high yield. Kemira was experiencing poor performance from a dissolved oxygen (DO) measurement system. A METTLER TOLEDO solution provided the reliability they required, plus a reduction in maintenance.

Water Treatment Technology

With expertise in fiber, chemical water treatment and water separation technologies, Finnish chemical industry group Kemira has created an extensive product portfolio.

At its UK facility in Bradford, Kemira manufactures organic flocculants for use in the water treatment industry.

Polymerization

Kemira’s flocculant production process is a copolymerization involving acrylamide and a quaternary ammonium compound. Monomers and polymer initiators are combined immediately prior to injection into the reactor vessel, which is blanketed with nitrogen. The polymerization takes place as material enters the reactor. At the

reactor outlet the polymeric product passes through a series of cutting processes which break the solid material into small pieces ready for drying and packaging.

Oxygen acts as an inhibitor to the polymerization, i.e. if oxygen levels are not kept below a certain level sufficient polymerization will not take place. If this happens there is a risk of un-reacted monomers entering the cutting system causing reduced product quality, a potential environmental issue and undesirable process downtime while the situation is rectified? Measurement of the dissolved oxygen level in the monomers is therefore critical in preventing out-of-spec material entering the reactor stage of the process.

High-Quality Membranes

METTLER TOLEDO was approached after Kemira experienced problems with its existing dissolved oxygen measurement system. They were seeing unexpected membrane failures in their DO equipment and generally poor membrane lifetime lasting anything from a couple of weeks, down to only a few days in extreme cases.

Before a new system was put in place, samples of the monomers were taken back to METTLER TOLEDO's lab so that the suitability of DO membranes could be evaluated. At the end of the trials no significant change or damage to the membranes was observed.

Rugged Performance

Following this successful evaluation, Kemira purchased a METTLER TOLEDO system for installation on one of their monomer lines. The solution chosen comprised the InPro 6800 DO sensor and M700 multi-parameter transmitter. The M700 was selected because it allows access to raw signal data and calibration statistics, which would help in Kemira's management and long term evaluation of the system. The installation has now been in place for many months without any membrane problems.

Less Maintenance

Due to the success of the DO measurement solution, Kemira has recently purchased a second system, this time upgrading to the new InPro 6850i digital sensor allowing the company to take advantage of METTLER TOLEDO's Intelligent Sensor Management (ISM) technology. ISM uses advanced diagnostics to provide real-time information on sensor condition. By using the predictive maintenance feature of the M700 transmitter, maintenance tasks at Kemira can be performed before a critical drop in sensor performance occurs. The result is reduced operating costs with higher process availability and a very satisfied customer.

For more information, please visit www.mt.com/DO *[1] and/or* www.mt.com/ISM *[2].*

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