

Case Study: Successful Ozone TLV Monitoring with the OZONE MONITOR BMT 932 C at Mercer Rosenthal Kraft Pulp Mill

Mercer Rosenthal GmbH is one of the largest producers of kraft pulp in Germany. Two different bleaching processes are used at the plant: ECF (elemental chlorine free) and TCF (total chlorine free). In the TCF process, the bleaching agent chlorine dioxide is replaced by ozone.



Ozone is a toxic gas, and occupational exposure is strictly regulated due to its harmful effects on human health. Consequently, ozone Threshold Limit Value (TLV) monitoring is mandatory in workplaces where ozone is produced or used. To ensure reliable compliance with exposure limits and to maintain a safe working environment, accurate ozone measurement is essential.

Problem

Kraft pulp production involves complex processing stages with the use of various chemicals. At Mercer Rosenthal, both ECF bleaching using chlorine dioxide and TCF bleaching using ozone are operated within the same facility - a unique setup that places high demands on workplace air monitoring. As sulphur compounds, chlorine dioxide, and ozone may all be present in the ambient air, reliable ozone TLV monitoring requires an ozone monitor with exceptional selectivity and minimal cross-sensitivity.

In the past, ozone monitoring at Mercer Rosenthal was based on electrochemical sensing technology. Frequent false alarms were observed, particularly during ECF bleaching processes in which no ozone is used. Electrochemical sensors exhibit a high cross-sensitivity to chlorine-based compounds and are therefore inadequate for accurate ozone monitoring in environments where both ozone and chlorine compounds may be present.

Solution

Following an on-site evaluation by engineers from BMT Messtechnik GmbH, an OZONE MONITOR BMT 932 C was installed on a temporary basis for a multi-month test period, operating in parallel with the existing electrochemical ozone sensors. Following a successful trial phase without any false alarms, Mercer Rosenthal replaced all electrochemical sensors with BMT 932 C units. To ensure reliable ozone monitoring even under conditions of high ambient humidity, BMT sample gas dryers DH6-LC were installed at all sample points.

In addition to the high selectivity of the ozone measurement, the BMT 932 C operates maintenance-free compared to electrochemical sensors.

Result

The combination of the BMT 932 C and the DH6-LC provides a highly reliable ozone TLV monitoring solution that enables Mercer Rosenthal to ensure the safety of its employees against potentially elevated ozone concentrations. Maintenance of the ozone monitoring system is now limited to condition-based replacement of particle filters. Compared to electrochemical sensors, which demand regular recalibration or sensor replacement, this approach has resulted in a significant reduction in maintenance effort and overall operating costs. The solution has proven to deliver reliable and interference-free ozone measurements even under demanding conditions where multiple reactive gases are present.



Stefan Krieg (Mercer): „The BMT instruments operate reliably, robust and with low maintenance. The retrofit has successfully eliminated false alarms, which previously led to process disruptions and increased personnel costs.“