

Clean wastewater after successful food washing

Efficient chlorine elimination with Memosens CCS51E



Washing vegetables with hypochlorite to protect the consumers, eliminating chlorine afterwards to protect the environment

Benefits at a glance:

- Fully tailored solution with high level technology provides maximum flexibility based on competence in process knowledge
- Precise chlorine measurements in demanding trace applications
- Sensor delivers long-term reliable measurement without falling asleep

To guarantee the safety of consumers, vegetables can be washed and cleaned with Hypochlorite. Before the washing water is discharged into the sewerage system, it must be ensured that the chlorine concentration meets the legal requirements. So there is no risk of a too high chlorine concentration in the wastewater. For this purpose, the washing water treatment is monitored with the digital Memosens sensor.

Customer Challenge

Hyperchlorination differs from traditional chlorination by the amount of disinfectant which is used. On the one hand, the process is more efficient than traditional chlorination because the disinfecting effect is stronger in terms of deactivating pathogens and the reaction speed is increased. On the other hand, however, the washing water treatment is more complex, since a higher quantity of

chlorine must be precipitated before the water can be discharged into the sewerage system. In the case of hyperchlorination, 60-70 mg/l HOCl is present. This needs to be reduced to regulatory limits as low as 0.2 mg/l. Measuring zero chlorine has always been challenging. Many comparable sensors fall asleep when they do not detect chlorine for a long time. So, how can you be sure that your measurement is reliable, when it shows 0 mg/l?

Especially when legal guidelines, like the Italian Regulation Dlgs 152/06, stipulate very low chlorine limits industrial wastewater treatment plants need to monitor the concentration of chlorine in their outlet in front of environmental authorities. Dosing bisulfite is a common method to precipitate chlorine in wastewater. This elimination can be carried out very efficiently when regulating the process based on online chlorine values.

Our solution

For monitoring and regulating chlorine Endress+Hauser offers a customized solution that meets the requirements of this application. It is based on a cabinet that includes all measurement equipment, like the sensors for chlorine (CCS51E) and pH compensation (CPS71E), the flow assembly (CYA27) and the Liquiline transmitter (CM44), as well as all necessary connections.

The trace version of our new Memosens CCS51E sensor is designed to measure chlorine down to 0 ppm HOCl. It is used to regulate the dosage of bisulfite to remove the chlorine. In order to remain safely below the legal limit value of 0.2 mg/l, the CM44x maintains the setpoint 0.08 mg/l by PID regulation and its 4-20 mA output is used to regulate the bisulfate dosing pump. A filter before the flow assembly effectively protects it from soiling. It can be automatically cleaned with an air compressor regulated by the transmitter.

With this engineered solution Endress+Hauser Liquid Analysis is a reliable supplier for high level technology.

Components of the chlorine measuring point

- Digital free chlorine sensor CCS51E-AA11ADNA
- Transmitter Liquiline CM444R-4H45/0
- Digital pH sensor Memosens CPS71E
- Cable CYK10-A031
- Flowfit CYA27

The results

- The fully tailored solution with high level technology provides maximum flexibility based on competence in process knowledge.
- The digital CCS51E free chlorine sensor delivers precise chlorine measurements in difficult trace applications.
- Reliable sensor for more than six months without falling asleep.
- Maintaining the setpoint of 0.08 mg/l HOCl ensures compliance with legal guidelines.
- Cost efficiency thanks to bisulfite savings in the chlorine precipitation process.



Benefits of the CCS51E

- Fast response time ($t_{90} < 25s$) provides an accurate process view and enables prompt reaction to process changes as well as efficient process control.
- Increased process safety: precise and long-term stable measurement ensures consistent process monitoring and allows for individually adapted disinfectant dosing.
- Connection to the Liquiline multiparameter transmitter allows for easy combination with other relevant parameters of liquid analysis such as pH and ORP.



Memosens CCS51E chlorine sensor with Memosens technology

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