
16 Oxiperm Pro systems for the Munich Exhibition Center

16 Oxiperm Pro disinfection systems with flushing capacity for Messe München.

The exhibition organisers need to provide different amounts of domestic water for different kinds of exhibitors. For example, an IT industry exhibition needs a different amount of water to a watersports exhibition. This means that the domestic water pipes need to be designed on basis of the shows which need largest volumes of drinking water. With all sorts of different occupants in the Munich Exhibition Halls, there were increasing problems when the drinking water was left standing in the supply pipes for long periods of time. Even with regular manual flushing of the domestic water system, no satisfactory result was achieved.

As the exhibition company provides "water (domestic water) for human consumption" to third parties, it operates a water supply system in accordance with the Drinking Water Ordinance 2001 and must comply with the chemical and microbiological tolerances specified therein. Negligent infringements of the Drinking Water Ordinance can, in conjunction with the Infection Control Act, result in a fine or up to one year's imprisonment and malicious infringements can result in a fine or up to five years imprisonment.

Messegesellschaft München reacted early in order to provide exhibitors and visitors with excellent quality water at all times, which was why it initiated a tender for a system for sterilising and cleaning the water supplied to the booths. The system was successfully installed and commissioned by H&S Service.

The aim was that the system should be kept completely clean and sterile throughout the different halls. It was also important that

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the rinsing/disinfection carried out by the new system were well documented. Before the beginning of an event, there needed to be documentary proof that the drinking water system had been flushed and disinfected in order to provide perfect quality water by the start of the event.

After inspecting the existing systems and recording all relevant data, H&S Service set up a combined flushing and disinfecting system for the 16 exhibition halls which met all the specifications of Messe München's tender. This was connected to Messe München's BACnet system. This meant that all information could be monitored and controlled directly from the control panel.

In an exhibition hall, the domestic water supply system consists of an outer ring system with a 100 mm diameter and twentyfour 54 mm water pipes running in floor channels. The exhibitors can individually connect to the water pipes. At the front of the exhibition hall is the water plant room, from where the drinking water is supplied to the exhibition hall. A water treatment system has been fitted on the opposite side of the exhibition hall where to the flushed water was disposed of.

The interconnected pipe system posed another problem, as the flushing of the basic treated water through all the connected pipes was not ideal without additional intervention. Therefore a motor driven valve was fitted to the distribution system to ensure forced flushing through all connection pipes. Measuring REDOX levels (a measure of disinfection concentration parameters) on the flushing plates made it possible to create an optimum flushing scheme for the exhibition hall.

The disinfection system selected was the "Oxiperm Pro" from Grundfos, a chlorine dioxide system which has the following benefits for the application.

Chlorine dioxide is an approved disinfectant for domestic water which is approved by the Drinking Water Directive (DWD 2001) and is used because it yields good disinfection results and excellent stability and deposit effect (disinfection effect in the network). It also does not form hazardous or toxic materials (chloramine, chlorophenol, halogen methane). Chlorine dioxide disinfects even in very small concentrations, meaning the volumes of disinfectant added are much lower than for substances based on acids with lower chlorine content (e.g. chlorine bleach).

With Oxiperm Pro, the two initial components (diluted acid and sodium chlorite) are added in a 1:1 ratio by volume to produce a reaction. Some other systems work with 3 parts of acid to the same concentration of chlorine dioxide (2 g/l) in the basic solution; this means that using Oxiperm Pro can eliminate any risk of corrosion even in soft water (because of the reduced buffer capacity). The reduced consumption of diluted acid also minimises operating costs.

As standard, the Oxiperm Pro system has a built-in measuring amplifier for the chlorine dioxide measurement so an additional measuring amplifier is not required. A Conex DIA-G chlorine dioxide gas warning system is also in place. System status and error messages are transmitted via Messe München's BACnet system to the control panel, where they are logged. System start messages can also be transmitted to the individual systems.

The flushing system made by H&S Service was fitted on the opposite side. The system is set up on a plastic base plate with a drainage tank and consists of motor-driven sluice gates with built-in redox measurement. This flushing system is connected to the switchgear system which controls the entire flushing and disinfection process. The switchgear is part of the flushing system and was also supplied and installed by H&S Service. It is connected to Messe München's BACnet system.

The combined flushing/disinfection process can be activated from the control room just before the beginning of the show. This involves opening the wash-off valve on the rinsing plates in the show halls and washing away the standing water in the pipes. At the same time, the system controls the valves in the connection pipes in the show hall based on the flushing program defined. During the rinsing process, the Oxiperm Pro system measures 0.2 mg/l of chlorine dioxide into the main intake. If the redox score on the opposite side of the hall exceeds a defined value, then the entire drinking water system in the measuring hall has been fully disinfected. This is also the signal for the flushing system to stop. The wash-off valve closes, the smaller diversion valves move back to their home position and the entire system can switch over to normal operation as planned. A system command can also define whether the Oxiperm Pro systems should remain active during the show.