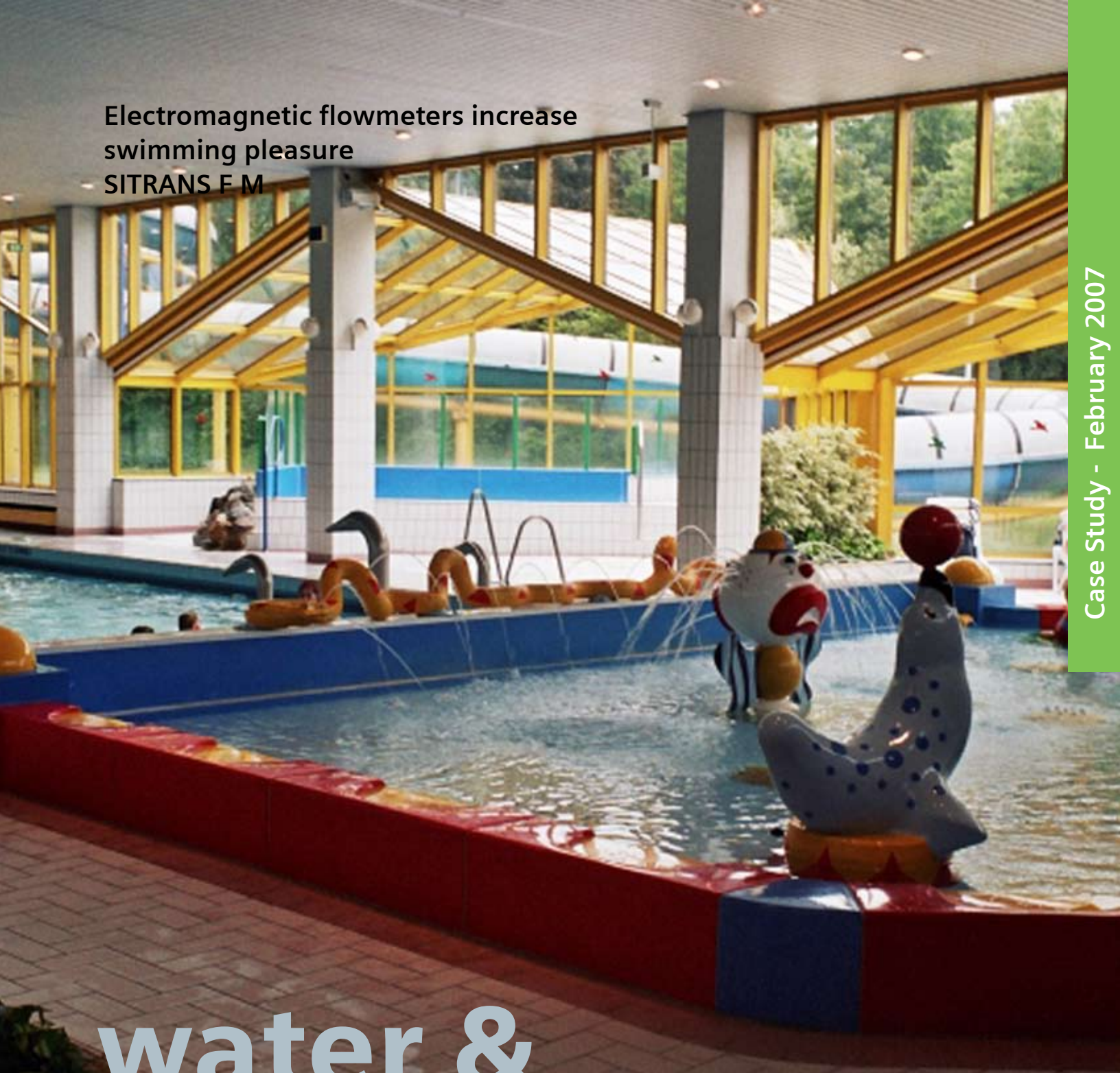


Electromagnetic flowmeters increase
swimming pleasure
SITRANS F M



Case Study - February 2007

water & WASTEWATER

During the different processes for satisfying the prescribed water quality, the water used in the out- and indoor swimming pool Aquarell in Haltern-am-See/Germany is monitored and regulated by a total of 20 Siemens SITRANS F M electromagnetic flowmeters.

Here, the filtration and the monitoring of temperature, chlorinity, pH and redox values play an important role. The newly installed control devices greatly contribute to cost-savings and making the stay of the visitors even more pleasant.

SIEMENS

Electromagnetic flowmeters increase swimming pleasure

SITRANS F M



Indoor swimming pool with a high attractiveness

The out- and indoor swimming pool Aquarell, located on the outskirts of the Ruhr region and open all year round, is equipped with a giant water chute as the main attraction and attracts more than 260,000 visitors every year. In addition to the city of Haltern with 36,000 inhabitants, its catchment area ranges from Marl via Recklinghausen to Dülmen. The indoor pool, opened in 1974, was considerably extended and modernised at the end of 2002.

The water for the in- and outdoor swimming pools is procured from an in-house well with a maximum flowrate of 50 m³/h, where the average refill quantity of fresh water is 60 l per bather and day.

In order to ensure a continuously high bathwater quality comparable with the requirements for drinking water, the filtering installation was completely replaced during the last 2 years.

Thanks to the use of modern Siemens flowmeters, the whole filtration process can now be controlled and monitored in an optimum way. For this purpose, 20 SITRANS F M electromagnetic flowmeters for the various pool areas and their different requirements were installed and still work today without any failure.

Thanks to a control system in the swimming supervisor's room, the whole installation can be centrally monitored and controlled. This facilitates the checking of the extensive technical equipment, and malfunctions can be detected and repaired at an early stage. Pool Manager Theo Besten and his 20 to 30 colleagues, depending on the season, thus managed to make the operation much more efficient and time-saving and significantly reduce the number of rounds of inspection. This gives them more time to take care of the bathers.

▲ The 70 m long giant water chute is the main attraction of the swimming pool. It was built end 2002 as part of the extension.

The modern building services control system enables a centralised monitoring of all processes on the screen. Here one can recognise the 4 SITRANS F M flowmeters which check the filtering performance and back-flush flowrate for the beginners' pool.



Tasks of the SITRANS F M electromagnetic flowmeters

The main task of the 20 installed electromagnetic flowmeters MAG 3100 W and MAG 5100 W for water applications is the checking of the filtering performance. When the filter is contaminated, the pressure drop increases; as soon as the preset limit is reached, the swimming supervisor initiates a backflush process. Thereby, the flowmeters ensure the observation of a filter backflush flowrate of exactly 160 m³/h. With too small a backflush flowrate there is no complete cleaning, whereas with an excessive flowrate the filtering material, consisting of activated carbon and sand, is washed out.

The main attraction of the Aquarell outdoor swimming pool is a 70 m long giant water chute. In order to offer the guests a maximum sliding pleasure, the water flowing through the pipes sized DN 100 must be limited to a flowrate of approx. 1000 l/min. Using too much or too little water would lead to excessive sliding speeds and thus considerably increase the risk of an accident.

► *Pool Manager, Theo Besten actuates the lever for opening the flow to the giant water chute. The SITRANS F M flowmeters monitor the flow rate.*

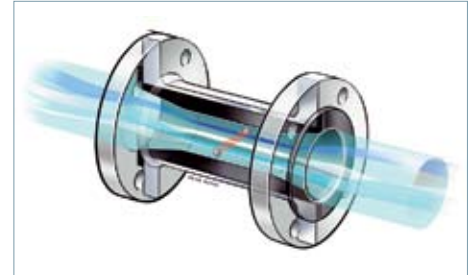
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The splash-water flowmeters measure the unfiltered pool water volumes, also referred to as raw water, which are supplied to the filter tanks. Too low a flow indicates a reduced filtering performance. In order to prevent the pumps from running dry, certain minimum flowrates have been fixed, which are monitored by SITRANS F M flowmeters.

Cone shaped measuring tube

The SITRANS F M MAG 5100 W electromagnetic flowmeters from Siemens are suitable for both drinking water and sewage water applications and replace the widespread MAG 3100 W series.

The series MAG 5100 W flowmeters are available in sizes from DN 25 to DN 1200. Since approximately 80 percent of all flowmeters sold are in the range from DN 50 to DN 300, Siemens has focused its innovation efforts on this area, thus meeting the priority requirements of the industry.



The conical construction of the measuring tube increases the speed in the area of the measuring section and at the same time straightens the flow profile. Both effects play a decisive role in increasing the accuracy.



The priority requirement of enhanced measuring accuracy for decreasing flowrates was met by using constructive innovations. These also include a cone shaped measuring tube, which was optimised for applications with a lower flow from time to time.

The disadvantages of the conical shape, such as the increase of the pressure drop and the formation of bubbles, vortices and deposits, were successfully eliminated with the MAG 5100 W by optimising the conical shape and the cone angle.

Another objective of the product development team was to maintain the installation length of the flowmeters according to ISO 13359, thus ensuring the replaceability of the already existing flowmeters with the MAG 5100 W. In cases, where the flowrate in an existing pipe has dropped to such a low level, that the accuracy is reduced, the new flowmeter allows the user to reach an acceptable accuracy again, without having to face the costs for the change-over to smaller pipe diameters.

More Information

For more information on this specific application read article "Electromagnetic flowmeters increase swimming pleasure" by Sales Engineer Johannes Niemöller.

Unique liner

The liner of the MAG 5100 W flowmeters is another reason for the enhancement of the measuring accuracy for applications in the water sector. The sensors are equipped with a patented ebonite liner. This composite elastomer is, above all, highly resistant to chemicals which can occur in untreated water and sewage, such as hydrocarbons and other materials.

Built-in earthing electrodes reduce installation costs

The earthing electrodes, built-in as a standard in the MAG 5100 W series, ensure the potential equalisation required by electromagnetic flowmeters. As most pipes used in the swimming pool sector are made of non-conductive PE plastic, the generally used stainless steel earthing flange, which has contact with the medium, needs not be used when installing SITRAN F M flowmeters.

▲ A SITRANS F M meter measures the unfiltered raw water of the beginners' pool. The splash water from the overflow gutter must then be filtered.

▼ The maintenance-free MAG 5100 W flow sensors are approved for drinking water and comply with OIML R49, ISO 4064 and the EEC Directives PED, LUD and EMC.

