



MIK measurement for phosphate precipitation in wastewater treatment plants

Project Description

Kobold Messring GmbH
Technisches Büro Mitte
Dirk Weiß
Tel. 06081 / 4460-401
Fax: 06081 / 4460-405
e-mail: weiss@kobold.com

25.09.2009

MIK measurement for phosphate precipitation in wastewater treatment plants

1) Problem Definition

Hydrophil GmbH in Hanau is a system manufacturer in the area of water treatment and disposal. Among other things, Hydrophil builds iron (III) chloride metering stations. Up to now these metering stations were monitored using suspended body measurement devices in order to avoid an excessive dosage. Due to the constantly increasing environmental protection and safety requirements, the exact monitoring and recording of the dosing continues to gain importance.

Corresponding laws are in the planning phase. The director of Hydrophil, Mr. Markmann, contacted Kobold Messring through Mr. Peter Kaufmann and expressed his need for specialized measuring equipment. After the requirements were accurately defined, our in-house development department built a prototype of the MIK device with tantalum electrodes. At the same time I visited Mr. Markmann in order to gain more exact insight into the precipitation process and in particular into the possible demand potential. Through the consistent tracking of the project development at Kobold by Mr. Kaufmann and several discussions which I was able to have with Mr. Markmann on site, we were able to present an optimal solution to the customer's problem in a very short time. The Kobold MIK device measures very small flow rates accurately and repeatedly (customer requirement: min. 100 ml/min), requires a lot less installation space and can be integrated fully into the process. Due to the materials which were used, PVDF and tantalum, it has reliable chemical stability.

2) Process:

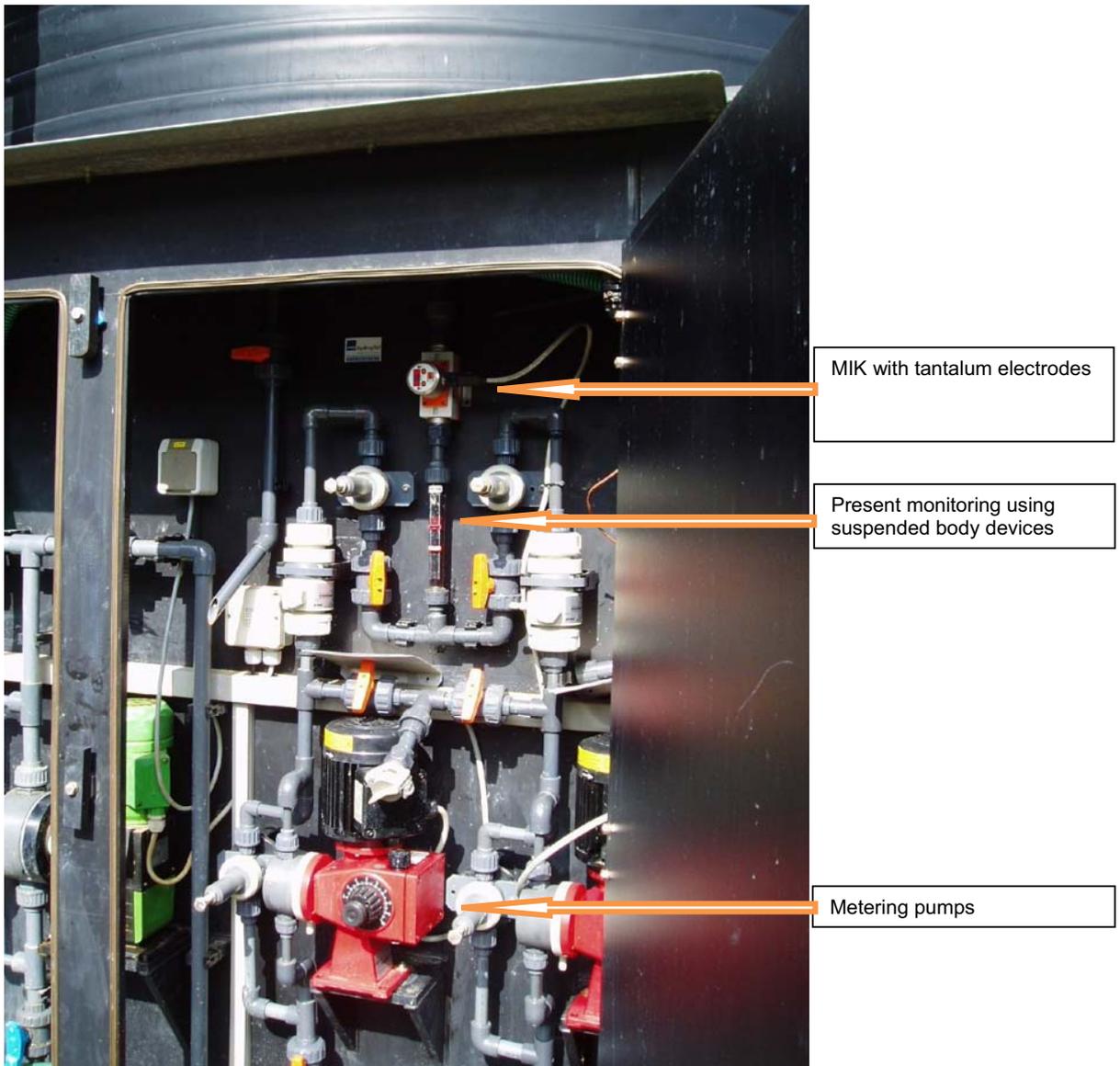
Through the addition of iron (III) chloride in the aeration tank, the phosphates which are dissolved in the effluent are chemically embedded in the sludge flakes and routed to sludge treatment together with the excess sludge. This measure reduces or prevents the growth of algae in our waters.

Iron (III) chloride is a chemical compound of iron (III) and chloride ions. It is chemically aggressive, damaging to health if swallowed and irritates the skin.

3) Field test

Hydrophil GmbH integrated a MIK test device into a metering station in the Marbach-Petersberg (at Fulda) wastewater treatment plant and tested it for several months. The results are outstanding, and the measuring device did not suffer any problems. Regular control measurements by the system operator have shown that the MIK reported very accurate flow rate values to the metering station. The system operator is very satisfied.

Iron (III) chloride metering at the Marbach-Petersberg wastewater treatment plant.



4) Potential

Phosphate precipitation using iron (III) chloride is the most common tertiary process in German wastewater treatment plants. An alternative to this is a process which uses aluminium chloride, however this has an estimated percentage of max. 5% of all plants. Nevertheless, I made an agreement with Hydrophil that durability tests would also be performed in this medium. Should these tests provide satisfactory results, we can also approach these plants. There are around 10 000 public wastewater treatment plants in Germany, plus the communal and private disposal operations (e.g. HIM, Hessische Industrie-Müll GmbH).

5) Further Course of Action

An information sheet which refers to the importance of monitoring will be prepared in close cooperation with Hydrophil. Hydrophil offers both complete new plants as well as plant refurbishment, always using our MIK device. The end customers are approached by both Kobold Messring and Hydrophil, in case of application we accord one another reciprocal project protection. The goal is to attain a broad circle of contacts quickly. Since the associations for sewage treatment are in close communication with one another, word of our positive results should get around quickly in the industry.

Yours sincerely

Dirk Weiß