

Polilyte Plus in Biocide Formulation

Reliable manufacturing of aqueous biocidal formulations

Industry segment: Specialty Chemicals

Application field: controlling and adjusting the pH value of a formulation

Hamilton products: Polilyte Plus H, RetractoFit



Biocides are chemicals used to suppress organisms (like pests and germs, i.e. moulds and bacteria) that are harmful to human or animal health, or that cause damage to natural or manufactured materials. They are widely used as disinfectants, for water treatment, wood preservation, paper, paints, plastics, and personal care. Biocidal products contain one or more biocidal active substances and may contain other non-active co-formulants that ensure the effectiveness as well as the desired pH, viscosity, color, etc. of the final product.

Acima AG, a subsidiary of The Dow Chemical Company, is a high-quality Swiss-based manufacturer of organic and inorganic specialty chemicals and is well known as manufacturer of biocidal formulations since the 1960's.

Improvements due to the Polilyte Plus H

When biocidal active substances and non-active co-formulants are mixed their chemical and physical properties like solubility and reactivity have to be respected in order to ensure the effectiveness of the formulation. The solubility of chemicals depends very much on the temperature and the pH value of the solvent and thus need to be controlled precisely. Each formulation has its own pH requirements, i.e. pH value needs to be adjusted either from pH 2.0 to pH 5.0 or from 11.5 to pH 9.0 accordingly with an accuracy of ± 0.1 . The measurement is not performed in the 10 m³ reactors but in a bypass to get a good reading during the mixing process. The Polilyte Plus H sensors are built in RetractoFit housings in order to clean and eventually replace them without disrupting the process. The housings were selected because they're easy to use and robust enough for the harsh environment. Some years ago newly introduced formulations required pH sensors with long lasting reference electrolytes and precise pH measurements. Thus the Polilyte Plus H was chosen. Since more than 3 years the sensors show stable and accurate readings, and still counting. Even if organic solvents are present in the formulation the operators can rely on the pH readings of the Polilyte Plus. The Single Pore technology and the polymer electrolyte allowed reducing the required maintenance to a minimum, and the reliability of the formulating process increased.

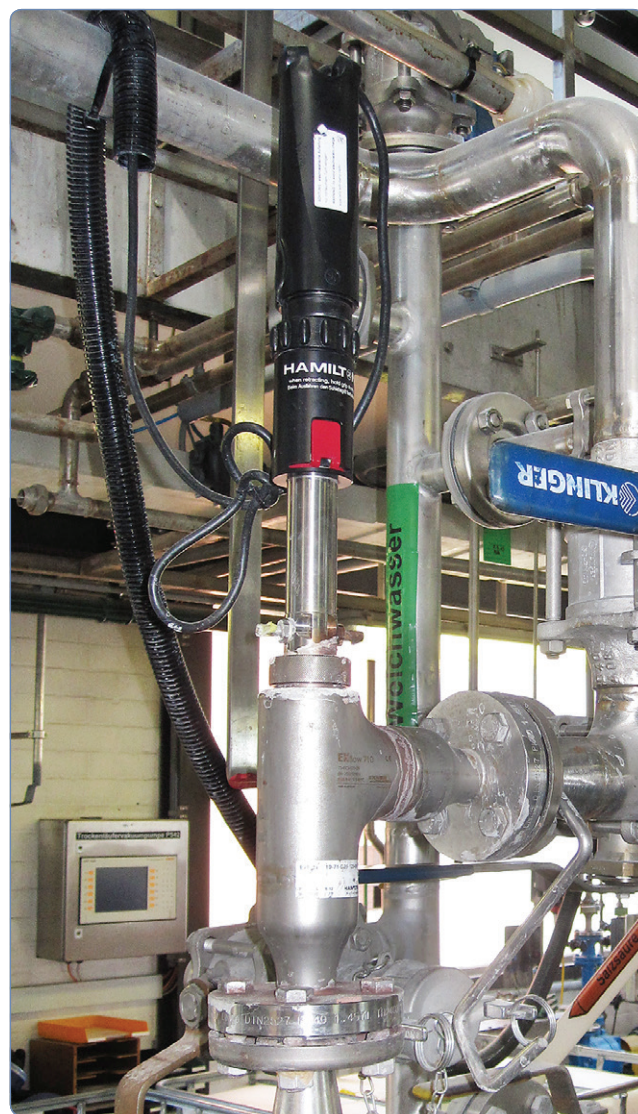


Figure 1: The Polilyte Plus H is used with the RetractoFit retractable housing and inserted in a specially designed flow through chamber.



Technical data of Polilyte Plus H

Measuring Range	pH 0 to 14
Diaphragm	Single Pore
Autoclavable	Yes, max. temperature 130°C
CIP	No
Steam Sterilizable	Yes, max. temperature 130°C
Process Temperature	0 to 130°C
Pressure Range	0 to 16 bar (100°C), 0 to 10 bar (130°C)
O-ring Material	FPM
Sample min Conductivity	2 µS/cm
Process Connection	PG13,5
Medium Affected Materials	Glass, FPM
Electrolyte	Polisolve Plus
Membrane / Cap	Hamilton type H glass

Benefits Polilyte Plus H

- ▶ Stable readings in a wide pH range
- ▶ Insensitive to organic solvents
- ▶ Single Pore technology prevents clogging
- ▶ Long sensor lifetime
- ▶ Easy maintenance



Figure 2: After more than 3 years of operation the Polilyte Plus H and RetractoFit are still in good shape and require only minimum maintenance.

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