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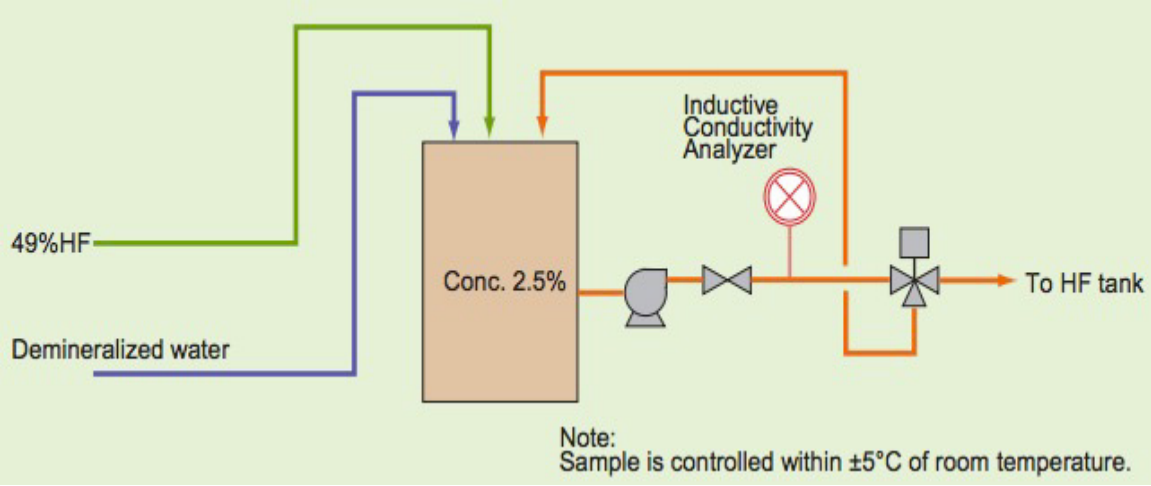
Measuring Concentrations of Developing Solutions and Fluoric Acid

Introduction

In a semiconductor plant, a variety of chemicals are used in various manufacturing processes. The chemicals used for specific purposes are produced by diluting raw liquid with demineralized water using in diluting equipment, and the control of the concentration at this point is performed by conductivity measurement. The FLXA202 and FLXA402 Inductive Conductivity Analyzer are capable of high-precision measurement, and their toroidal probe ISC40 is sealed in rugged PEEK (Poly Ether Ether Ketone) material to withstand the harshest applications. A highly reliable measurement is achieved by using FLXA202/FLXA402 in the control of concentrations of chemicals in a dilution system. The FLXA202 and FLXA402 Inductive Conductivity Analyzer also play a role in the drainage control and the processing of solutions delivered from various manufacturing processes.



Dilution System Diagram

Expected Benefits

- Easy control of fluoric acid concentration
- Reduces operating costs
- Establishment of corrosion-resistant wetted parts

Process Overview

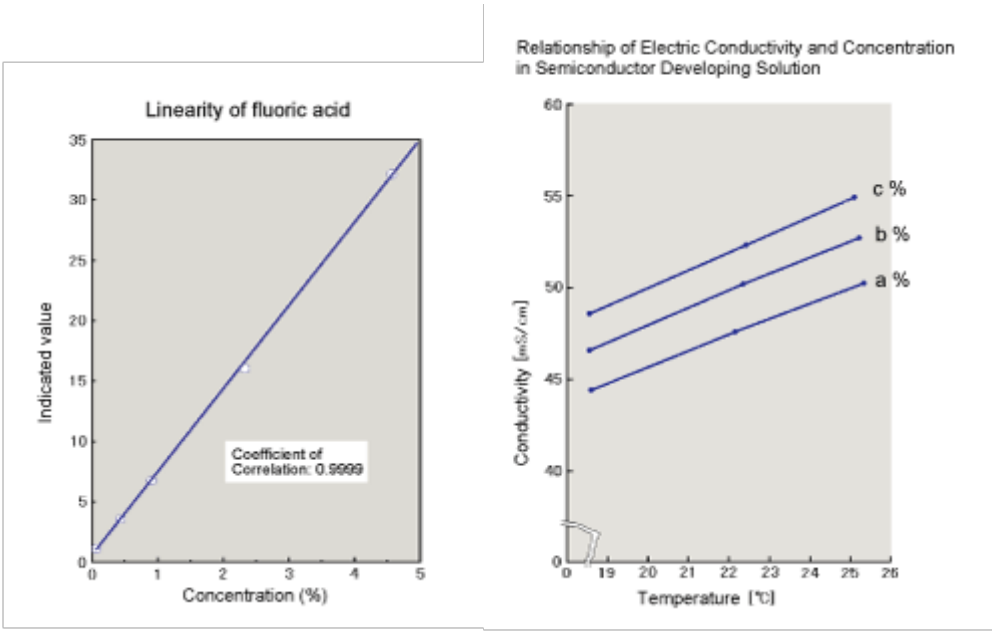
Up to now, chemicals used in semiconductor plants have been purchased in concentrations diluted beforehand by the chemical company to suit specific applications. However, as the price competition in the semiconductor market is increased, the operating cost reduction is highly required. As a result, each chemical used in a manufacturing process has been reviewed so that the substance profits and widespread cost reductions are secured.

Ordering chemicals in various concentrations from chemical manufacturing companies has been replaced by the installation of dilution systems at individual companies, whereby a raw chemical solution, whose price is not significantly different from that of diluted chemicals, is diluted to the required concentration, using inexpensive demineralized water.

Solution Details

Measurement system	
2-wire inductive conductivity system	
Sensor	ISC40G-TG-T1-☐☐
Flow-through type holder	ISC40FF-☐A
Analyzer	FLXA202-D-B−D-AB-C5-NN-A-N-LA-☐-NN
Dedicated distributor for transmitter	PH201G-A☐*C
4-wire inductive conductivity system	
Sensor	ISC40G-TG-T1-☐☐
Flow-through type holder	ISC40FF-☐A
Converter	FLXA402-A-B-☐-C5-NN-A2-WR-☐-☐-☐-NN

Field Data



Measurement Examples

Utilities

FLXA202 2-wire inductive conductivity analyzer	
Power supply voltage:	17 - 40 V DC (from distributor)
PH201G distributor	
Power supply:	100 V: 20 to130 V DC / 80 to 138 V AC, 47 to 63 Hz
	220 V: 120 to 340 V DC / 138 to 264 V AC, 47 to 63 Hz
Power consumption:	24 V DC: approx. 200 mA
	100 V AC: approx. 7 VA
	220 V AC: approx. 11 VA
FLXA402 4-wire inductive conductivity converter	
Power supply:	90 to 264 V AC, 50/60 Hz
Power consumption:	35 VA maximum

YOKOGAWA ELECTRIC CORPORATION
World Headquarters
9-32, Nakacho 2-chome, Musashino-shi, Tokyo 180-8750, JAPAN
http://www.yokogawa.com/an/

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