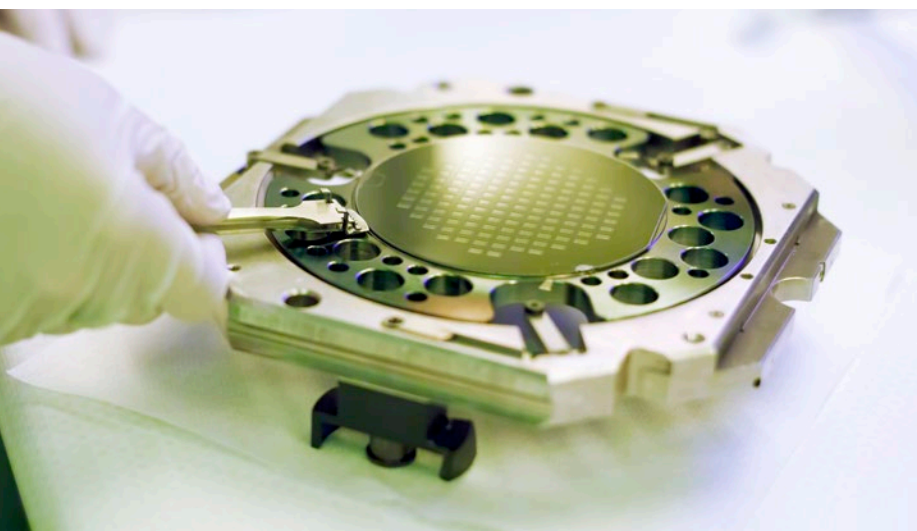


Online monitoring of flat panel display PR stripping process using FT-NIR



With years of experience and thousands of process monitoring installations, ABB is the leading supplier of fibre-optic-based spectrometers to the semiconductor industry.

Measurement made easy.

—
01 Wafer in a semiconductor manufacturing site

Background

A liquid crystal display (LCD), the most common type of flat panel display (FPD), consists of two sheets of glass separated by a 5 µm gap containing liquid crystals. An image is projected by applying an electric current to the liquid crystals to control the passage of light.

This technology takes advantage of the properties of liquid crystals that enable them to both maintain the same orientation with respect to each other and change orientation when a voltage is applied.

A large part of creating a liquid crystal is the formation of the circuits on the glass substrate.

The LCD array process is similar to the semiconductor manufacturing process except that transistors are fabricated on a glass substrate instead of a silicon wafer.

One of the key steps in the LCD array process is the PR stripping process in which the unwanted photoresist layers are removed from the panel. Its objective is to eliminate the photoresist materials from the panel as quickly as possible, without allowing the stripping materials to attack the materials under the resist.

It is very important to rapidly measure PR stripping chemical concentrations to increase yield of panel damage.

Key benefits

- Fast analysis in less than 30 seconds
- Non contact measurement with patented ClippiR+ (no contamination risk)
- No reagents or cooling units required (no down time due to sample cooling process)
- Multi-stream analysis (up to 8 sampling points)
- Low cost per stream analysis

- 01 Bath monitoring process
- 02 ABB's ClippIR+ non-contact sampling accessory
- 03 PR concentration trend chart
- 04 MEA concentration trend chart

Application details

Summary:

- Real time analysis of PR and amine concentrations of PR stripping process using a wet process analyser (WPA)
- Non-contact measurement to eliminate possible risk to chemical bath contamination
- Enables auto-chemical spiking to extend bath life

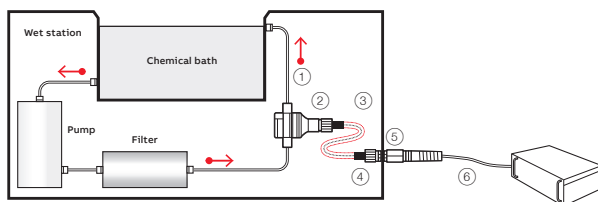
Method:

- Instrument: FTPA2000-260 (WPA)
- Sampling technique: ACC137 ClippIR+
- Number of sampling points: up to 8
- Remote analysis (up to 100 m)
- Analysis temperature: at process temperature (no cooling required)
- Measurement time: ~ 30s (128 scans)

Suggested end-user configuration

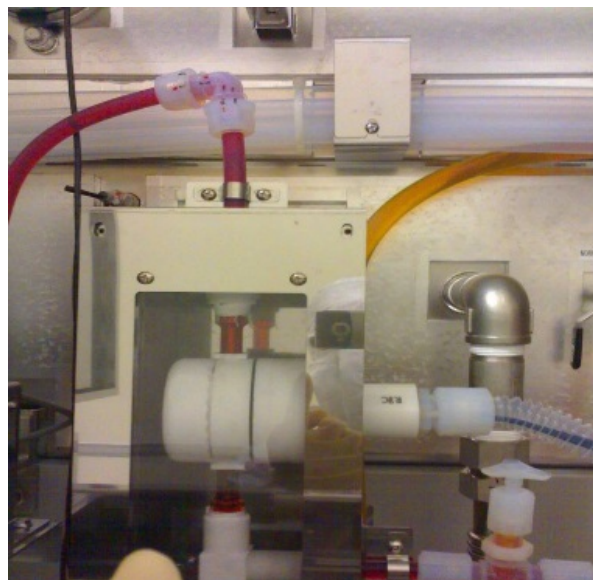
Process measurement:

- FTPA2000-260 (wet process analyzer)
- ACC137 (non-contact sampling accessory)

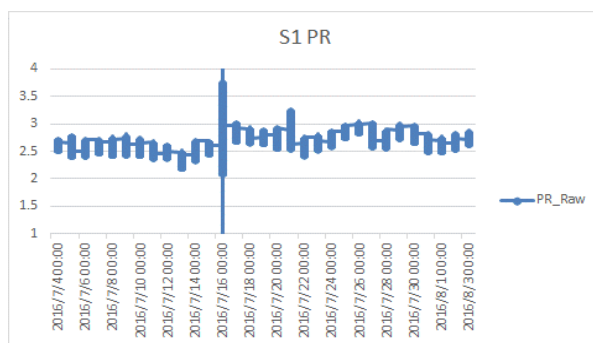


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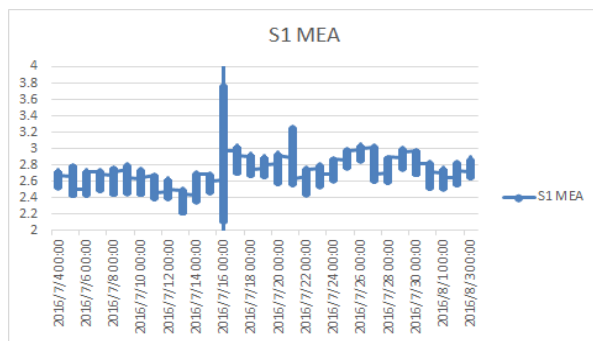
- ① The ClippIR+ is designed to be clipped directly around the recirculating line and is self-supporting. However, an optional bracket can be provided.
- ② 15.2 cm (5.98 in) minimum clearance around the ClippIR+.
- ③ Teflon tubing protecting fibre optics: 1.5 m (4.92 ft) long.
- ④ 2.5 cm (0.98 in) access hole required.
- ⑤ Standard bulkhead fitting.
- ⑥ Standard 10 to 100 m (32.80 to 328.08 ft) optical cables housed in PVC tubing.



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ABB Inc.
Measurement & Analytics
3400, rue Pierre-Arduin, Québec, Québec
G1P 0B2 Canada

Tel.: +1 418-877-2944
1 800 858-3847 (North America)
Email: ftir@ca.abb.com

abb.com/analytical

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