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A flexible PV barrier films defects detection system for in-situ R2R film processing

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Abstract:

R2R film processing procedures can often result in PV films being manufactured with a large quantity of defects, resulting in lower efficiency and a short life span. It is desirable to develop an in-situ PV barrier films defects detection system for R2R PV film manufacturing processes. Nevertheless, off-line PV barrier films defects detection is difficult and time consuming. Implementing an accurate in-situ flexible PV barrier films defects inspection system in the production environment is even more challenging, since the requirements on positioning, fast measurement, long term stability and robustness against environmental disturbance are demanding. This paper reports on the deployment of an in-situ PV barrier films defects detection system based on wavelength scanning interferometry (WSI) and its integration into an R2R film processing line in the Centre for Process Innovation (CPI). The system has been tested and characterised. The capability of the system has been verified.