University of Huddersfield Repository

Gao, Feng, Muhamedsalih, Hussam, Elrawemi, Mohamed, Blunt, Liam, Jiang, Xiang, Edge, Steven, Bird, David and Hollis, Philip

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

Original Citation


This version is available at http://eprints.hud.ac.uk/23048/

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

http://eprints.hud.ac.uk/
A flexible PV barrier films defects detection system for in-situ R2R film processing

F. Gao¹, H. Muhamedsalih¹, M. Elrawemi¹, L. Blunt¹, X. Jiang¹, S. Edge², D. Bird², and P. Hollis²

¹ EPSRC Centre for Innovative Manufacturing in Advanced Metrology, University of Huddersfield, UK
² The Centre for Process Innovation, the National Printable Electronics Centre, UK

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, offline 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.