Benefits of and challenges for inline metrology in vacuum metallization

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ABSTRACT

The presentation describes current methods for online quality controls comprising sensors measuring thin film transparency or surface resistivity or high definition cameras. They are very accurate and fast in response and sufficiently robust for the demanding industrial environment but limited in terms of inspection depth. With the growing interest for new metallized film characterized by high “barrier” properties, material reduction, replacement of multi-material packaging as dictated by the circular economy trend, new and more advanced metrology methods are requirement. They should be reliably and consistently predictive of not directly measurable properties such as barrier and adhesion which are currently done with off-line methods. The presentation core describes the approach of multi-modal X-RAY & Hyperspectral camera analysis, as developed within the Eu-funded NanoQI project for the specific application of vacuum metallization, illustrating expected innovative advantages in terms of key properties prediction and process control and discussing the uncertainties and challenges for a future introduction into the industrial practice.