Non-Nuclear Alternatives for On-Line Coating Thickness and Moisture Measurement

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ABSTRACT

This paper considers the role non-nuclear Infrared backscatter and X-Ray transmission and backscatter sensors can play in the online measurement of organic coatings and laminate layers.

For a long time, Beta transmission sensors and gamma backscatter sensors have been the preferred choice, due to their design simplicity, and ability to be used on a wide range of materials and applications with fairly predictable results.

However, radioactive source regulations and disposal requirements are getting increasingly tougher, and many countries and companies are adopting "green" initiatives to reduce or eliminate the use of hazardous materials in the workplace. In this new environment, the possibilities and advantages that Infrared and X-Ray sensor technologies can deliver are starting to be realized in a number of applications including the converting industry, particularly where high performance is demanded, such as extrusion coating and lamination.

The acceptance of Infrared and X-Ray sensors for the use in measurement of converted materials has come about due to a change in attitudes and philosophies while the advancement of the hardware technology has also promoted its use. Some of these advances have been made at the sensor level, and some at the system level, where use of such tools as same spot measurement, more robust calibration techniques, and improved sensor management have resulted in significant performance gains.

This paper will assess the role for these new Infrared and X-Ray sensors, their limitations, and the advantages they can deliver.