



ICE USA Exhibition
April 6-8, 2011
Orlando FL

Web Handling Machine Design for Static Control

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Abstract

Static charge on insulating webs causes a number of problems during conveyance including dust attraction, coating defects, sheet sticking and jamming in converting operations, and sparks that ignite solvent vapors, compromise control logic malfunctions, and shock operators. Machine design criteria for achieving good static control are presented. Good static control can be achieved by selecting roller and belt materials that are compatible with the products and by installing static neutralizers at strategic locations along the web path. Guidance for selecting compatible materials is provided by the triboelectric series. Several experimental methods for measuring the compatibility of materials are reviewed. Good static control requires that incoming materials meet specifications and that finished product has static levels acceptable to customers. Measurement locations along the web conveyance path are identified for electrostatic fieldmeters and voltmeter to measure incoming materials and finished product. Data collected from these on-line instruments may be provided to vendors for process improvement projects and to customers to verify that finished product meets their specifications.