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Preventing Static Fires: Best Practices for Printing and Converting Operations

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Abstract

Fires ignited by static discharges (sparks) cause human suffering and significant economic losses. A facility that adopts best practices for controlling static takes a significant step towards preventing static fires. Incendive static sparks may be effectively suppressed by using a two-layer, fault tolerant strategy. The first layer of defense is to neutralize static at the source. Hand held, non-contact electrostatic fieldmeters may be used to identify the sources of static charging. Examples of common sources of charging are reviewed and the best practices for neutralizing static at these sources are presented.

The second layer of protection is a system of fail-safe static dissipater located to protect our facilities against specific static threats including web breaks, splice failures, coating solution pump failures and dryer fan failures. We will see how each of these failures caused a static fire. And, in the event of a failure, how the best practice locations for static dissipaters can prevent static ignitions.

Robust static control for printing and flammable solvent coating operations may be achieved by adopting these best practices to implement a two-layer fault tolerant system. A fault tolerant system provides protection even in the event of a single fault, such as a web break, a splice failure, or the failure of any single static dissipater. For a static ignition to occur, two failures must occur simultaneously. So, detecting a fault and restoring normal operation is required for robust, long term operation. Operators may be alerted of the failure of a static dissipater by static monitors permanently installed at key locations. These monitors together with maintenance schedules for the static dissipaters insure good performance over time so that static fires are effectively prevented.