J1 The Use of an Electrostatic Detection Device (EDD) to Identify Class Characteristics on Documents Produced by Printers and Photocopiers

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The goal of this presentation is to determine if it is feasible to use an electrostatic detection device (EDD) to examine questioned documents for class characteristics from printers and/or photocopiers after a document has been printed or copied.

The use of an electrostatic detection device (EDD), first marketed by Foster and Freeman, Ltd., of England as ESDA (Electrostatic Detection Apparatus), is an invaluable tool that provides forensic exam- iners with a method to examine indentations in a document. Since ESDA is a non-destructive examination (with exception to a brief humidifying process) that is highly sensitive and capable of creating a permanent record of results, its use in forensic laboratories is ubiquitous. As well, the ESDA technique is well documented in the literature and numerous articles have been published exploring parameters affecting quality and methods of enhancing results. After conducting a literature search, the author found limited references with regards to detecting physical impressions left on a document subsequent to being produced on a printer or photocopier. Printing devices and photocopiers are fast becoming a rampant resource for criminals, and their forensic identifi- cation can be critical to an investigation. Examinations such as chemical analysis of colorants and the identification of trash marks are essential tools for the forensic examiner, but new techniques to identify a machine model or group of models are essential. The market is inundated with inkjet printers, laser printers, and photocopiers, but many of these office machine systems are built by various manufacturers, or their hardware design (e.g., "rolling" and "grabbing" mechanisms) have been changed over the years due to technological advances.

In this study, ESDA was used to examine documents produced using various printers and photocopiers to determine if class character- istics could be employed to determine the make and/or model of the machine. As well, the author attempted to ascertain the feasibility of identifying individual characteristics to compare documents produced by the same machine.

ESDA, Printers, Copiers

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