Development of a Methodology to Identify Repairable Photoreceptor Drums

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Toner cartridges are discarded due to the degradation of the organic photoconductor while the other parts of the cartridge are in usable condition. This research is focused on developing a method to identify repairable drums. Since the condition of the used drum is unknown, identifying the primary cause for the quality deterioration of xerographic prints is of great importance in repairing these drums.The print quality deterioration can happen due to deterioration of charge transport layer alone,degradation of charge generation layer alone, or occurance of both simultaneously.The damaged charge transport layer could lead to a higher residual potential due to trapped charges in the charge transport layer, and that finally affect the print quality.

A locally fabricated setup was used to obtain dark decay curves and photoinduced discharge curves. These curves were then used to identify repairable drums successfully. Furthermore, the wear-out thickness of the charge transport layer was also estimated using the same data. This information was then used to develop a repair methodology for the damaged drums.

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