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Replacement Time and Number of Preventive Maintenance Actions for Second-Hand Device

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Abstract : In this study, the optimal replacement time and number of preventive maintenance (PM) actions were investigated for a second-hand device. Suppose that a user intends to use a second-hand device for manufacturing products, and that the device is replaced with a new one. Any device failure is rectified through minimal repair, thereby incurring a fixed repair cost to the user. If the new device fails within the FRW period, minimal repair is performed at no cost to the user. After the FRW expires, a failed device is repaired and the cost of repair is incurred by the user. In this study, two profit models were developed, and the optimal replacement time and number of PM actions were determined to maximize profits. Finally, the influence of the optimal replacement time and number of PM actions were elaborated on, using numerical examples.

Keywords : second-hand device, preventive maintenance, replacement time, device failure
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