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A simulation model for a Cash Concentration and Disbursements System

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Carlos A. Herrera ; Asier Ibeas   **All Authors**

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This paper presents a simulation model for a Cash Concentration and Disbursements System (CCDS) seen as an inventory management system, based on difference equations and systems engineering techniques. The model assumes the existence of delays due to banking procedures and analyzes the application of the zero balance accounts concept. The case of a generic company whose agencies are geographically distributed in different regions is proposed. The model assumes the existence of a centrally operated main account and minimum balance policy. This account receives money transfers from the revenues accounts of each agency and, also from the main account, money is transferred to the agencies' expense accounts in order to cover overdrafts. There exist an investment account into which any cash surpluses of the main account are deposited and a credit line in order to avoid the cash deficits. The operating rules for the CCDS are defined, and income and financial costs involved are considered. The model represents the flow of money between the identified elements of the system and the flow of money requirements or transfer orders. An equivalent model represented by algebraic equations through the Z-transform is derived, which opens perspectives for using rigorous control techniques in the field of finance.

Published in: 2015 23rd Mediterranean Conference on Control and Automation (MED)

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