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A generic material flow control model applied in two industrial sectors

Abstract

This paper addresses the problem of generic planning and control of Automated Material Handling Systems (AMHSs). We build upon previous work in this research direction to provide a proof of concept for generic control of AMHSs in different application areas. We present a generic control architecture for AMHSs, and apply this architecture to a material flow model with storage and sorter systems. We set up our model to be applicable to AMHSs in two different market sectors, baggage handling and distribution. We report on performance indicators, and analyze how far we can control the two industries generically in terms of software implementation. To this end, we present an impressive degree of 84% commonality in the control software code. Moreover, we highlight deviations from the generic control and give insight to control procedures that deviate from the generic code. A generic architecture that optimally exploits synergy between the different market sectors may reduce design time and costs considerably for system suppliers, where finding a common ground to model AMHSs in these different sectors forms a scientific challenge.