



Research School for Operations
Management and Logistics

Optimization of a poultry production plant

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Marel Poultry Processing (MPP) produces equipment for poultry processing plants. A production line is capable of transforming poultry into finished products, with limited human interaction. Two areas can be distinguished in a production line: the primary process and secondary process. The primary process cleans and prepares chickens for the secondary process, where they are made into final products. The focus will be on the secondary process, where the product flows diverge and diversify.

The trend is that the input of poultry is becoming more complex with the introduction of new broiler types. Concurrently, demand from customers for more diverse products is increasing. These developments complicate the design and control of systems that have to deal with more diverse products. Therefore, MPP now aims to find better system designs to deal with these issues.

We aim to develop a simulation model of the production line to gain insight in the line behavior (throughput, utilization, breakdowns, transition probabilities), and perform a sensitivity analysis. Concurrently, an analytic model will be developed to analyze the line performance and provide a theoretical framework. Using the framework, a model for stochastic optimization of production scheduling for a given layout will be developed. Similarly, a model for optimizing a layout will be created. Lastly, a decision support tool will be made to assist in production scheduling.