Preface

All the work presented henceforth was conducted during my time as Research Assistant at the School of Management at the University of Applied Sciences Upper Austria. Additionally, the PhD Management Programme of the faculty of business, economics and statistics of the University of Vienna has been completed. The following funded projects have enabled the preparation of the thesis:

E-Conwip: Embedded Conwip, Austrian Research Promotion Agency (FFG), Project number: 814303/13129, Investigates the production planning method Conwip in an MRPII setting by applying in-depth case studies in three companies.

HPP: Hierarchical Production Planning, Austrian Science Fund (FWF), Translational research project, Project number: L534-N13, Investigation of robust planning strategies in a hierarchical production planning setting.

SimGen: Simulationgenerator, FFG Coin Aufbau, Project number: 826789, Development of a framework for generating discrete event simulation models; decision support for mid-term capacity planning; identifying the effects of planning strategies and their parameters on real world production systems.

ProdNET: Atmende Produktion BAY-AUT, Interreg Bayern – Österreich, Project number: J00317, Identification and promotion of production potential for small and mid-sized enterprises.

HOPL: Heuristic Optimization in Production and Logistics, FFG COMET, Project number: 843532, The aim of this project is to develop innovative optimisation algorithms based on interacting sub-processes to build the holistic model.

BioBoost: Biomass based energy intermediates boosting biofuel production, FP7, Project number: 282873, The overall objective of BioBoost is to pave the way for de-central conversion of residual biomass to optimised, high energy density carriers, which can be utilised in large scale applications for the synthesis of transportation fuel and chemicals or directly in small-scale combined heat and power plants.

The PhD-thesis has been written under supervision by Prof. Richard F. Hartl (University of Vienna) and evaluated by Prof. Heinrich Kuhn (Catholic University of Eichstätt-Ingolstadt) and Prof. Lars Mönch (University of Hagen). The thesis consists of five journal articles, two of which have already been published and three are working papers:

Chapter 3 : Hübl and Jodlbauer (2013): Optimal Utilization based on costs and revenue for a hierarchical decision model based on JIT goals (Working Paper)

Chapter 4 : Altendorfer et al. (2014): Periodical capacity setting methods for make-to-order multi-machine production systems (published) and Hübl and Altendorfer (2014b): Queuing model for optimal switching point for two capacity levels (Working Paper)

Chapter 5 : Hübl and Altendorfer (2014a): Inventory constraint definition for Conwip in a make-to-order environment – a simulation study (Working paper)

Chapter 6 : Hübl et al. (2013): Influence of dispatching rules on average production lead time for multi-stage production systems (published)

The applied simulation model was published in Hübl et al. (2011), Felberbauer et al. (2012) and Altendorfer et al. (2013). Preliminary work has been published in the following conference papers: Hübl and Gmainer (2008); Hübl and Jodlbauer (2008); Hübl et al. (2009, 2010); Hübl (2014); Hübl and Altendorfer (2015).

Alexander Hübl
Wels, March 2015

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