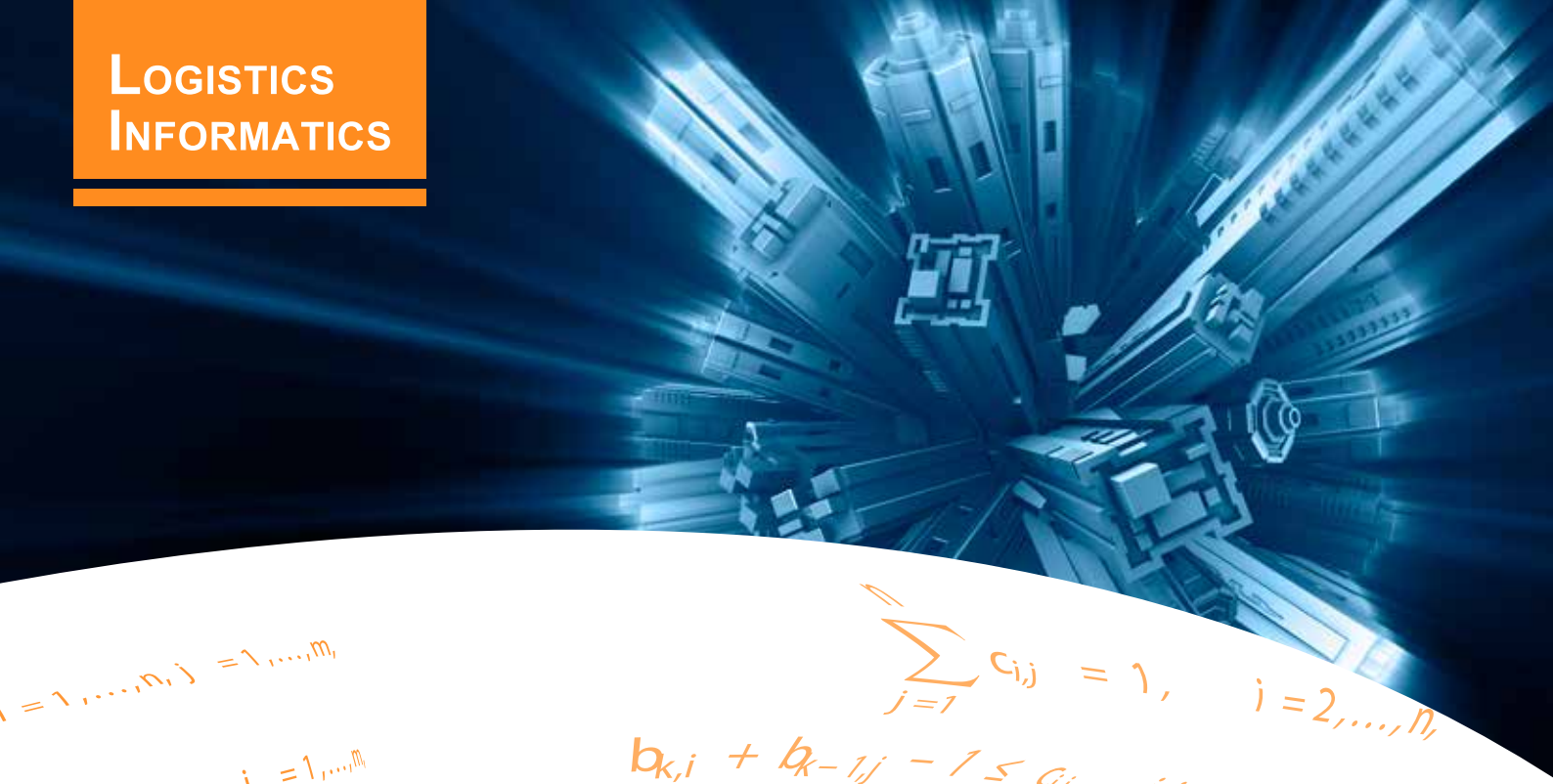
LOGISTICS
INFORMATICS



PRODUCTION PLANNING

RISC
Software GmbH

Production Planning

Optimal utilization of the production capacity is essential for companies to gain ground in the current market. Despite all, practically applicable out-of-the-box software solutions in the field of production planning are hardly available and mostly provide unsatisfactory planning proposals due to the complex demands of today's economy.

RISC Software develops for its costumers individually customized production planning software products with mathematical optimization algorithms.

Why individually customized production planning software?

- Ideal adaptation to production and manufacturing processes
- Exact representation of the machinery and shift calendar
- Suitable for all industries
- Easy to use and ideal customized graphical user interface
- Control of rapidly increasing product variety
- Optimal management of the trend towards ever smaller lot sizes

Why mathematical optimization algorithms?

- Modern powerful solution algorithms at the current state of research
- Conclusive structuring of computed solutions
- Transparent consistency of generated production plans
- Deterministic decision-making: Reproducible repeatability of optimal planning results
- Controllable and rapid adaptability to new production scenarios (Disruption Management)
- Firm control over the design complexity

Wide range of usable solution algorithms, solvers and tools:

- In-house development of mathematical solution algorithms
- Use of existing mathematical libraries
- Use of mathematical high end solutions of the IBM-ILOG Software Products Division

StartUp → Analysis and Design → Implementation → PilotPhase → Commissioning

BORBET Austria - Success through Individual Production Planning

For over 20 years, Ranshofen-based BORBET Austria has been manufacturing aluminum wheels for the European automotive industry. As a renowned manufacturer with an annual production of about 3 million wheels, the company continuously substantiates its strong market position using efficient production processes.

It is essential to maintain and consolidate international competitiveness with a high adherence to schedules, short delivery times and optimal utilization of production capacity. Moreover, the growing wheel diversity and the increasing smaller batch sizes make the planning of the production process increasingly complex for BORBET Austria.

RISC Software has developed an individually customized production planning software for BORBET Austria, which proves to be of high value since 2010. With the help of powerful and leading mathematical solver engines of IBM-ILOG every day challenging planning problems are solved successfully.

Excerpt of the quantity structure:

- About 500 products
- 20 – 40 production machines
- Limited sequence dependent setups
- 2 detailed modeled production levels on a 8h-shift basis

Benefits and customer values:

- Optimal decisions on the sequence, set-up processes, timing, machine assignment and size of the production lots
- Optimal utilization of production capacity.
- Increase of operational capacity
- Increase of flexibility and adherence to delivery dates
- Rolling planning by advancing per shift in the planning horizon

By managing the growing complexity of the planning processes with calculated high quality production plans, the basis for a more cost-efficient production planning is set.

Individual Production Planning
RISC Software Start Up Kit

A structured approach with analysis of the as is situation is the basis for a successful implementation of a production planning project.

Content Start Up Kit – Production Planning:

- One or more workshops, each about 4 hours:
  - Problem analysis
  - As is situation
  - Identification of optimization objectives and constraints
  - Modeling aspects
- Preliminary considerations concerning choice of tools and algorithms
- Draft (rough) specification
- 4– 10 mandays
- Presentation of results and further Steps

$$\omega_r \sum_{i,j=1}^{n} r_{i,j}\, c_{i,j} + \omega_p \sum_{i=1}^{n} \sum_{j=1}^{m} q_{i,j} +$$

$$\sum_{k=1}^{n} b_{i,k}\, P_{k,j} \geq p_{i,j}$$

$$1 - \sum_{k=1}^{n} \left(Q_{k,j} \sum_{l=1}^{i-1} b_{k,l} \right) \geq p_{i,j}$$

$$1 - c_{i,k} \sum_{l=1}^{i-1} b_{i,k} \geq b_{i,j}$$

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v 1.1 05.03.2015