

Spis treści

Part One: Introduction to Production Logistics	7
1. Logistics management	9
1.1. Definition of logistics management	9
1.2. Logistics management objectives	11
1.3. Basic principles of logistics management.....	13
1.4. Logistics management development.....	14
2. Production logistics	16
2.1. Production logistics levels	16
2.2. Reasons for development of production logistics.....	17
2.3. Logistic solutions in production	17
2.4. Production logistics in Central and Eastern Europe.....	19
2.5. Structure of the book	19
Part Two: Production Logistics Concepts and Systems.....	21
3. Traditional inventory control systems.....	23
3.1. EOQ model	23
3.1.1. EOQ logic	23
3.1.2. Example of basic EOQ model (Harris–Wilson formula) application.....	26
3.1.3. EOQ model taking into account quantity discounts	28
3.1.4. Application of EOQ model taking into account the quantity discounts....	29
3.2. Fixed order-quantity system	30
3.2.1. Fixed order-quantity system logic	31
3.2.2. Safety stock.....	32
3.2.3. Example of fixed order-quantity system application.....	34
3.3. Fixed order-period system	38
3.3.1. Fixed order-period system logic	38
3.3.2. Example of fixed order-period system application.....	39
4. MRP and ERP systems	43
4.1. MRP I – Material Requirements Planning.....	43
4.2. Closed-loop MRP.....	47
4.3. MRP II – Manufacturing Resource Planning	48
4.4. ERP systems	50

5. Just-in-Time, TPS and Lean manufacturing concepts and <i>kanban</i> system	52
5.1. Toyota Production System and Lean manufacturing	52
5.2. Definition of Just-in-Time concept	53
5.3. Problems with implementation of JIT	55
5.4. JIT implementation	57
5.4.1. Securing high quality products	57
5.4.2. Removing the risks of equipment breakdowns.....	58
5.4.3. Securing short equipment setup times	59
5.4.4. Efficient arrangement of material flows	60
5.4.5. Creating a system of guaranteed suppliers	62
5.5. <i>Kanban</i> system	63
6. TOC concept and DBR and OPT systems	68
6.1. Basic terms of TOC	69
6.1.1. Bottlenecks	69
6.1.2. TOC tools.....	70
6.2. TOC principles and tools usable in production logistics	73
6.2.1. Bottlenecks in production	73
6.2.2. TOC principles usable in production logistics.....	74
6.2.3. TOC tools usable in production logistics.....	75
Part Three: Applications in Metallurgical and Waste Processing Companies	85
7. Utilisation of production logistics concepts and systems in metallurgical company	87
7.1. Objectives of operational production logistics in a metallurgical company.....	87
7.2. The potential for use of production logistics concepts and systems in a metallurgical company	89
7.3. Application of MRP approach for manufacturing resource planning of the operations producing heavy plate cut shapes.....	90
7.3.1. Operations for production of heavy plate cut shapes	90
7.3.2. Production scheduling in operations producing heavy plate cut shapes ...	91
7.3.3. Methodology for production scheduling.....	92
7.3.4. Example of the methodology application	95
7.3.5. Algorithm for calculation of operating capacity of flame-cutting machines.....	98
7.4. Analysis and identification of capacity bottlenecks using an example of line for cutting of hot rolled bars	103
7.4.1. Bottlenecks in metallurgical production	103
7.4.2. Approaches to the analysis and identification of floating capacity bottlenecks in metallurgical production.....	104
7.4.3. Methodology for operating capacity analysis of floating capacity bottlenecks.....	105
7.4.4. Operating capacity analysis of the line for cutting of hot rolled bars	108
7.4.5. Simulation as effective tool for analysis of floating capacity bottlenecks	112
7.4.6. Simulation of the line for the cutting of hot rolled bars	113

8. Utilization of Lean manufacturing and Just-in-Time concept in logistics of used products sorting and processing	117
8.1. Methodology for analysis and evaluation of logistics of used products sorting and processing	118
8.2. Disassembling scrapped electronic equipment.....	119
8.3. Analysis and evaluation of disassembly logistics of scrapped electronic equipment	120
8.4. The concept of new logistics solution of scrapped electronic equipment disassembly	123
Part Four: From Production Logistics to SCM Concepts and Systems	127
9. Advanced Planning and Scheduling (Supply Chain Planning) systems	129
9.1. APS system definition	130
9.2. APS system planning structure and modules.....	131
9.3. Production planning and scheduling module	133
9.4. APS system advantages	134
10. Lean and agile supply chain management	135
10.1. Lean supply chain management.....	136
10.2. Agile supply chain management.....	138
10.3. Leagile supply chain management.....	141
11. Using the TOC principles for supply chain management	144
11.1. Five focusing steps for ongoing improvement.....	144
11.2. DBR system.....	145
11.3. TOC supply chain solution	147
References.....	149