## LIST OF TABLES

Table 1.1The simulation process2Table 1.2The aggregated simulation process3Table 1.3Success factors in simulation7Table 1.4Strategic, tactical and operational use of simulation in manufacturing12Table 1.5Computer software systems for manufacturing simulation12Table 2.1The SIMMEK research programme16Table 2.2Findings from The UK Simulation Study Group20Table 2.3Future general research areas of DES in manufacturing21Table 2.4Future detailed research areas of DES in manufacturing22Table 3.5Resource type; Machine - attributes34Table 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Operators - attributes34Table 3.3Resource type; Stores - attributes34Table 3.4Resource type; Stores - attributes35Table 3.5Resource type; Stores - attributes37Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.10Order data41Table 3.11Cost data41Table 3.12The attributes for the entire experiment45Table 3.13The attributes for the entire experiment45Table 3.10Order data41Table 3.11Cost data41Table 3.12The coses plan for a machine step44Table 3.13The attributes for the entire experiment45<	Number	Name	Page
Table 1.2The aggregated simulation process3Table 1.3Success factors in simulation7Table 1.4Strategic, tactical and operational use of simulation in manufacturing12Table 1.5Computer software systems for manufacturing simulation12Table 2.1The SIMMEK research programme16Table 2.2Findings from The UK Simulation Study Group20Table 2.3Future general research areas of DES in manufacturing21Table 2.4Future detailed research areas of DES in manufacturing22Table 3.5Resource type; Machine - attributes34Table 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Transport units - attributes37Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.9Plant operation rules - part two39Table 3.11Cost data40Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK57Table 3.16The major davantages of SIMMEK56Table 3.17The new SIMMEK-II versions <t< td=""><td>Table 1.1</td><td>The simulation process</td><td>2</td></t<>	Table 1.1	The simulation process	2
Table 1.4Strategic, tactical and operational use of simulation in manufacturing12Table 1.5Computer software systems for manufacturing simulation12Table 2.1The SIMMEK research programme16Table 2.2Findings from The UK Simulation Study Group20Table 2.3Future general research areas of DES in manufacturing21Table 2.4Future detailed research areas of DES in manufacturing22Table 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Coperators - attributes34Table 3.4Resource type; Stores - attributes36Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for invalidity63Table 3.15The major divantages of SIMMEK57Table 3.16The major divantages of SIMMEK57Table 3.15The major divantages of SIMMEK57Table 3.15The major divantages of SIMMEK63Table 3.12The eccess factors in result presentation71Table 4.3SIMMEK; How validity is secu	Table 1.2	-	3
manufacturing12Table 1.5Computer software systems for manufacturing simulation12Table 2.1The SIMMEK research programme16Table 2.2Findings from The UK Simulation Study Group20Table 2.3Future general research areas of DES in manufacturing21Table 2.4Future detailed research areas of DES in manufacturing22Table 2.5Main goals of follow-up project of the SIMMEK 23programmeTable 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Operators - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Operators - attributes35Table 3.5Resource type; Transport units - attributes37Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.9Plant operation rules - part two39Table 3.10Order data41Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK57Table 3.16The major advantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 3.18The major advantages of SIMMEK57Table 3.19The major advantages of SIMMEK57Table 3.11The major disadvantages of SIMMEK57Table 3.13The enajor d	Table 1.3	Success factors in simulation	7
Table 2.1The SIMMEK research programme16Table 2.2Findings from The UK Simulation Study Group20Table 2.3Future general research areas of DES in manufacturing21Table 2.4Future detailed research areas of DES in manufacturing22Table 2.5Main goals of follow-up project of the SIMMEK 2323programme77Table 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Transport units - attributes37Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major disadvantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 3.11Cost data caused reasons for invalidity63Table 3.13The major disadvantages of SIMMEK56Table 3.14Reasons for invalidity63	Table 1.4	•	12
Table 2.2Findings from The UK Simulation Study Group20Table 2.3Future general research areas of DES in manufacturing21Table 2.4Future detailed research areas of DES in manufacturing22Table 2.5Main goals of follow-up project of the SIMMEK23programme7Table 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Requisites - attributes34Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Transport units - attributes37Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major disadvantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 3.14Critical success factors in result presentation71Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72	Table 1.5		12
Table 2.3Future general research areas of DES in manufacturing21Table 2.4Future detailed research areas of DES in manufacturing22Table 2.5Main goals of follow-up project of the SIMMEK23programme25Table 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Operators - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Stores - attributes37Table 3.7Plant operation rules - part one38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.1SIMMEK; How validity is secured in experimenting and analysis51Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.4Using Excel spreadsheet for result	Table 2.1	The SIMMEK research programme	16
Table 2.4Future detailed research areas of DES in manufacturing22Table 2.5Main goals of follow-up project of the SIMMEK23programmeTable 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Operators - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Stores - attributes37Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major disadvantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for resul	Table 2.2	Findings from The UK Simulation Study Group	20
Table 2.5Main goals of follow-up project of the SIMMEK 23 programmeTable 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75 <td>Table 2.3</td> <td>Future general research areas of DES in manufacturing</td> <td>21</td>	Table 2.3	Future general research areas of DES in manufacturing	21
programmeTable 3.1The SIMMEK system's major advantages25Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Operators - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major disadvantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis61Table 5.1Critical success factors in result presentation71Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 2.4	Future detailed research areas of DES in manufacturing	22
Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major disadvantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 2.5		23
Table 3.2Resource type; Machine - attributes34Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis71Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75 <td>Table 3.1</td> <td>The SIMMEK system's major advantages</td> <td>25</td>	Table 3.1	The SIMMEK system's major advantages	25
Table 3.3Resource type; Operators - attributes34Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 3.2		34
Table 3.4Resource type; Requisites - attributes35Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 3.3		34
Table 3.5Resource type; Stores - attributes36Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 3.4		
Table 3.6Resource type; Transport units - attributes37Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.7Plant operation rules - part one38Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.8Priority rules38Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.9Plant operation rules - part two39Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.10Order data40Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis71Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75		•	
Table 3.11Cost data41Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.12Process plan for a machine step44Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.13The attributes for the entire experiment45Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.14Reasons for choosing the Finder of Macintosh as media51Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 3.15The major advantages of SIMMEK56Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and analysis65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75		-	
Table 3.16The major disadvantages of SIMMEK57Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75		6	
Table 3.17The new SIMMEK-II versions58Table 4.1User caused reasons for invalidity63Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 4.2Simulator package caused reasons for invalidity63Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 4.1	User caused reasons for invalidity	63
Table 4.3SIMMEK; How validity is secured in modelling65Table 4.4SIMMEK; How validity is secured in experimenting and65Table 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 4.2	•	63
Table 4.4SIMMEK; How validity is secured in experimenting and 65 analysisTable 5.1Critical success factors in result presentation71Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75			
Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 4.4	SIMMEK; How validity is secured in experimenting and	
Table 5.2Skill factors72Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 5.1	Critical success factors in result presentation	71
Table 5.3Calculations of throughput time73Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75	Table 5.2	-	72
Table 5.4Using Excel spreadsheet for result presentation74Table 5.5Results along the category axis75		Calculations of throughput time	73
Table 5.5Results along the category axis75			
		• • •	
Table 5.7Economical and market service results. Model totals77		<b>e</b> 1	

Table 5.8	Economical and market service results. Product type details	78
Table 5.9	Technical results. Production order details	79
Table 5.10	Product type results	80
Table 5.11	Resources results	81
Table 5.12	Estimated expected results. Resources	82
Table 5.13	Estimated expected results. Products	83
Table 5.14	Detailed results from one replication. Products and	84
	resources	
Table 6.1	Main result factors to be studied at Raufoss	89
Table 6.2	Number of different types of entities	91
Table 6.3	First operations machines	92
Table 6.4	Models in phase 1	93
Table 6.5	Main results from phase 1	93
Table 6.6	Main results from phase 2	95
Table 6.7	Throughput times	96
Table 6.8	Total hours spent on the Raufoss case	96
Table 6.9	Conclusions from the Raufoss case study	98
Table 6.10	Case studies with SIMMEK	99
Table 7.1	Characteristics of simulation models and experiments	102
Table 7.2	Assumptions and conditions	111
Table 7.3	The outer algorithm	112
Table 7.4	The inner algorithm	113
Table 7.5	Further developments of algorithms	114
Table 9.1	Success factors in simulation, ref. Table 1.3	125
Table 9.2	Strategic, tactical and operational use of simulation in manufacturing, ref. Table 1.4	126
Table 9.3	The SIMMEK system major advantages, ref. Table 3.1	127
Table 9.4	The major disadvantages of SIMMEK, ref. Table 3.16	128
Table 9.5	SIMMEK; How validity is secured in modelling, ref. Table	129
	4.3	
Table 9.6	SIMMEK; How validity is secured in experimenting and	129
	analysis, ref. Table 4.4	
Table 9.7	Results along the category axis, ref. Table 5.5	130
Table 9.8	Results along the time scope axis, ref. Table 5.6	130
Table 9.9	Conclusions from the Raufoss case study, ref. Table 6.8	131
Table 9.10	The new SIMMEK versions	132
Table 9.11	Future detailed research areas of DES in manufacturing,	133
	ref. Table 2.4	

