Index

a
acceptance 67f., 182
acquisition
  – costs 3
  – of orders 88
Act of God, see Force Majeur
activities 82
  – concentration 82f.
  – design tasks 82
  – physical 82
  – procurement 87
alterations 70f., 123
  – additions 71
  – of equipment and services 71
  – omissions 71
annual production output 16
approval planning 84, 102
assembly 4, 81f., 86f.
  – of the piping 96
  – phase 96
  – schedule 168
  – work flow 96
authority
  – approval 10, 102f.
  – engineering 2, 103
auto routers 101
automation
  – high level 22
avoidance
  – of delays 108
  – zones 101

b
balance
  – enthalpy 32, 51
  – mass 51
  – matter 51
balancing 32, 112
  – of costs 97
basic
  – engineering 8f., 30, 34, 88, 103
  – materials 41
  – process operations 30
battery limits 32
bid preparation 83
black box 124
bonds 69
  – performance 69
  – prepayment 69
break even point 13, 19, 24
building
  – closed building 16
  – construction drawings 151
  – opensteel construction 16
  – outdoor installation 16
  – part 96
c
CAD system (Computer Aided Design) 36, 39, 45, 47, 137, 147ff.
  – 3D 149, 158f.
  – administrator 155
  – basic grid 147
  – engineer 156, 158, 160
  – intelligent 122f.
  – suppliers 155
calculation table 114
call-off 109
cash flow profile 24
civil work 166
claims 70ff.
  – cost 71
  – in time 65, 71ff.
  – management 70, 95
cleaning 176f.
collision calculation runs 159f.
coming into effect 77
commercial
  – part 29, 48, 63
  – knowledge 7
commissioning 10, 82, 86f., 124, 173, 175f.
  – cold 10, 180
  – management 176
  – manager 175f.
  – staff 181
  – warm 10, 180f.
competition 25
  – global 27, 70
completion date 27
component
  – assembly 167, 169
  – catalogues 101
  – list 39f.
  – media-contacting 141
  – procurement 87
compulsory tendering 25
computational fluid dynamics 101
computer applications
  – CAD/CAE (Computer Aided Design/Engineering) 97, 101
  – databases 97
  – documentation systems 97, 102
  – E/MC technology 97, 102
  – FEM (Finite Element Method) 97, 101
  – flow calculations 97
  – maintenance and repair software 97
  – office applications 97, 191
  – pipe stress analysis 97, 101
  – process simulation 97, 102
  – time scheduling 97
confirmation of order 78f.
  – unconditional 78
construction
  – design 152
  – firm 152, 166
  – manager 165
  – phase 167
continuous
  – fabrication 4
  – function charts 144
contract 3, 55ff.
  – arrangement 55
  – award negotiations 7
  – clauses 65
  – comprehensive 77
  – conclusion of 11
  – condition of 55
  – deadline 60, 63
  – Fédération Internationale des Ingénieurs-Conseils (FIDIC) 55f.
  – negotiations 9, 53, 70, 108
  – penalties 63
  – purchasing 104
  – sales 55
Contracting Rules for Award of Public Works (VOB) 25
Contracting Rules for Services (VOL) 25
contractor 56ff.
contractor’s
  – default 65
  – drawings 60
  – duties 61
control
  – engineering meetings 144
  – group 144
  – instrument 95
  – master system 144
  – program 143f.
  – scheme 144ff.
  – sub-assembly 144
  – system 171
  – technology 102, 123
controlling department 95
core business 22
correspondence
  – project 93
  – system 92f., 97
cost
  – accounting 21
  – assembly 49
  – assessment 19, 22
  – calculation 95
  – commissioning 49
  – control technology 17
  – E/MC-technology 17
  – employment 22
  – energy 18, 21, 25
  – engineering 20, 49
  – estimation methods 9
  – expert services 49
  – factors 20
  – guarantees 49
  – hedging 49
  – insurance 49
  – investment 9, 16, 18f., 22, 32
  – labour 17, 19, 21f.
  – maintenance 16, 19, 21ff.
  – manufacturing 18, 22
  – material 18, 41
  – minimization 50
  – miscellaneous 49
  – monitoring 95
  – objectives 95
  – operating 13, 17f., 21, 32
Index

- operation 9
- optimization 21
- overheads 49
- processing 41
- procurement 16f., 19f., 41, 45, 48f.
- quantity-based 21
- raw material 21, 25
- recurring 21
- repair 19, 21ff.
- service 22
- total 18, 22, 24
- transport 49
- travel expenses 49
- utility 21f.
cost-value-ratio 108
costing rate 20
costumer 28f., 56
  - specification 29, 34, 61
damage
  - claim 64f.
  - liquidated 64
database
  - component control 123
  - system control 123
deadline situation 29, 69
defects 67f.
  - latent 67f.
  - patent 67
degree of automation 17
degression
  - exponent 20
  - method 20
delivery 4
  - time 41, 45
description
  - of disturbances 61
  - of the continuous function charts 61
design
  - data 34
  - building 147, 150
  - layout 147
  - process-related 42
  - production-related 42, 45
  - steps 42, 45
  - strength-related 42
detail engineering 10
determination of a specific documentation system 61
diagram
  - basic flow 30, 34, 36, 38, 48
  - instrumentation 34
  - pipeline and instrumentation (P&I) 36, 117, 122ff.
  - process flow 34, 36f.
dispatch 86
  - general 161, 163
  - operation manual 161, 163
  - quality 161, 165
  - standard 161
  - technical 161, 163
de
  - E-consumer list 138
  - E/MC (Electrical Engineering and Measurement and Control)
    - assembly 171
    - system 136
    - technology 17, 85, 96, 135ff.
edger 56, 67
  - materials 38
  - process and control 144
equipment 96
  - commission 103
  - control 143f.
  - detail 81
  - electrical 136f.
  - measurement 137, 139ff.
  - piping 84
  - process 84
  - safety 84
  - systems 84
enquiry 25f.
enterprises
  - large-scale 3f.
  - medium-sized 4
  - small 3
environment 28
  - laws 17
  - protection 2
  - regulations 17
  - requirements 2
erection 165ff.
  - planning 10, 85
events 96
excavation 166
execution
  - phase 101
  - process 96
exhaust gas 2
  – purification 2

f
feasibility study 9, 23f.
feedstock 109
final approval 81
fitting concept 113
flow sheet 122, 124
Force Majeur 65
forecast 95
foundation plan 151
framework plan 153
free storage 104

g
Gantt charts 96
geographic conditions 15
globalization 2
goods marketing
  – consumer 14
  – investment 14
greenfield mills 15
guaranty, see warranty

h
heating, ventilation and air conditioning
  (HVAC) plans 153, 167

i
in-house 45
  – method 49
  – system 90
  – training courses 7
index method 19
inquiry 23, 25, 28, 53, 110
  – documents 27f., 48
inspections 16
instalments 69f.
instrumentation
  – diagrams 111f., 117
  – planning 45
insulations 172f.
insurance 75
  – currency 76
  – design 76
  – erection all risk 75
  – transport
interface 63
  – access routes 63
  – control engineering 63
  – disposal lines 63
  – drawing 64
  – electric 63
  – product lines 63
  – supply lines 63
interference check 101
investment 19ff.
  – volume 19
invitation to tender 23, 25, 28, 48, 53
invoice verification 83
isometric drawings 160, 162

j
jus
  – dispositivum 56
  – strictum 56

k
label text lists 174
labour
  – market 15
  – organisational 5
layout
  – and building design 101
  – data 62
  – design 110
  – drawing 117, 148f.
  – piping 101
  – planning 45ff.
  – safety-related 125
  – strength-related 110f.
legal requirements 17
Letter of Intent (LOI) 53
level control systems 141
liability towards consequential loss or damage 57
load
  – capacity 45
  – cases 32ff.
losses of interest 69
low-cost suppliers 59
lump-sum tender 56

m
main apparatus 42
maintenance
  – failure-oriented 23
  – measures 16
  – preventive 23
  – strategies 23
management
  – autonomous 88
  – sound project 88
  – staff 88
Index

manufacturing
  – method 14
  – process 30
market analysis 9, 14
markings
  – cable 173
  – component 174
  – of operating resources 173f.
  – pipeline 173, 175
  – plant 173
  – safety 173, 175
masks 97
mass data 32f.
  – indication 32
mass flux number 32
material
  – concept 36, 38ff.
  – lists 161
  – recyclable 2
  – residual 2
  – selection 141
matter data 102
measuring point list 139f.
mechanical measuring setup 142f.
media data sheets 32ff.
metrological recording 23
mini plant technology 31f.
minutes of negotiations 108
monitoring of dates 96

n
net income area 13
network analysis 5

o
offsites 34
omissions 95
operating
  – data 111
  – mode 15ff.
  – period 21
  – phase 11
  – reliability 16, 23
  – resources 15
  – staff 22
operation
  – continuous 15
  – intermittent 15
  – year-round 24-hour 16
operator 59
  – future plant 56
  – model 22
optimization 49
order
  – activities 108
  – basis 56
  – report 95
ordering process 108

p
patent applications 14
paying habits 28
payment 69f.
  – apply for the 69
  – terms of 69
penalties 16, 66f.
personnel
  – maintenance 17
  – repair 17
pipe
  – assembly 169ff.
  – high-temperature 157
  – inquiry 160
  – lists 161, 164
  – passages 153
  – procurement 160f.
  – route planning 158
  – routing 117
  – supports 157
pipeline routes 150, 156
piping
  – classes 112, 155f., 161
  – diagrams 111f., 117
  – flow charts 110
  – package 101
  – planning 101, 110, 150, 154ff.
  – prefabricated 170f.
  – routes 111, 115, 123
  – site-run 171
plain text identification 32, 34
planning
  – instruments 1
  – of resources 96
  – phase 96ff., 101
plant
  – availability 16
  – capacity 3, 6, 16, 20, 32f.
  – chemical production 4, 30
  – close-down 25
  – concept modelling 101
  – constructor 2, 16
  – control-engineering 20
  – curve 111, 115
  – design 3f., 8, 26f.
  – documentation 26
Index

- dosing and mixing 4
- dry run 180
- engineering 2, 7
- food production 4
- fully automatic 17, 22
- heat and power 4f.
- hydrostatic acid dosing 132, 134
- interfaces 25
- large-scale 4ff.
- lifespan 16, 19
- limit 26
- lines 34
- location 15ff.
- manufacturer 3, 21f., 28, 59
- medium-sized 4, 6, 15f., 22, 28
- model 149f.
- multistage evaporating 49ff.
- operator 2f., 13, 16, 18, 21f.
- pharmaceutical 4
- pilot 31
- sewage 4
- small 3ff.
- type 14f.
- units 102
- warm dry run 181

plot of land 15

police approval 167f.

political conditions 15

preferable zones 101

preliminary
- calculation 88
- inquiries 45f.
- quotations 45

pre-qualification 9, 11

prequalifyings 25

price 69
- escalation clause 41
- fluctuation 19, 41
- indices 19
- maintenance 45, 48
- purchase 27, 53
- quotation 45, 48, 59, 70
- selling 3
- tender 41

primary industry 21

process
- concept 20, 36
- development 30
- engineering technology 29, 32, 36, 49
- flow sheet 122f.
- period 96

process plant
- capacity 16
- construction 1
- degree of automation 17
- design 1, 9
- kind of premises 15
- legal requirements 17f.
- location 15, 28f.
- safety-regulations 18
- start-up 1

process unit operations 30f.

process-control systems 22

procurement 10, 16
- component 96, 103, 105

product
- annual quantity of manufactured 3
- development 9, 14
- distribution 14
- fast-selling 20
- function 62
- high-quality 14
- highly-refined end 21
- idea 8f.
- intermediate 1
- marketable 13f.
- manufacturing 13f., 18
- output 21
- price 14
- profit 13
- profitability 24
- quality 21, 62
- quantity 14
- selling 14, 18

production
- data 62
- drawings 109, 148f.
- capacity 62
- facility 8
- output 16
- quantity 62
- start of 25

profit 24f.
- margins 49
- maximize 24
- total 25

profit opportunities, see market analysis 14

profit-making zone 13

project
- calculation 83
- controlling 27, 83
- deadlines 63
- design 82
- development phase 11
- documentation 59
- duration 95f.
Index

supplementary offer 71
supply 60
– contract 27
– schedule 48, 60
suspension 74f.
syndicate partners 5
system maintenance 97
systematics 90ff.
– order 90
systems supplier 102

target price offers 21
– calculation 21
target price offers 21
– calculation 21
technical
– and commercial analysis 45
– data sheet 43f., 103f., 115f.
– guaranties 104
– part 60
technically run down 59
technology control 17, 135
tender documents 27f.
tendering procedure 25
termination 74f.
test
– certificate 68
– functional 178f.
– on acceptance 68
– on completion 68
– pressure 177f.
– run 181
– system 179f.
time scheduling 3, 5, 96ff.
– framework 97f.
total downtime 16
training of operating staff 176
transaction 3f.
transparency of total plant system 123
transport analysis 167f.
trigger events 69f.
tubular heat exchanger 131, 133, 168
– inspection nozzle 131
– ventilation 131f.
vessels 109ff.
– atmospheric 124, 126
– drain connection 125
– dry run protection 125
– head access hole 124
– manhole 124
– overflow protection 125
– pressure generation source 125
– process design 110
– ventilation system 125
warranty 10, 41, 66f.
– for corrosion 36, 41
– for wear 36, 41
– period 66, 68
– run 181f.
– vessel 111
workflow scheduling 96