
Table of contents

I General Aspects.....	1
1 Introduction.....	3
2 Modelling and simulation in the pulp and paper industry – what have we achieved today?.....	5
3 Importance of modelling and simulation in view of the Technology Platform – visions for 2030.....	15
II Approaches and Tools	25
4 Dynamic validation of chemical reaction process models	27
5 Optimal quality measurement schedule for a paper machine.....	37
6 Nalco Approach System Simulator (NASS) – a new method to analyze and optimize the papermaking process	45
7 Data driven process modelling	53
8 Practical examples of soft sensors in pulp and paper mills	59
9 Process automation in view of a holistic production optimisation	67
III Modelling Cases.....	75
10 Control of pH and calcium chemistry with multiphase modelling.....	77
11 Modelling of component flows during stratified forming – aspects on retention and layer purity	89
12 Combination of statistical and physical models for model based control and decision support in the pulp and paper industry	101
13 Tracking the origin of a foaming problem in the wet end by process measurements and data analysis.....	113
14 Managing discontinuities in paper production	121
15 Wet end multivariate optimisation.....	133
IV Model Predictive Control.....	143
16 MPC-based control in papermaking	145
17 Model-based predictive adaptive control of pulp and paper mill processes	157
18 Advanced process control in paper machines by utilizing adaptive virtual sensors – increased productivity through in-spec. quality properties provided by Voith OnV VirtualSensors technology	171
19 Improved wet end stability and performance using multivariable model predictive control and optimisation.....	181