

CONTENTS

Abstract	vii
Abbreviations	xiii
1 Introduction	1
1.1 Motivation	2
1.2 Thesis Objectives	4
1.3 Literature Review	4
1.4 Main Contributions	10
2 A Comparative Study of Stochastic Model Predictive Controllers	15
2.1 Introduction	16
2.2 Model Predictive Control Strategy	16
2.3 Stochastic MPC	20
2.4 Comparison of Stochastic MPCs Through Numerical Examples	35
2.5 Chapter Conclusions	47
3 Conditional Scenario-Based Model Predictive Control (CSBMPC)	49
3.1 Introduction	50
3.2 Problem Statement	51
3.3 Model Predictive Control via Conditional Scenarios	57
3.4 Numerical Examples	70
3.5 Chapter Conclusions	84
4 CSB-MPC for Energy Management in Microgrids with Correlated Forecasts	85
4.1 Introduction	86
4.2 Microgrid Modelling	88
4.3 CSB-MPC Energy Management System	91
4.4 Case Study	101
4.5 Chapter Conclusions	112
5 Conclusions and Future Research Directions	113
5.1 Conclusions	114
5.2 Future Research Directions	120
Bibliography	121