

Table of Contents

Acknowledgements	I
Table of Contents	II
List of Graphs	IV
List of Tables	VI
List of Units & Abbreviations	VII
Abstract	IX
Chapter 1 Introduction	- 1 -
1.1 Background	- 1 -
1.2 Motivations	- 2 -
1.3 Workflow	- 3 -
Chapter 2 Literatures review	- 7 -
2.1 Fundamentals of gas simulation	- 7 -
2.2 Existing overall models	- 10 -
2.3 Summary	- 16 -
Chapter 3 Overview of methodology	- 18 -
Chapter 4 Network modeling	- 22 -
4.1 Study scope	- 22 -
4.2 Databases	- 24 -
4.2.1 Pipeline	- 25 -
4.2.2 Devices	- 32 -
4.3 Simplifications and assumptions	- 36 -
4.3.1 Pipeline network	- 36 -
4.3.2 Compressor stations	- 42 -
4.3.2 Gas storages	- 45 -
4.4 Summary	- 45 -
Chapter 5 Simulation scenarios	- 51 -
5.1 Databases	- 52 -
5.1.1 Import / export	- 52 -
5.1.2 Domestic consumption	- 57 -
5.2 Gas demand analysis	- 58 -
5.3 Gas flow allocation	- 61 -



5.4 Analysis of gas load profiles.....	- 64 -
5.5 Base case definition	- 68 -
5.5.1 Gas import and export	- 69 -
5.5.2 Gas consumption.....	- 71 -
5.5.3 Gas storages	- 72 -
5.5.4 Control plans	- 73 -
Chapter 6 Capacity calculation	- 74 -
6.1 Individual point	- 76 -
6.2 Overall network	- 80 -
Chapter 7 Case studies	- 85 -
7.1 Additional gas sources	- 85 -
7.2 New customers	- 90 -
7.3 New infrastructures	- 95 -
7.4 Gas supply security.....	- 100 -
Chapter 8 Summary and future improvements	- 107 -
8.1 Summary.....	- 107 -
8.2 Imperfections & future improvements.....	- 109 -
Bibliography.....	- 113 -
Appendix.....	- 117 -