

Bachelor's Thesis

Bachelor's degree in Industrial Technologies and Economic Analysis

Offshore wind park optimization

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Call: Spring 2023-2024



Escola Tècnica Superior
d'Enginyeria Industrial de Barcelona



ETSEIB

Abstract

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Resum

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Resumen

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1 Una imatge del logo de l’ETSEIB 8

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Nomenclature

The next list describes several abbreviations that will be later used within the body of the thesis.

AC Alternating Current

DC Direct Current

HVAC High Voltage Alternating Current

HVDC High Voltage Direct Current

MVRSM Mixed-Variable ReLU-based Surrogate Modelling

N-R Newton-Raphson Method

OPF Optimal Power Flow

OSS Offshore Substation

OWF Offshore Wind Farm

OWPP Offshore Wind Power Plant

PF Power Flow

SCR Short Circuit Ratio

XLPE Cross-Linked Polyethylene

1 Preface

Per no repetir informació és millor referir-se a altres apartats [2](#).

I recorda, sempre és important citar a la bibliografia [\[1\]](#).

La bibliografia ha d'estar ordenada, en teneu un exemple a la pàgina [10](#)

Arguably, climate change is one of the most pressing challenges we are facing today as humanity. That's why I wanted to develop a project revolving around sustainable solutions for the energy system of the future. As an engineering student I wanted to explore how renewable energy sources can be integrated into the grid and what challenges it poses, that's why I contacted Oriol Gomis to explore thesis topics within this field.

He introduced me diverse research areas and also eRoots, a spin-off from the UPC-CITCEA that develops software solutions for modern grid modelling, analysis and optimization. That is how I ended up as an intern at eRoots and developed this thesis in collaboration with them.



Figure 1: Una imatge del logo de l'ETSEIB

2 Introduction

2.1 Motivation

2.2 Scope

Com hi ha coses escrites en aquest apartat, el següent començarà en una pàgina senar nova.

2.3 Objectives

2.4 Outline

3 Grid to study and theoretical background

4 Minimization problem

5 Optimization methods

6 Case studies

7 Conclusions

7.1 Outcome

7.2 Future work

8 Planning and viability studies

8.1 Time Planning

8.2 Economic assessment

8.3 Environmental assessment

8.4 Social and gender equality assessment

Acknowledgements

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Gràcies als meus amics de la uni sobretot, papa, mama i Mire.

Bibliografia

- [1] AUTORS DEL TEXT, *Títol de l'obra*, EDITORIAL i publicació
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