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Tohid Jahangiri · Qian Wang ·
Filipe Faria da Silva · Claus Leth Bak

Electrical Design of a 400 kV Composite Tower

Springer

Tohid Jahangiri
Department of Energy Technology
Aalborg University
Aalborg East, Denmark

Qian Wang
Department of Energy Technology
Aalborg University
Aalborg East, Denmark

Filipe Faria da Silva
Department of Energy Technology
Aalborg University
Aalborg East, Denmark

Claus Leth Bak
Department of Energy Technology
Aalborg University
Aalborg East, Denmark

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Preface

The global goals of decarbonizing energy supply call for alternative sources of generation of electric power. Such are in nature located geographically elsewhere than the conventional power plants. Offshore wind power plants are located in the ocean. Solar plants are located in areas with a high intensity of solar radiation. Altogether, the replacement of conventional power plants often located close to centers of consumption with more remote sources creates a huge demand for restructuring the transmission grid. New lines become necessary to transport the renewable energy. Overhead lines are the dominant and only realistic way to transport large quantities of electric power over long distances.

Overhead line technology reaches back a century without much change in design. However, nowadays the public opinion against overhead lines is very negative and new lines often are delayed by tens of years due to governmental processing to get public acceptance. An entirely new, more modern and visually friendly look of overhead lines would undoubtedly ease this process leading to a faster reaching of the climate goals.

The Power Pylons of the Future (PoPyFu) project aims at introducing a groundbreaking new design for transmission overhead line design based on a fully composite tower with a less visible and more visually friendly design, which is also expected to accelerate the construction of new transmission corridors at a lower cost.

The authors of this book are Dr. Tohid Jahangiri, Dr. Qian Wang, Prof. Claus Leth Bak and Associate Professor Filipe Faria da Silva from Department of Energy Technology, Aalborg University, Denmark. This book is a part of the Power Pylons of the Future (PoPyFu) project, which has been funded by the Danish Research Council (Innovationsfonden), to whom we would like to thank the financial support of this project. This book provides researchers, developers and practitioners with a major contribution to the design and evaluation of the initial concept of a fully composite pylon, based on theoretical studies, finite element method and experimental results.

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All project partners of the Power Pylons of the Future (PoPyFu) project.

Aalborg, Denmark
February 2019

Tohid Jahangiri
Qian Wang
Claus Leth Bak
Filipe Faria da Silva

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