

Tutorial Proposal

IEEE 20th International Conference on Industrial Informatics (INDIN 2022)

Tutorial Title: Multiple Active Bridge Converters for flexible DC grids

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1. KEYWORDS

- Multiple Active Bridge converters
- Impedance modeling
- Dc-dc power converters

2. AIMS AND LEARNING OBJECTIVES

The aim of the tutorial is to introduce the model and the control of the multiple active bridge converters. As learning outcome, the attendees will be learn how to derive the mathematical model of the converter and how to implement the control.

3. SHORT SUMMARY OF CONTENTS

- Operations of the Multiple Active Bridge converter with phase shift modulation
- Control of the Multiple Active Bridge Converters
- Stability analysis by means of impedance modeling
- Overview of the applications of the multiple active bridge converters in smart distribution and green transportation
- Simulation Exercise

4. TARGET AUDIENCE

Postgraduate students with interest in multi-port conversion systems and researchers who are interested in entering the field.

5. DURATION

The tutorial will be 60 minutes lecture and 30 minutes practical exercise.

6. SHORT BIOGRAPHY OF SPEAKER (max. ½ page)

Giampaolo Buticchi (S'10-M'13-SM'17) received the Master degree in Electronic Engineering in 2009 and the Ph.D degree in Information Technologies in 2013 from the University of Parma, Italy.

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He was appointed Associate Professor in 2017 at The University of Nottingham Ningbo China and the Head of Power Electronics of the Nottingham Electrification Center. He was promoted Professor in 2020.

His research focuses on power electronics for renewable energy systems, smart transformer fed micro-grids and dc grids for the More Electric Aircraft.

He is author/co-author of more than 260 scientific papers and an Associate Editor of the IEEE Transactions on Industrial Electronics, the IEEE Transactions on Transportation Electrification and the IEEE Open Journal of the Industrial Electronics Society.

Dr. Buticchi is involved in the major international organizations (IEEE, IET, RAeS, HEA) and he has been organizing tutorials and special session in the relevant conferences and journals related to Power Electronics. He is currently the Chair of the IEEE Industrial Electronics Society Technical Committee on Renewable Energy Systems and Cluster Delegate.