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## Solid-State Transformers

Topologies, Use Cases, Design Considerations,  
and Challenges.

Presented by

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Seminars and Tutorials

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- II. Why SSTs?
- III. Topologies Overview
- IV. Functionalities

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## 11 Summary

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# A Brief History of SSTs

# 2

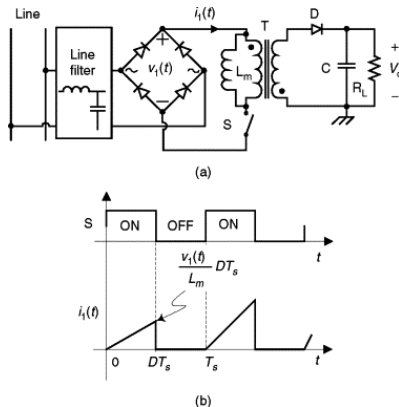
## SSTs in a Glance

- I. What is an SST?
- II. Why SSTs?
- III. Topologies Overview
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# I. What is an SST?

- A Power Electronics Converter in which the galvanic isolation is embedded in the topology, i.e., one or multiple transformers are surrounded by a PE Converter.
- The embedded transformer is operated at medium/high frequency.

## ? Is your phone charger an SST?



- ✓ Galvanic isolation embedded in the topology.
- ✓ Transformer is surrounded by a PE Converter.
- ✓ Transformer operated at medium/High Frequency.

▲ Power Electronics Handbook (Fourth Edition), Butterworth-Heinemann, 2018.

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**Thank you.**

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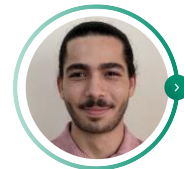
Ilknur Colak pursued her MSc. and PhD. in Electrical Engineering at Istanbul Technical University, Turkey. Over the past two decades, she has worked in various industry and research centers, including CERN, ABB, Ansaldo Richerche, MR, and TUBITAK. Starting in January 2022, Colak has been serving as the Technical Director at Schneider Electric-Secure Power. Her research interests primarily involve modular and multilevel high-power converters, power conversion systems for Medium Voltage and Low Voltage applications, insulation-coordination, EMC and grounding, and reliability.



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Ahmed Meligy earned his B.Sc. in Electrical Engineering from the American University of Sharjah in 2018. He completed his M.Sc. in Renewable Energy Engineering and Management at Albert-Ludwigs-Universität Freiburg in 2022. Currently, he is pursuing an industrial Ph.D. in Electrical Engineering with at the Université Grenoble Alpes, in collaboration with Schneider Electric, France. Meligy is a power electronics research engineer with research interests in solid-state transformers, battery energy storage systems, smart grids, and optimization.