



UNIVERSITÀ
degli STUDI
di CATANIA

DIPARTIMENTO DI INGEGNERIA ELETTRICA ELETTRONICA E
INFORMATICA

Corso di laurea magistrale in Electrical Engineering

Anno accademico 2016/2017 - 2° anno

ENERGY CONVERSION FROM RENEVABLE SOURCES

ING-IND/32 - 6 CFU - 1° semestre

Docente titolare dell'insegnamento

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OBIETTIVI FORMATIVI

The course is aimed at students who have already been introduced to a first course in Power Electronics which covers steady-state characteristics of various AC-DC, DC-DC, and DC-AC converter circuits. The objective of the course is to show how these converter topologies are utilised in renewable energy systems (wind and PV), in utility applications (for example HVDC) and to further investigate the converters in terms of their efficiency, control characteristics, description of dynamics and their closed-loop control. Some advanced converter topologies, especially in the context of large and complex applications, which are beyond the scope of a first course in power electronics, are also treated.

At the end of the course, the student will be able to recognize the most common conversion chain and to operate as a system designer, moreover, he will be able to collaborate with the experts in the project of electrical machine, electronic power converter and control designers.

PREREQUISITI RICHIESTI

Lo studente deve aver seguito un corso di macchine elettriche.

FREQUENZA LEZIONI

Obbligatoria

CONTENUTI DEL CORSO

The course will introduce and study the power conversion stages where the energy source is constituted by a renewable source as solar, wind, sea waves and tide. In particular, it will be described the structure of the conversion chain from the source to the electrical grid connection analyzing all stages in principle

and operation. The course is aimed at students who have already been introduced to a first course in Power Electronics which covers steady-state characteristics of various AC-DC, DC-DC, and DC-AC converter circuits.

TESTI DI RIFERIMENTO

Bent Sørensen - **Renewable Energy Conversion, Transmission and Storage** - Elsevier

ALTRO MATERIALE DIDATTICO

Le slides delle lezioni sono disponibili su sito studium

VERIFICA DELL'APPRENDIMENTO

MODALITÀ DI VERIFICA DELL'APPRENDIMENTO

Oral examination

PROVE IN ITINERE

non previste

PROVE DI FINE CORSO

non prevista

ESEMPI DI DOMANDE E/O ESERCIZI FREQUENTI

Schema di conversione di un inverter fotovoltaico.

Schema di controllo di un generatore eolico
