

DHET NOUVELLES TECHNOLOGIES DE L'ENERGIE

IN BRIEF

Type of diploma : Diplôme des Hautes Etudes Technologiques

Ministry field : Sciences, Ingénierie et Technologies

MORE INFO

Level : BAC +3

Type of education

* Formation initiale

Kind of education : Spécialité

Organization

DHET Nouvelles Technologies de l'Energie

Organizational unit

École Nationale Supérieure d'Électrotechnique d'Électronique d'Informatique d'Hydraulique et des Télécommunications

DHET Nouvelles Technologies de l'Energie

MORE INFO

Organization

· Semestre 1-Mastère et DHET NTE

· Teaching Unit Formation générale-NTE

Person(s) in charge
AZZARO-PANTEL CATHERINE
SCHNEIDER HENRI

· Subject English language

· Subject Energy and Sustainable Dev Conferences

· Subject CV, Lettre de Motivation, Entretien

· Teaching Unit Conception systémique

Person(s) in charge
FLOQUET PASCAL
SARENI BRUNO

· Subject Process Design and Analysis

· Subject Systemic modeling in Bond Graph

· Subject Ecodesign, Life cycle analysis, project management

· Subject Optimization Design

· Teaching Unit Systèmes Hybrides, Smart-grids

Person(s) in charge
MONTASTRUC LUDOVIC
JAAFAR AMINE

· Subject Decentralized and embedded electrical networks

Objectives

- * Know the characteristic criteria (security, stability ...) of an embedded or decentralized electrical network compared to a conventional distribution network.
- * Understand the main elements (storage ...) used in the design of such a network.
- * Propose different network architectures in relation to a given specification.
- * Be able to read a complete electrical diagram of a photovoltaic installation by being able to identify the various devices necessary as well as their function and sizing.

Description

1. Security and reliability

- * Related concepts (fault isolation, reconfiguration, backup network, ...)
- * Example of an aeronautical network

2. Mission Profile to be completed

- * Interest of sources hybridization to optimize their use
- * Using the Ragone plan in sizing storage units

3. Quality (AC and DC networks)

- * Definition of quality standards (current, voltage)
- * Quality Improvement Solutions

4. Stability (AC and DC networks)

- * Architecture and operation of AC power grids
- * Principles of frequency and voltage settings on networks (primary, secondary adjustments)
- * Power limitation of transportation lines
- * Instability related to filter - regulated system interactions

5. EMC issues

- * Coupling types
- * Disturbance measurements and means of protection
- * EMC issues for power grids
- * Problems associated with indirect lightning strike

6. Study of PV installations connected to the distribution network

- * Definitions of electrical switchgears and classes of protection
- * LV earth connection diagram
- * Electrical surge protection
- * Study of plant schematic examples

Person(s) in charge

ROUX Nicolas
Nicolas.Roux@enseeiht.fr
Phone 2428

Teaching method

En présence

Teaching language

French

Bibliography

T. Christen et M. W. Carlen, « Theory of Ragone plots », Journal of Power Sources 91, pp. 210-216.

O. Gergaud, « Modélisation énergétique et optimisation économique d'un système de production éolien et photovoltaïque couplé au réseau et associé à un accumulateur », Thèse ENS Cachan, 2002.

- Subject Energy Hybridization of Systems

Objectives

At the end of the course, the student will be able to identify the architectures of the hybrid systems and to know the energy/power characteristics of some sources and energy storage elements.

He will be able to analyze the mission of an energy system, to evaluate the relevance of its hybridization and to design a hybrid system.

The student will also be able to propose an energy management strategy of a multi-source energy system by respecting the intrinsic characteristics of the associated sources.

Description

In addition to the hybridization theory and the energy management of multi-source systems, the course is based on several examples of hybrid energy systems from the Laplace laboratory experience feedback. These examples relate in particular to the transport field (aeronautics, rail and road).

Number of hours

8.75

Teaching method

En présence

Teaching language

French

- Subject Electrochemical components

- Subject Electrochemistry

- Subject Smart Grids

- Teaching Unit Energies renouvelables

Person(s) in charge

ALLIET MARION

SCHNEIDER HENRI

- Subject Wind Energy Systems

- Subject Biofuel systems

- Subject High temperature biomass valorization

- Subject Photovoltaic Project

- Subject Installation hydroélectriques de faible puissance

Person(s) in charge
BONOMETTI THOMAS

- Teaching Unit Projet long

- Subject Projet Long

Person(s) in charge
SCHNEIDER HENRI

- Teaching Unit Harmonisation NTE

- Subject Circuits électrique

Person(s) in charge
JAAFAR AMINE

- Subject Conversion statistiques

Person(s) in charge
SCHNEIDER HENRI

- Subject Conversion Electromécanique

Person(s) in charge
NADAL CLEMENT

- Subject Thermodynamique

Person(s) in charge
GOURDON CHRISTOPHE

- Subject Transfert

- Semestre 2 -Mastère et DHET NTE

- Teaching Unit Thèse Professionnelle - Mastère et DHET NTE

Person(s) in charge
AZZARO-PANTEL CATHERINE
SCHNEIDER HENRI

- Subject Thèse Professionnelle NTE

Person(s) in charge

AZZARO-PANTEL CATHERINE
SCHNEIDER HENRI

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