

# Module

## Electrical Risk in Wind Turbines

### ERWT

(6 h)



**total**  
**HSE**

#### Objective

To provide the basic knowledge and skills to carry out work safely in the presence of electrical risk. At the end of the course, students will be able to work safely following the basic procedures against the risk of the presence of electricity in the work area. All this based on **R.D. 614/2001**, on Minimum Provisions for the protection of the health and safety of workers against Electrical Risk.

In the **ERWT** (Electrical Risk in Wind Turbines) module of Total HSE, the concepts of:

- Generalities of intervention with Electrical Risk
- Electrical Installations in Wind Turbines
- maneuvers in Transformation Centers and Substations
- Electrical accidents and safety equipment

#### Program: Electrical Risk in Wind Turbines ERWT

1. Introduction
  - 1.1 Course purposes and objectives
  - 1.2 Introduction to transformation centers and substations
  - 1.3 General characteristics of work between electrical risk
  - 1.4 Regulations. (Regulations, Consultative Standards, Accreditations)
2. Generalities and Electrical Risk
  - 2.1 Electrical Magnitudes (Voltage, intensity, resistance and power)
  - 2.2 Work without tension
  - 2.3 Work without intensity
  - 2.4 Work in proximity to tension
  - 2.5 Maneuvers, measurements, tests and verifications
  - 2.6 General preventive measures
  - 2.7 Factors influencing the electrical effect
3. Electrical installations in Wind Turbines
  - 3.1 Parts with Electrical Risk in Wind Turbines
  - 3.2 Terminology for Transformation Centers (CT) and Substations
  - 3.3 Switches and Disconnectors in medium and high voltage
  - 3.4 Medium and high voltage cells
  - 3.5 Power transformers
4. Maneuvers in CT and Substations
  - 4.1 Terminology
  - 4.2 Elements involved in maneuvers
  - 4.3 Devices used for maneuver execution
  - 4.4 Electrical diagrams
  - 4.5 Causes that cause trips
  - 4.6 Logical sequence of opening and/or repositioning maneuvers in a CT and/or Transformer position in Substation
  - 4.7 Interlocks
  - 4.8 Basis for study of maneuver execution in a CT
5. Electrical accidents
  - 5.1 Generalities of accidents with the presence of electricity
  - 5.2 Types of electrical accidents (Fires, explosions and electrocutions)
  - 5.3 Electrocutions and electrizations
  - 5.4 Injuries caused by electric current in the human body
  - 5.5 Safety Devices (Magnetothermal Switches, Differential Switches and grounding)
6. Collective personal safety equipment (use of detectors and rods)

#### Electrical Risk in Wind Turbines ERWT

**Duration:** 6 hours (1 day)

**Certificate Validity:** permanent

**Program:** Sections 1 to 6

**Maximum students:** 12 persons per edition

#### Headquarter:

**Cárcar (Navarra) • Spain**

Phone: +34 948 674 881 • navarra@totalhse.com

#### Other centers in Spain:

**Las Palmas (Canary Islands) • Spain**

SEPROM

Phone: +34 902 008 482 • canarias@totalhse.com

**Redondela (Galicia) • Spain**

Verticalia Formación

Phone: +34 986 401 472 • galicia@totalhse.com

#### Other centers:

**Hatzor Haglilit • Israel**

IWTC

Phone: +972 4 632 2095 • israel@totalhse.com

**San José • Costa Rica**

Desarrollos Floruma

Phone: +506 2282-7468 • sanjose@totalhse.com

**Santiago de Chile • Chile**

ENACTRAR

Phone: +56 9 5819 5060 • chile@totalhse.com

[www.totalhse.com](http://www.totalhse.com)

