

ÉVALUATION SPÉCIFIQUE POUR L'ATTRIBUTION DE LA MENTION « SECTION EUROPÉENNE »

Baccalauréat professionnel MELEC /SN/ TCI

Session 2023

Épreuve orale

Durée de l'épreuve A et B : 20 minutes

Préparation : 20 minutes

A. Première partie : durée 10 mn, préparation : 20 mn

SUJET N° 2 Document candidat

WIND TURBINES



Travail à faire par le candidat

Role play :

You are a candidate for a job interview in a company which installs and looks after the maintenance of wind turbines. Using the documents provided, show you know about wind turbines and how your skills can be useful for the company.

You are expected to :

- Present the advantages and disadvantages of wind turbines.
- Explain how a wind turbine works.
- Explain on which part of the wind turbine you can work.
- Which components correspond to your specialty / field ?

Enclosure(s) :

Document 1 : Advantages and disadvantages of wind power

Document 2 : How do wind turbines work ?

Document 3 : Conventional wind turbine

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DOCUMENT 1 : Advantages and disadvantages of wind power

➤ Read the document below (<https://www.slideserve.com/marty/energy-expo-wind>)

Advantages and Disadvantages

ADVANTAGES

- Wind is a clean energy source.
- It is very cheap to supply, so you do not have to pay lots of money for it.
- Wind doesn't need a factory to be produced, so it is protecting the environment.
- It can be recycled.

DISADVANTAGES

- In summer, there is not as much wind as the rest of the year, so the amount of the supply is inconsistent.
- It makes a lot of noise.
- It needs big open spaces of land to be on.
- Windmill farms are only available in certain states.

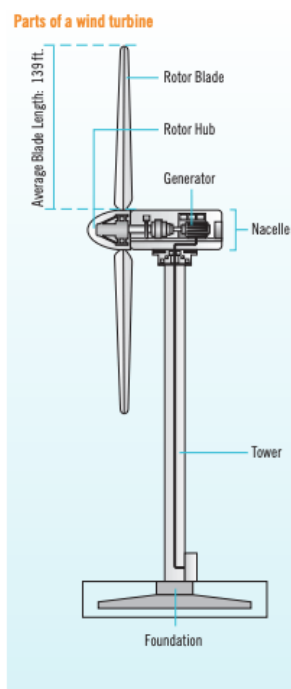


Advantages	Disadvantages

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DOCUMENT 2 : How do wind turbines work ?

- Read the document below (<https://sustainable-solutions.duke-energy.com/resources/how-do-wind-turbines-work/>)



Power is generated through rotating wind turbines that use the kinetic energy of moving air, which is converted into electricity. The basic idea is that wind turbines use blades to collect wind's potential and kinetic energy. Wind turns the blades, which spins a rotor that is connected to a generator to create electrical energy.

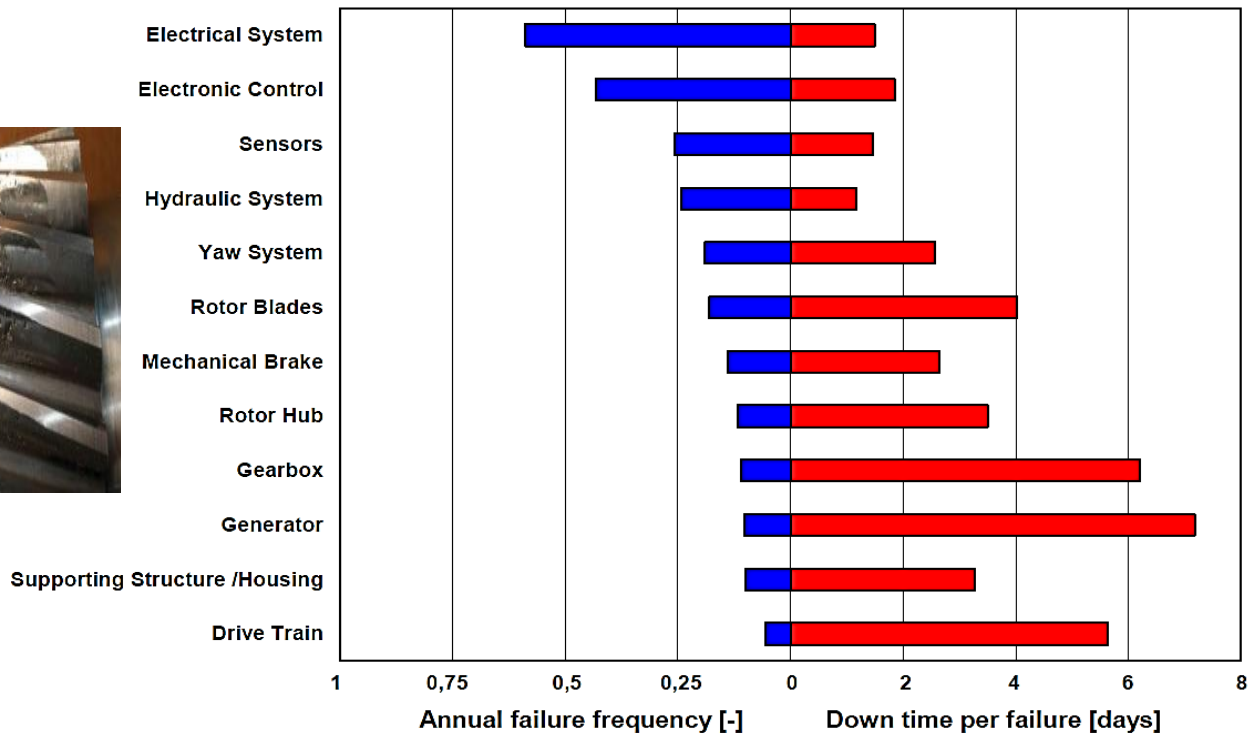
Most wind turbines have four main parts:

- Blades are attached to a hub, which spins as the blades turn. The blades and hub together make the rotor.
- The nacelle houses the gearbox, the generator and electrical components.
- The tower holds the rotor blades and the generator high above the ground.
- A foundation holds the turbine in place on the ground.

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DOCUMENT 3 : Conventional wind turbine

https://www.ccefp.org/wp-content/uploads/2015/12/IEC-2018_Biswa.pdf (p 4)



Failure frequency and downtimes of components.

The 4 most common failures:	The 4 longest failures to fix:
-	-
-	-
-	-
-	-

Which component(s) correspond(s) to your specialty ?

Develop and explain how you could intervene on the maintenance of a wind turbine.