

# WEEKLY ENGLISH PRACTICE

## Monster Wind Turbines: What Are the Limits?

28/01/21 / Keyword: wind turbines

How big can you make a wind turbine? ECP coach Rob talks to Eugenio Sorazu of Grupo WEC about the technical and financial challenges of making things bigger and bigger.



We're all familiar with **onshore** wind turbines. Those huge white towers with **scything** blades that cut through the air on **breezy** days. But these giants are gradually being dwarfed by a new generation of monsters that are helping governments around the world achieve their ambitious clean energy goals.

From less than a megawatt just 15 years ago, the latest models under development by General Electric, Siemens Gamesa and Vestas can produce up to 14MW and power over 15,000 homes each. GE's prototype Haliade X **offshore** wind turbine rises 260 metres into the sky above Rotterdam harbour and its 107-metre blades create a total rotor diameter of 220 metres - that's longer than two football pitches. It's a real beast of a machine and getting it off the drawing board and into the sea is proving to be a huge challenge for the companies that manufacture the components.

Experts like Eugenio Sorazu of Grupo WEC, an **iron casting** company based in Itziar in the Basque Country, freely admit they don't know where the physical limits are for current designs. But Eugenio, a student at ECP, points to logistics and investment as two areas that are already being pushed to their limits.

"Component suppliers like Grupo WEC are faced with the need to invest in new equipment and in the future any new facilities will have to be located next to the assembly areas," he said.

The constant increase in the size and weight of the **casted** components that make up these monsters is complicating the manufacturing process. "We are faced with technological challenges, a higher rate of defects and a longer prototyping period," explained Eugenio, co-founder of Grupo WEC and its senior technical consultant. But these are difficulties that can be **overcome**. It's the transportation of the finished component that it is creating the worst headache.

Grupo WEC produces hubs, bed frames and shafts for wind turbines at the company's foundry in Agurain, Álava. The hub is the spherical component at the top of the tower where the blades slot in and at up to 55 tons and over 5 metres in diameter, these huge **iron casts** can make you feel very small when standing next to them.

But for a 14MW wind turbine, they will have to be around 6.5 metres in diameter and weigh up to 80 tons, requiring foundries to update equipment such as the heavy duty **cranes** used to lift and move the pieces. "It is difficult to get a return on this investment," notes Eugenio "because although the size is bigger, the margin is lower." *Turn to page 2*

### Useful vocabulary

**onshore:** situated on land

**to scythe:** to cut with a scythe (a long curved blade on a pole)

**breezy:** pleasantly windy

**offshore:** situated at sea

**to cast (casted):** to make shapes by pouring molten metal into a mould

**cast iron:** a type of hard iron that will not bend easily and is made into shapes by being poured into a mould when melted

**to overcome:** to succeed in resolving a problem

**crane:** a machine used to lift and move heavy objects

**landlocked:** having no route to sea

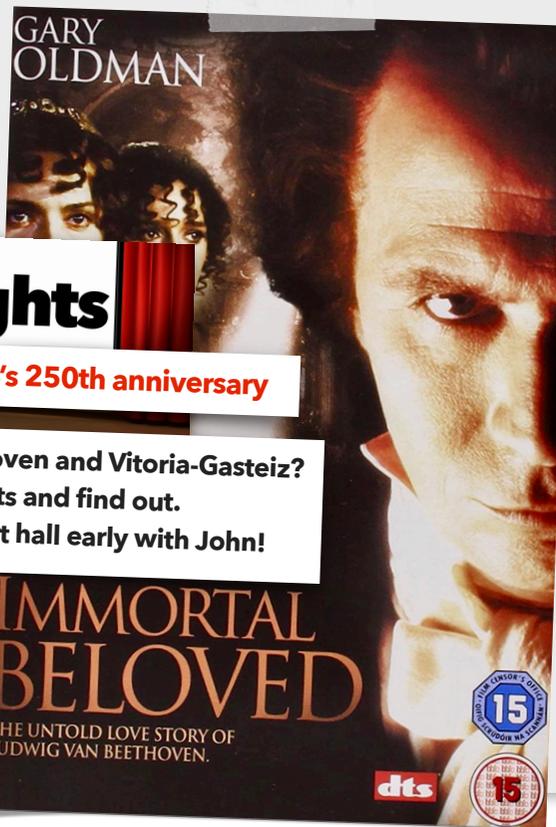
**to ramp up:** to increase the level or amount of something rapidly

### Let's chat about !

1. Are there any wind (or solar) farms near your home? Describe them.
2. Does your electricity bill include a green energy component?
3. What other products are getting bigger and bigger?
4. Do you think governments are doing enough to create a society powered by 100% clean energy? Explain.
5. In what ways can renewable energy actually be harmful or contaminating?

# LIVE! English Events

## Come and socialise in English!



### Coffee Saturdays

1st Saturday 11:00

- 3rd Oct ✓
- 7th Nov ✓
- 5th Dec ✓
- 9th Jan ✓
- 6th Feb**
- 6th Mar
- Not in April
- 8th May
- 5th Jun

### Cinema Nights

Last Friday 1

- 30th Oct ✓
- 27th Nov ✓
- Not in Dec ✓
- 29th Jan**
- 26th Feb
- 26th Mar
- 30th April
- 28th May
- 25th Jun

## An ECP LIVE! English event Cinema Nights

**Fri 29th at 18:15: BEETHOVEN's 250th anniversary**

**What is the link between Beethoven and Vitoria-Gasteiz?  
Come to Cinema Nights and find out.  
Book your place in the concert hall early with John!**

**Message John to  
reserve your place  
657731354**



## What is a 'hub'?



By Paul Anderson, CC BY-SA 2.0, <https://commons.wikimedia.org/w/index.php?curid=13457166>

A cast iron hub being lifted into position

### hub | hʌb | noun

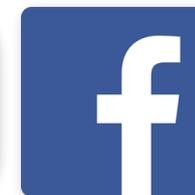
- 1 the central part of a wheel, rotating on or with the axle, and from which the spokes radiate.
- 2 the effective centre of an activity, region, or network: *ECP's office in Vitoria acts as a hub for its coaches and learners | the kitchen was the hub of family life.*
  - a central airport or other transport facility from which many services operate: *the city's major transportation hub for bus and rail | Heathrow airport is a major hub for international travel.*

“But the immediate problem,” he continued, “is that the maximum height for transport along roads, through tunnels and under bridges is 5.5 metres.” That means current facilities are in danger of producing **landlocked** components for **offshore** machines that are assembled at coastal ports.

**Ramping up offshore** wind energy production is essential to accelerating the global energy transition. The cost of **offshore** electricity generation has fallen by more than 66% since 2012, making it cheaper to build wind farms than new fossil-fuel power plants.

But component suppliers are struggling to keep up with demand. Governments, private investors and established companies need to develop a common strategy to secure the future of the sector and maintain that drive towards a society powered by clean, renewable energy.

**Written by ECP coach Rob Hextall**



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