Overview Belgium

Volumes & market on- and offshore wind

19.01.2023

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About Port Oostende

- In just over ten years, Port Oostende has become a major hub for the offshore wind business, with 2.2GW installed of operational capacity in the Belgian North Sea.
- Active maintenance of those parks out of Port Oostende with crew transfer vessels and service operating vessels
- With more than 800 people directly employed in the O&M business for the offshore wind in Oostende.

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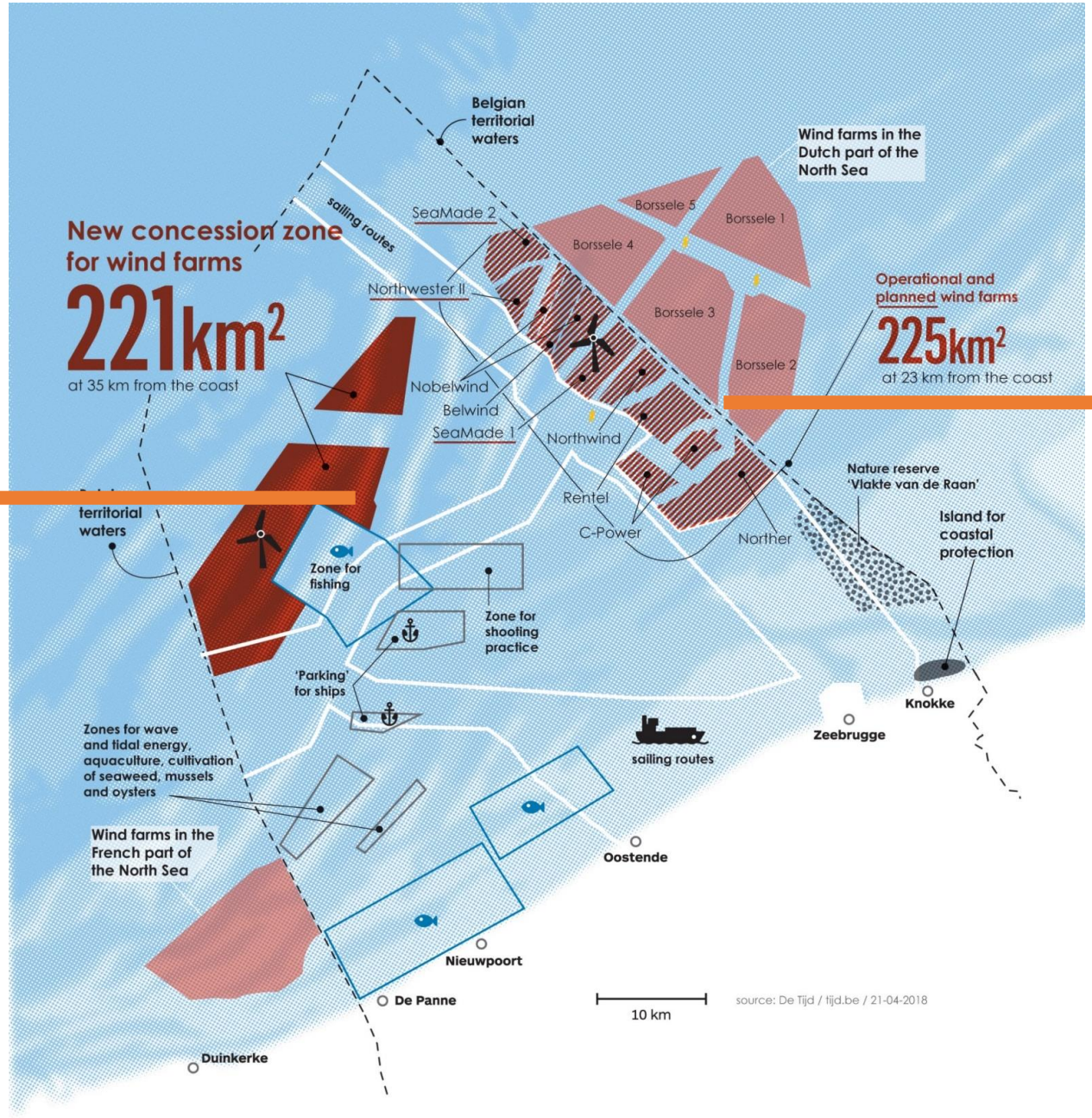
Belgian Offshore Wind Parks



+3,6 GW
Installed 2030

2,2 GW
Installed 2020

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Installed Windparks close to Oostende

Wind farm	MW	Type of turbine	Country	Phase
Rentel	309 MW	7 MW Siemens	BE	operational
Norther	370 MW	8 MW Vestas	BE	operational
C-Power	325 MW	6 MW Senvion	BE	operational
Seamade	252 MW + 235MW	7 MW Siemens	BE	operational
Northwind	216 MW	3 MW Vestas	BE	operational
Northwestern	219 MW	9,5 MW Vestas	BE	operational
Belwind	171 MW	3 MW Vestas	BE	operational
Nobelwind	165 MW	3 MW Vestas	BE	operational
Borselle 3&4	680 MW	6 MW Vestas	NL	operational
Borselle 1&2	752 MW	8 MW Siemens	NL	operational

BELGIUM 2 262 MW 399 turbines Investment +/- € 8 billion

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Context

- Most windmills designed for life span of 15-20 years
- First offshore windmills installed in 2008
- Decommissioning/repowering onshore is well known
- Decommissioning Offshore is a new market

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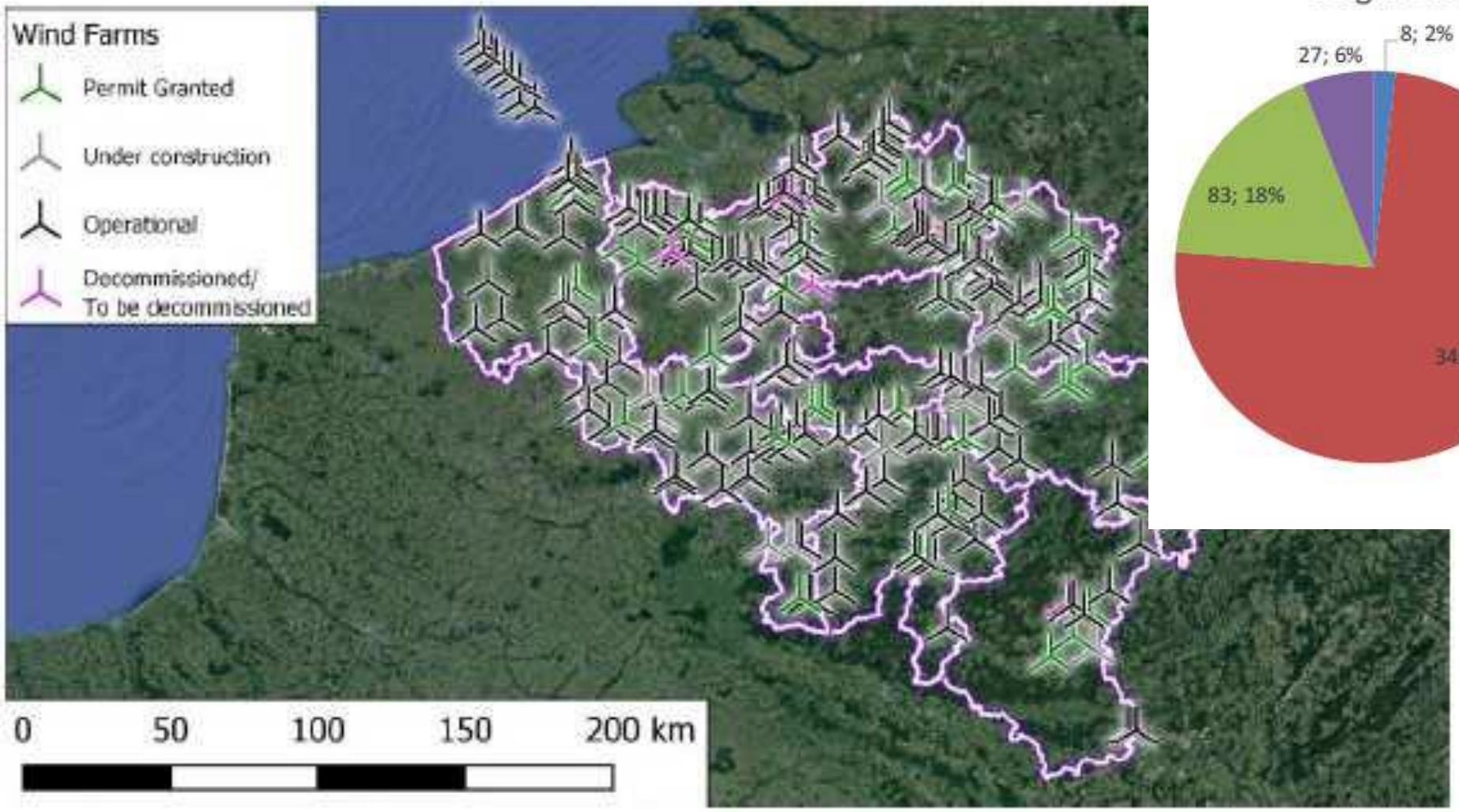
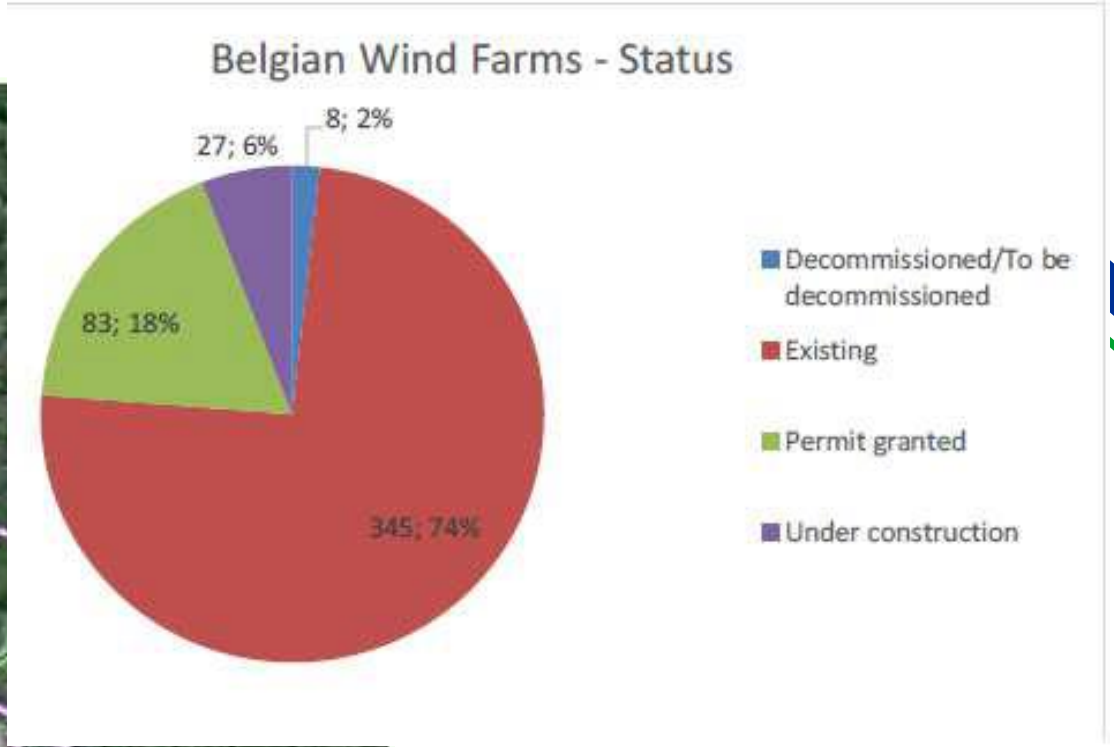
Overview Belgian Windfarms





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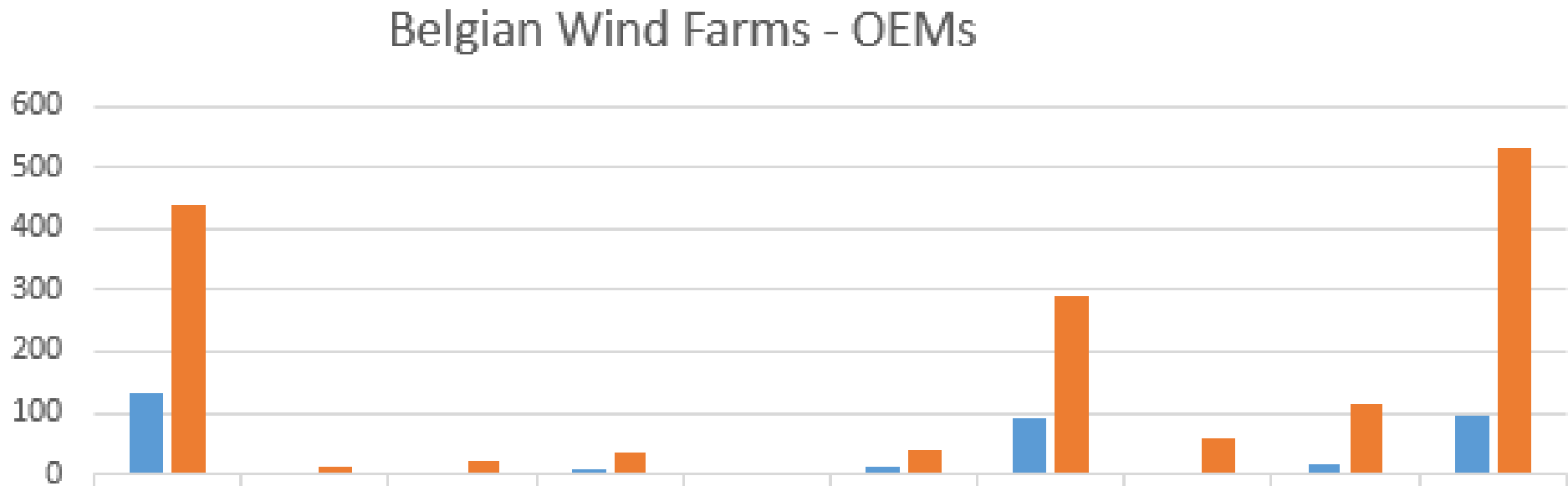
Manufacturers



	Enercon	Fuhrlander	Gamesa	GE	Lagerwey	Nordex	Senvion	SGRE	Siemens	Vestas
# Wind Farms	131	2	4	8	1	10	90	1	16	96
# Wind Turbines	440	13	23	35	2	39	291	58	115	532

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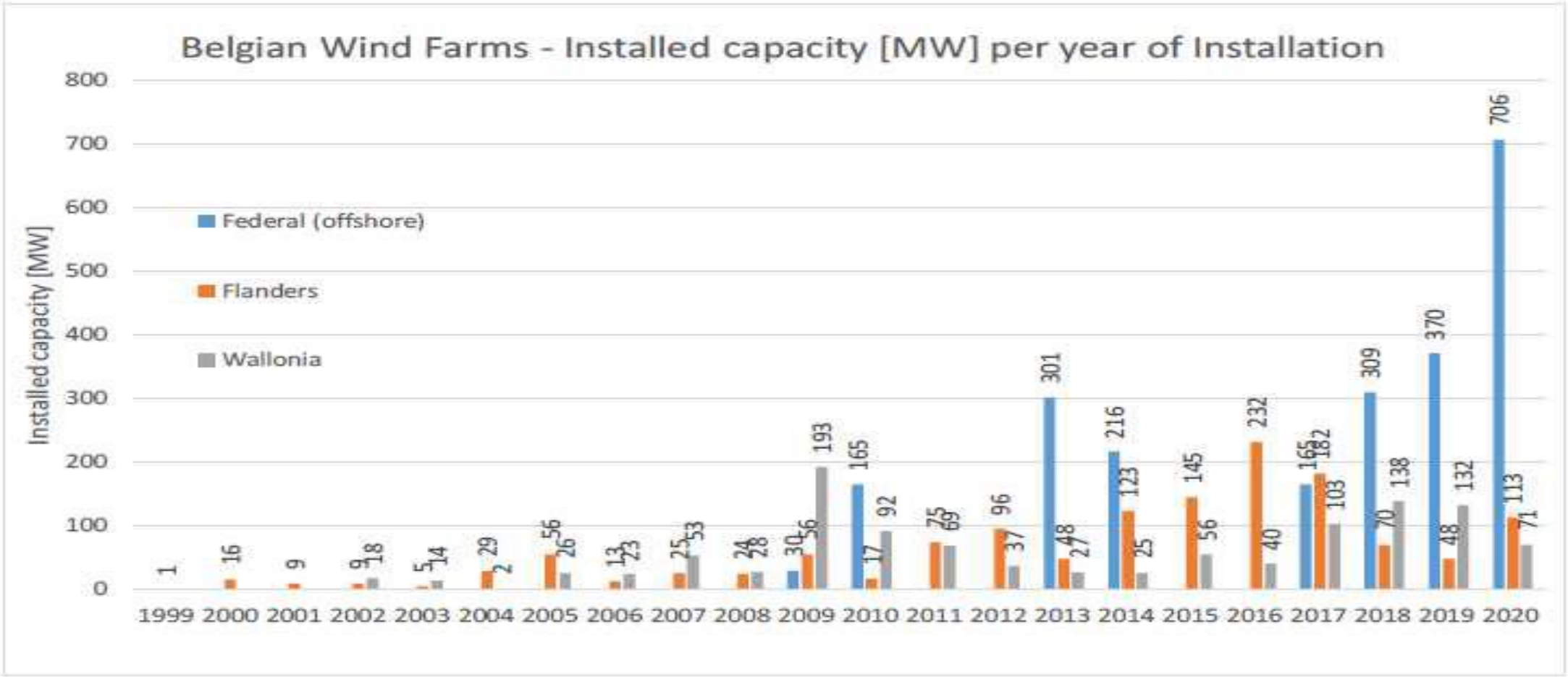

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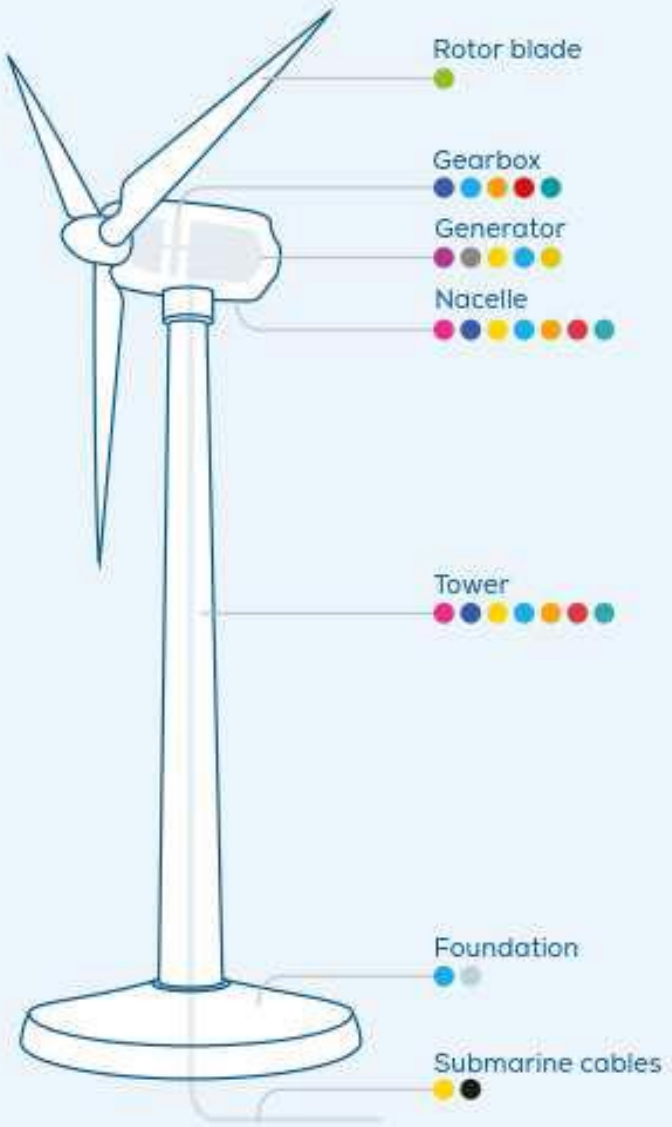
What is a wind turbine made of?

- Aluminium
- Boron
- Chromium
- Cobalt
- Composite
- Copper
- Iron
- Lead
- Manganese
- Molybdenum
- Nickel
- Rare Earths*
- Concrete

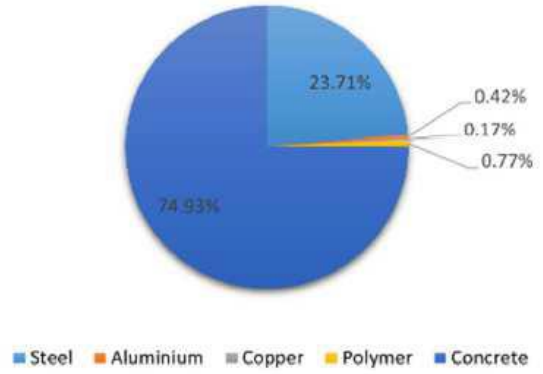
* Dysprosium, neodymium, praseodymium, terbium

Sources: European Commission Materials Information System (MIS) Wind Energy, April 2016 and European Commission Raw Materials Scoreboard 2016.

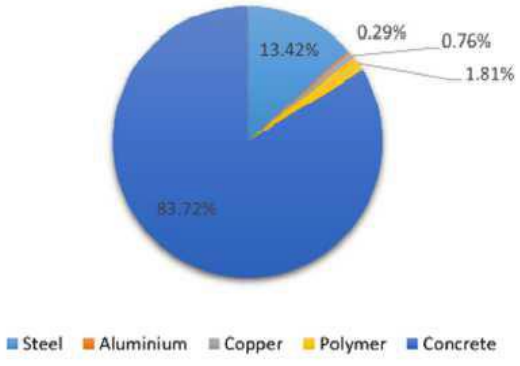
The source does not specify the wind turbine on which the above information is based.



V90-2.0 MW at 105mHH



E-92 / 2350 kW at 104mHH



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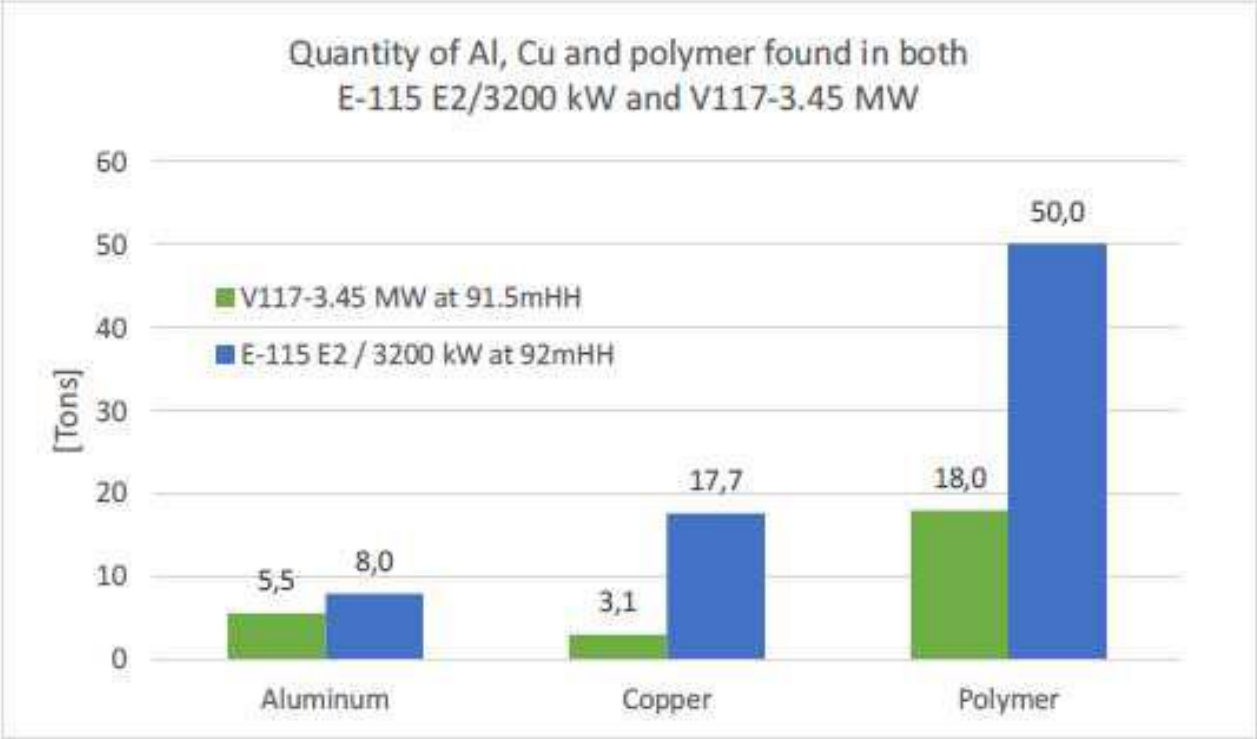
What is a wind turbine made of?



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Key messages

- A bit less than 500 wind farms in Belgium
- A bit less than 2000 operating wind turbines
- 750,000 tons of steel, 6,500 tons of Aluminum, 9,000 tons of copper, 40,000 tons of polymer and almost 2 million tons of concrete.
- The effective operational lifetime of a wind farm is based on financial parameters.
- The second-hand market is an unknown but decisive parameter.
- Except for the polymers, the recycling sectors are well established in Belgium

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Infrastructure Port Oostende

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Circular industry in Port Oostende

- AIM Recycling
- TopMix
- TopAsfalt
- TopRecycle
- BioPower
- BioFuel
- BioStoom
- Bioferticol
- Yeafa
- Proviron
- Group Verhelst
- PGS

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Jan Allaert – Port Oostende

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