

Wind Farms in Brittany (Bretagne), France

By

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Wind mills and tidal mills were common in coastal zones of Western France for centuries. For example, the small island of Bréhat was equipped with mills (locally called "moulins de Bréhat") as early as the late 14th century; one tidal mill and two wind mills were rebuilt in the 1630s. During the 1850s, more than 3,000 windmills, and 5,000 tidal mills and waterwheels, operated in Brittany, with 60 windmills at Ouessant Island alone.

Electricity production by wind farms is a very recent trend in Brittany despite the huge wind energy potential of this coast. Figure 1 shows the location of major installations in Brittany, and Table 1 lists wind farm Internet links.

The first major wind farms in Brittany were opened in 2000: Goulien in Cornouaille, near the Pointe du Raz, and Plouarzel, Pays du Léon (Figures 2, 3, 4). Wind farms are now located on high plateaus inland and on coastal cliffs: Goulien, Plouarzel, and Beuzec-Cap-Sizun (Figure 5) near the coast, and Plouyé, Plougras, and Dinéault inland (Figures 6, 7). In coastal zones, wind farms must be placed up to several hundred meters away from the shoreline to limit the visual impact and environmental nuisances. Wind turbines are preferably located on high cliffs for greater wind speeds and electricity production, even though the Plouarzel, Dinéault and Goulien sites are visible from the sea.

Today, 21 MW of generating capacity exist in Brittany (Figure 1), and 26,500 MWh were produced in 2003. Although the Brittany region has a huge potential for wind farm electricity production, development is restrained by a number of factors, including some bad publicity among local communities. For example, the Plougras wind farm (Figure 7) generated unacceptable noise between June and October 2003 before problems were fixed. The Beuzec-Cap-Sizun wind farm (Figure 5), completed in 2001, was shut down because of repeated noise complaints, and the project at Guimaëc, was postponed after public consultation in 2003.

Further, the Brittany coast attracts a huge number of tourists each summer, and wind turbines and their visual "pollution" are often perceived as a threat to the tourism industry.

http://www.uq.edu.au/~e2hchans/photo.html#Wind_farms	Photographs of wind farms
http://www.espace-eolien.fr/	French wind farm association
http://suivi-eolien.com/	Monitoring of French wind farm production

Table 1. Internet links to Brittany wind farm web sites.

Figure 2.

Wind farm at Goulien, Cornouaille near the Pointe du Raz. Most of the electricity production in Brittany occurs during windy and rainy days, such as on 3 March 2000 when this photo was taken. Note the 2 turbines in the mist in background. Installation has 8 turbines with a capacity of 6 MW. Production in 2000 was 16,000 MWh (all photos by the author).

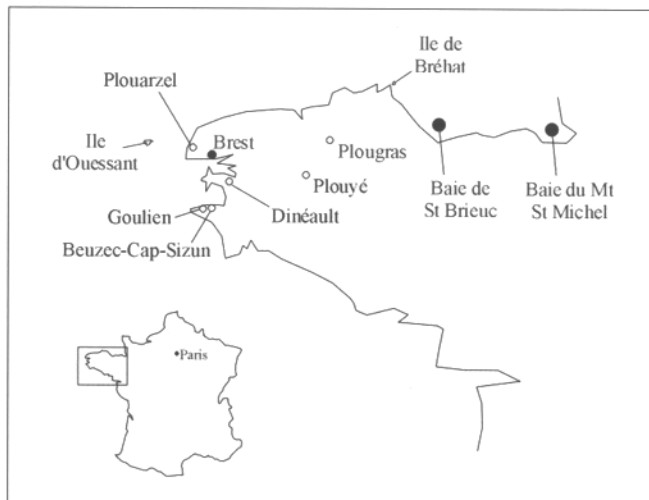


Figure 1. Map of Brittany, France showing the location of major electricity wind farms.





Figure 3. Wind farm at Plouarzel, Pays du Léon. Photo shows turbines on 1 March 2004 with only 4 rotors out of 5 operating during a moderate, easterly breeze. Each mast is 38.4 m high and weights 28.9 tons. Installation was completed in 2000, and has 5 turbines with total capacity of 3.3 MW. Production is 9,800 MWh per year.

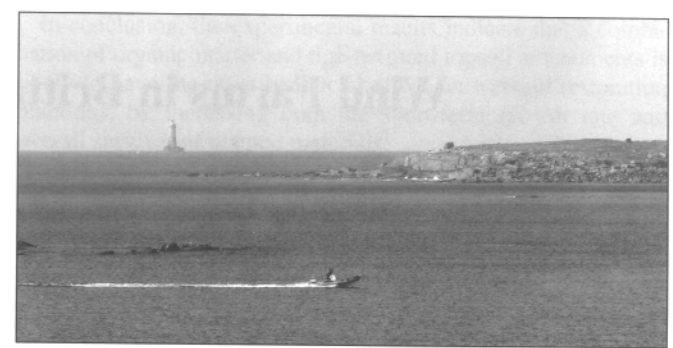


Figure 4. Coastline of du Léon, less than 3 km from the wind farm at Plouarzel. Entrance of the Aber Ildut on 1 March 2004, with the 4 lighthouse (Phare du Four) in the background. Completed in 1874, the light house is 28 m above ground and 31 m above high tide levels - It is said that wave breaking and splashing may overtop the light.



Figure 5. Privately-owned and operated wind farm at Beuzec-Cap-Sizun, Cornouaille. Installation was completed in 2001, and has 5 turbines with total capacity of 1.5 MW. Noise problems were experienced and the station was shut down. Photograph taken on 3 March 2004, when all rotors were stopped. Note that the turbines are closely located to each other and interactions between rotors could be expected.

Figure 6. Photo shows wind farm at Plouyé, Monts d'Arrée on 4 March 2004. Installation was completed in 2002, and has 4 turbines with total capacity of 3 MW. Production is 6,000 MWh per year.



Figure 7. Wind farm at Plougras, Monts d'Arrée, Côtes d'Armor on 27 February 2004, during a Northerly breeze. Installation was completed in 2003, with 8 turbines and a total capacity of 6 MW. Noise problems were experienced at the start in June 2003, but were fixed in October 2003 after a lot of "bad press."