

DISMANTLING A LARGE WIND TURBINE: WINDKRAFT DIEMARDEN

Windkraft Diemarden began when a group of determined citizens met unofficially in the summer of 1992 to form a locally owned wind company. By 1993 they had installed one 150-kW Nordex N27 turbine, making Diemarden the first village in the area southeast from Göttingen to generate electricity with wind energy. (Göttingen, of course, is where the famed aerodynamics laboratory employed Ludwig Prandtl and Albert Betz—of the Betz limit fame.) By December 1994 they added a 250-kW N29 turbine. The successful *Bürgerbeteiligung* or community-owned wind project later expanded to include two other sites in the region. In 1996 they added two Bonus 600-kW turbines near Deiderode and from 2000 to 2002 they added three Bonus 1.3-MW turbines at Bischhausen.

As the original turbines were nearing two decades of service, Windkraft Diemarden decided to repower the site. They took the old Nordex turbines down in the winter of 2012 and shortly afterward replaced

them with three new Enercon E-101 turbines. The 3-MW Enercon turbines use a rotor 101 meters (330 feet) in diameter. The rotor sweeps 8,000 m², 14 times more area of the wind stream than the Nordex N27.

This sequence of photos illustrates the dismantling of a large wind turbine. Importantly, the photos show how the concrete foundation is broken up with a hydraulic hammer and the rebar is separated from the broken concrete for recycling. The concrete can be used for aggregate or sent to a disposal site.

The wind turbines and towers were also recycled. They found a new home in Northern Ireland where they were reconditioned, repainted, and returned to service for another couple of decades.

In the fall of 2013, 300 guests celebrated the 20th anniversary of the locally owned wind turbines at Diemarden's wind turbine festival with beer, *würst*, *gemütlichkeit* (good cheer), and tours of the wind turbines.

All photos by Gottfried Wehr, 2012.



Removing the rotor from the nacelle.



Lowering the rotor to the ground for disassembly.



Lowering the nacelle. The turbine and tower were shipped to Northern Ireland where it found a new home. Note image on the tower at left. Many wind turbines in Germany are "adopted" by local groups who paint fanciful patterns on the towers.



Disassembling the tubular tower.