

Turbines and substations **will contain hazardous chemicals**; hydraulic oils, lubricants, coolants and fuels. Table 8.1-1 summarizes volumes **PER Wind Turbine Generator (WTG)**.

As per Table 8.1-2 each substation could have up to 79,000gal transformer oil and 50,000gal of diesel fuel!

Did you know SF6 is called one of the world's worst greenhouse gas? It is classified as a High Global Warming Potential Gas which is 23,000x more potent than CO2? The global installed base of SF6 is expected to grow by 75% by 2030.

Annual global SF6 emissions are the equivalent to yearly CO2 emissions produced by approximate 100 millions cars

Monitoring, maintenance and emergency action is much more difficult offshore than onshore. Weather on the high seas can make emergency access impossible. For such "green" machines they sure do depend on a lot of fossil fuels and have a lot of non-recyclable parts and a short life span (~15-20 year).

It's safe to say green energy sourced from wind turbines are hypocritical.

Table 8.1-1 – Summary of maximum potential volumes oils, fuels, and lubricants per WTG.

WTG System/Component	Oil/Fuel Type	Oil/Fuel Volume
WTG Bearings and yaw pinions	Grease ^a	187 gallons
Hydraulic Pumping Unit, Hydraulic Pitch Actuators, Hydraulic Pitch Accumulators	Hydraulic Oil	40 gallons
Drive Train Gearbox (if applicable), Yaw Drives Gearbox	Gear Oil	106 gallons
Transformer	Dielectric Fluid	1,585 gallons
Emergency Generator	Diesel Fuel	793 gallons
Switchgear	Sulfur Hexafluoride (SF6)	243 lbs
Transformer and Converter Cooling System	Propylene Glycol	357 gallons
Converter Primary Cooling	Ethylene Glycol	48 gallons
^a Approximately 26 gal to 40 gal (100 L to 150 L) per large bearing.		

Table 8.1-2 – Summary of maximum volumes oils, fuels, and lubricants per offshore substation.

Equipment	Oil/Fuel Type	Oil/Fuel Volume
Transformers and Reactors	Transformer oil	79,252 gallons
Generators	Diesel Fuel	52,834 gallons
High-Voltage & Medium-Voltage Gas-insulated Switchgear	Sulfur Hexafluoride (SF6)	793 gallons
Crane	Hydraulic Oil	317 gallons