Wet Stacking

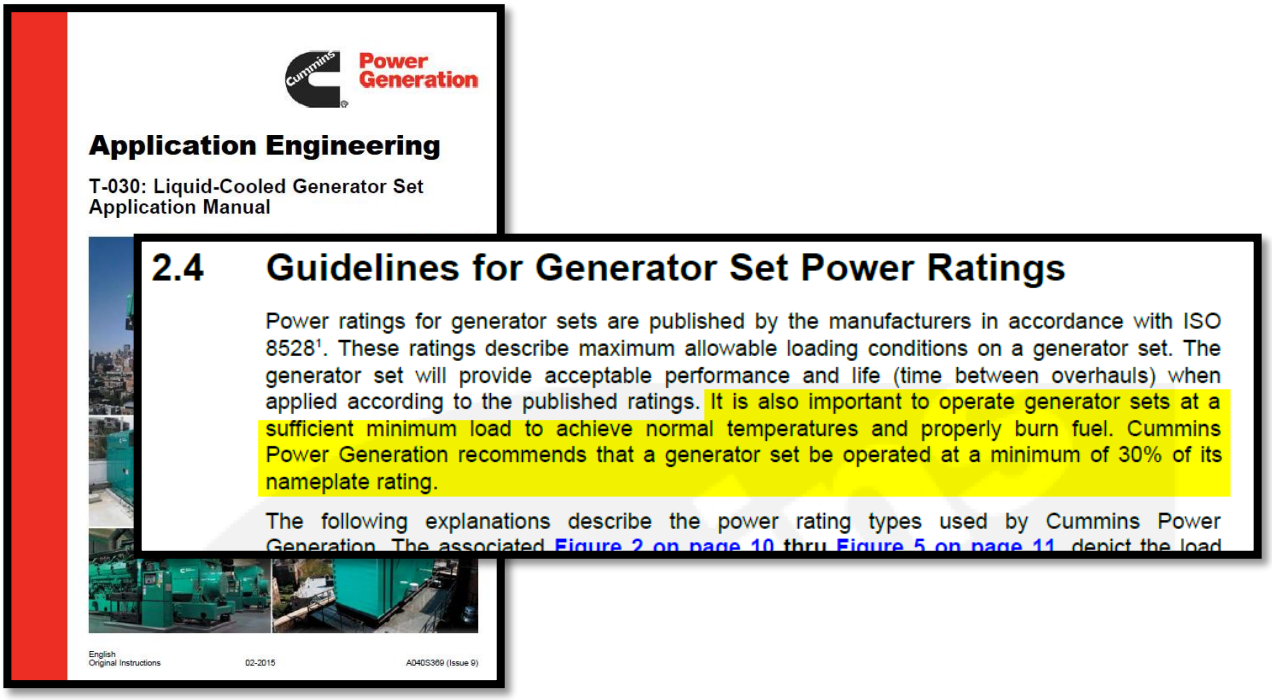
Wet Stacking is a sign of unburned fuel that accumulates in the exhaust system of a diesel engine. The unburned fuel mixes with soot along the exhaust system creating a black-oil substance. When a diesel engine is operated on light loads, or in prolonged idle, it will not attain its designed operating temperature required to completely burn the fuel. The unburned fuel can foul fuel injectors, engine valves, exhaust system, turbochargers and reduce engine performance. Fuel and oil dilution may also be attributed to wet stacking which could lead into a serious lubrication problem.

Wet stacking is also a serious fire hazard. Hot exhaust passing thru the muffler can reach temperatures of up to 700°C, depending on the size of engine, and could ignite soot deposits in the muffler mixed with unburned fuel as a result of wet stacking. Ignition of soot deposits is a fire hazard to any surrounding combustible material such as foam, paper, dried leaves, fabric and also to nearby flammable vapors of gasoline or liquefied petroleum gas (LPG).

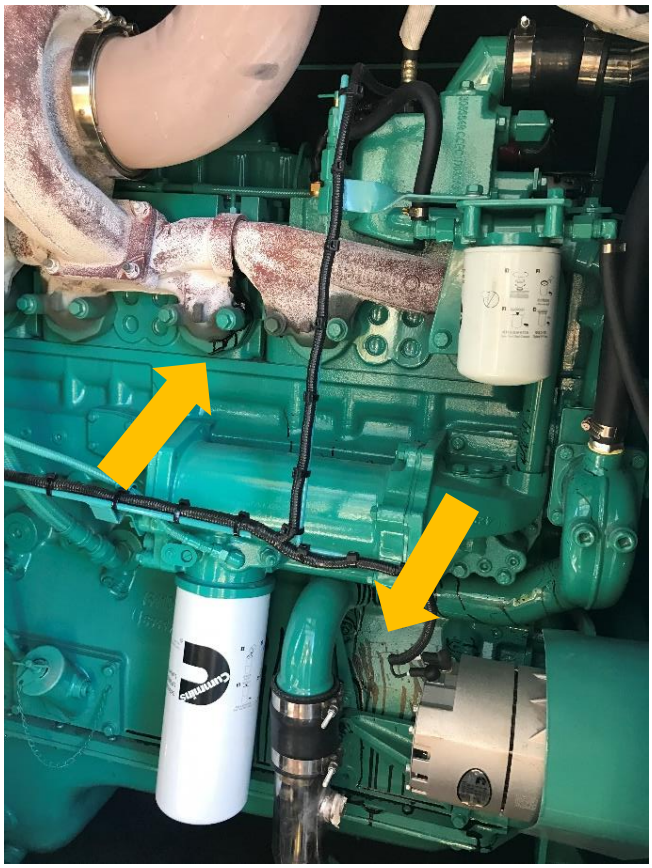
Diesel engines are designed to operate with load. Rule 8.4.9.5.1 of the Standard for Emergency and Standby Power Systems (also known as NFPA* 110) states that:

"***Loading shall not be less than 30 percent of the nameplate kW rating of the Emergency Power Supply, (generator). A supplemental load bank shall be permitted to be used to meet or exceed the 30 percent requirement."***

Cummins engines for Power Generation recommends a minimum of 30% load as written on Cummins Application Engineering Manual.



Example of generator sets that show signs of wet stacking.



Further, Section 5.3 of the ISO 8528-2 – Standards for Engine Driven AC Generating Sets states that:

"The customer shall be made aware that extended running under low load may affect the reliability and life of the reciprocating internal combustion (RIC) engine. If the generating set is to be operated at lower loads than the minimum, the RIC engine manufacturer shall specify the measures to be adopted and/or corrective procedures to be used to alleviate the problem."

*NFPA – National Fire Protection Association