HAZARDOUS LOCATIONS/ ENVIRONMENTS FOR GAS TURBINES

Because gas turbines have to operate in a wide variety of environments, they are often subject to many different hazardous mediums that have the potential to cause fires and/or explosions if exposed to the electrical components of a gas turbine filtration system or the gas turbine itself. Electrical components require a wide variety of housing depending on the environment in which the gas turbine will operate.

There is rarely a situation where hazardous materials are not present, which means that engineers must carefully evaluate each environment to determine what safeguards must be put in place to ensure the safety/efficiency of equipment and the safety of workers.

Hazardous areas are divided into three different segments:

Classes - Classes show what type of substance or explosive material is present in the atmosphere (see chart for details). *For example, a class might include combustible dust, like the coal dust that is present around a coal mine.*

Divisions - Divisions are meant to show the actual likelihood that the substance or explosive will ignite under particular conditions. For example, under certain conditions, coal dust may only be explosive under abnormal operational conditions.

Group - Groups define the types of substances themselves. Groups usually include types of substances that are similar in nature. For example, Group D includes a wide variety of flammable gasses, like ammonia and natural gas.

NFPA 70 NEC HAZARDOUS LOCATIONS

CLASS	DIVISION	GROUP
I Flammable Gases or vapors may be present	**1**-Ignitable concentrations of hazards exist under normal operation conditions and/ or where the hazard is caused by frequent maintainence or repair work or frequent equipment failure **2**-Ignitable concentrations of hazards exist under abnormal conditions	**Group A** - Acetylene **Group B** - hydrogen, butadiene, ethylene oxide, propylene oxide and acrolein **Group C** - Ethylene, cycloprpane, and ethyl ether **Group D** - Acetone, ammonia, benzene, butane, ethanol, gasoline, hexane, methane, methanol, naptha, natural gas, propane and toluene
II Combustible dust may be present	**1**-Ignitable concentrations of hazards exist under normal operation conditions and/ or where the hazard is caused by frequent maintainence or repair work or frequent equipment failure **2**-Ignitable concentrations of hazards exist under abnormal conditions	**Group E** - Combustible metal dusts: aluminum, commercial alloys and magnesium **Group F** - Combustible carbonaceous dust: carbon black, charcoal, coal, and coke dusts **Group G** - Other combustible dusts: chemicals, flour, grain, plastic and wood
III Easily ignitable fibers or flyings may be present	**1**-Ignitable concentrations of hazards exist under normal operation conditions and/ or where the hazard is caused by frequent maintainence or repair work or frequent equipment failure **2**-Ignitable concentrations of hazards exist under abnormal conditions	**Not Applicable**

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