

Auxiliary aircraft systems

Engineering



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[College] Fuel systems are made up of fuel lines, storage tanks, filters, pumps, valves, metering devices, and monitoring devices. They are both designed and certified within Title 14 of the Code of Federal Regulations. Each fuel system in a multi-engine airplane is to be arranged such that, in at least one system configuration, failure of any component, with an exception of a fuel tank, does not result in the loss of power of multiple engines. It is advisable for fuel systems to be designed or arranged such that ignition of fuel vapor in the system as a result of direct lightning strikes is prevented. Every fuel tank has to withstand vibrations, fluid, structural, and, inertia loads without failure. In addition, fuel systems have to be free from vapor lock that occurs when fuel is used at its critical temperature.

The danger of fuel starvation, fire, or explosion in flight makes it compulsory for fuel system irregularities check top priority. An aircraft fuel system has to deliver and store clean fuel at flow rate and pressure that sustains operations. Therefore, any evidence of leak or malfunction has to be rectified before departure.

Personnel maintaining fuel or handling fuel systems should be trained on best practices that reduce incidents or accidents. Conditions of fuel trucks and storage tanks should be monitored to avoid contamination. Filter treatments and changes are to be carried regularly. Samples from all drains must be inspected regularly.

Fueling and defueling of an aircraft should be done outside to avoid fuel vapors that might accumulate in hangar and cause an accident; these processes require fire extinguishers. Personnel should wear clothing that does not promote static electricity buildup. Correct fuel should be put in the aircraft by the placing placards at the filling port or at the fueling station.

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Nozzles are required to be clean every time to avoid contamination of the fuel. When defueling, if a tank is drained due to fuel contamination or suspected contamination, then it should not be mixed with other fuel.