

UNIT 6 - AIRFRAME AND POWERPLANT

FUEL SYSTEMS

As with hydraulic systems, fuel requires an accurate filtration in order not to clog nozzles or pumps. Fuel types can be classified as follows:

Type	Application	Engine type	Colour
Jet A-1 (JP-1A)	Civil aviation	Jet/Turboprop	Straw, clear
Jet B	Civil aviation, military	Jet	Straw, clear
AVGAS 80/87 ⁴	General and Civil Aviation	Piston	Red
AVGAS 100/100LL ⁵ (Low Lead)			Blue
AVGAS 130/145 ⁶			Green
MOGAS			Yellow or Red

Table 1 - Aviation fuel types and applications.

Most of the fuel systems have components similar to the hydraulic system. All fuel systems must have a quantity indication which can be of a float or capacitor type. The fuel quantity in each tank is then transmitted to an indicator in the cockpit. Temperature plays a big part in determining the amount of fuel quantity, especially for large aircraft. All jet fuel is supplied in Kg or Lbs and multiplied by the density (SG) to determine the volume.

Fuel from the tanks is fed into the engines via fuel pumps or by gravity feed in case of general aviation aircraft or, as a backup means in case of pump failure. Fuel is then filtered before being fed to the nozzles, similarly to hydraulic systems, this is to prevent contaminants or debris from being introduced.

Fuel temperature for jet engines flying at high altitudes requires the fuel to be at the appropriate temperature in order to prevent ice formation. This is done via a fuel-oil heat exchanger. Hot engine oil is fed through a radiator in the fuel tank, at the same time, through thermal exchange, the fuel is heated and oil cooled.

⁴ AVGAS 80/87 has been phased out. Availability is very limited.

⁵ Common in North America and Western Europe. Limited elsewhere.

⁶ Mostly used on older and vintage aircraft, has been replaced by 100LL. Limited availability