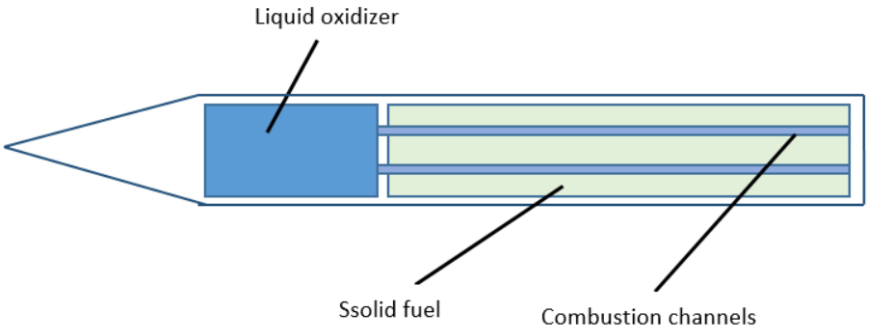
Rockets with solid propellant and liquid oxidizer have significant advantages over liquid-only or solid-propellant rockets.

The liquid oxidizer allows the use of heavier, denser and more efficient types of solid propellants that cannot burn on their own. Part of the rocket with solid fuel is manufactured using conventional technologies, but the shape of the channels through which the heated liquid oxidizer is pumped is different. The use of a liquid oxidizer makes it easy to control engine thrust, increase the efficiency of fuel oxidation (by increasing the temperature of the oxidizer).

This ensures high safety of storage and preparation of the rocket for launch. Solid fuel without an oxidizing agent almost does not burn. Solid fuel cannot immediately mix with the oxidizer in full, which prevents the rocket from exploding. The liquid oxidizer also cannot react with all the fuel. Any accident will have a very limited scope.



A rocket with a liquid oxidizer can use a much more efficient and heavier solid propellant. Such an engine will provide longer operating time and long flight at hypersonic speed. Such hypersonic missiles have an advantage over ramjet hypersonic missiles. Because have a classic design and do not require flight in the atmosphere. Such a missile can travel at hypersonic speeds above the atmosphere and penetrate many missile defense systems.

Such a rocket uses already known technologies, which greatly simplifies its design and production. At the same time, it combines the advantages of liquid and solid rockets.

Such a rocket is safer. In the event of an oxidizer tank failure, the liquid oxidizer cannot mix with a large amount of solid dense fuel. There will be a fire on the surface of the fuel, but no explosion. In a solid propellant block fire, the size of the fire is limited only by the surface in contact with the oxidizer.

The power control of the engine of such a rocket is almost as flexible as that of liquid rockets. You can change the pressure of the oxidizer in the nozzles and its temperature.