Methane-powered Airplane

The airplane pictured above is a Beechcraft Sundowner, a four-place lightplane produced by Beech Aircraft Corporation, Wichita, Kansas. This Sundowner, however, differs from production line models; it is powered by liquid methane (LM), which is stored in two 18-gallon tanks installed in place of the Sundowner's rear seat (left).

Beech Aircraft conducted extensive tests of the experimental Sundowner to determine the feasibility of using LM instead of gasoline in future piston-driven aircraft. Methane, the principal component of natural gas, is in abundant supply and is 40–60 percent cheaper than conventional fuel; it also offers bonuses in safety and reduced pollution from exhaust emissions. The company had earlier developed a system, now in production, for converting cars and trucks to LM use.

Use of methane in liquid state was necessary to reduce the space needed for fuel storage to practicable dimensions; as a gas, it would have required a volume 630 times greater. But liquid methane is a "cryogenic" fuel that must be stored at a temperature of 260 degrees below zero Fahrenheit to keep it liquefied. Thus, the key technology in both the aviation and automotive applications is the cryogenic storage tank, developed by Beech Aircraft's Boulder (Colorado) Division; company engineers say the tank is so efficient it would keep a cup of coffee hot for 10 years. In designing the tank, Boulder Division drew upon the company's experience in producing superinsulated, virtually leak-proof cryogenic equipment for storing liquid oxygen and hydrogen fuels in NASA's Apollo, Skylab and Space Shuttle programs.