

AE Update – Jan. 12, 2010 – Alt propulsion

Hybrid engine debuts in Germany

Electric and gasoline engine powered by engines of 140- to 200-hp.

Flight Design, German manufacturer

Electric motor used only on takeoff and climb -- extra 40 horsepower.

If gasoline engine failed, electric motor could continue for five minutes.

Wouldn't maintain level flight, but provide glide ratio of 25- or 30-to-1.

Boeing hydrogen-powered aircraft

Boeing has flown a manned aircraft on hydrogen fuel cell power.

Based on a Diamond Dimona motor glider, the two-seater aircraft has become a single seater.

Compressors feed air to the fuel cell; pumps cool down the 75 hp motor.

Lithium-ion batteries, as well as a hydrogen tank.

Can fly for up to 1 hour at 100 km/h.



Boeing unmanned liquid hydrogen powered aircraft might be designed to fly for up to 10 days at 60,000 feet carrying loads of up to 2,000 pounds.

Liquid hydrogen takes up more than four times the space of jet fuel, but the jet fuel weighs 3 times more than liquid hydrogen.

Larger fuselage for fuel storage and highly efficient, very high-aspect ratio low-camber wings not aerodynamically compromised by fuel-carrying.

Internal combustion engines adapted for hydrogen driving propellers.

Could increase its endurance to 30 days if operated near sea level.

Surveillance vehicles use fuel cells

Fuel cell powered UAVs; Naval Research (ONR)-sponsored program

Ion Tiger, merges UAV technology and fuel cell systems.

Tests a hydrogen-powered fuel cell design, can travel farther and carry heavier payloads than battery-powered.

Stealth: small size, reduced noise, low heat signature & zero emissions.



Fuel cells create an electrical current when they convert hydrogen and oxygen into water and are pollution-free.

Fuel cell system delivers twice the efficiency of internal combustion engines - running more quietly and with greater endurance.

Italian electric airplane reaches 155 mph

New battery-powered airplane flew 155 mph, which is expected to be a new world record for the category.

The two-seat Pioneer Alpi 300 is powered by a 75-kW electric motor using brushless technology and lithium polymer batteries.

Next goal is power by hydrogen fuel cells.

Electric aviation moves forward

New airplane from China, the **Yuneec International E430**,

Takeoff speed was 40 mph and top flight speed was about 93 mph.

Two-seat, long wing, a V-tail and all-composite construction.

Solar Impulse

Solar Impulse, the solar powered aircraft.

High-aspect-ratio flying wing

Tested effect of electric motors on the aircraft's electronics.

Developers hope to fly around the world.

Wingspan more than 200 feet and weight about 4,000 pounds

So far, aircraft flew at an altitude of about one meter and distance of about 350 meters.

Flight tests begin in early 2010

Plan is to increase the flight duration toward the intermediate goal of flying through the night using stored solar energy.

Nuclear-powered passenger planes?

U.K. government funding project to reduce the environmental impact of air travel.

Experiments by Soviet Union and the United States in 1950s demonstrated that the development of nuclear-powered aircraft is possible.

The U.S. has long ago flown a B-36 carrying a nuclear reactor -- and a lead-lined cockpit -- to prove the crew could be protected.

Tested nuclear-powered jet engines on the ground.

The big challenge is demonstrated safety.

Nuclear-powered UAVs could be used for reconnaissance or in combat without the need for heavy reactor shielding, according to proponents.

