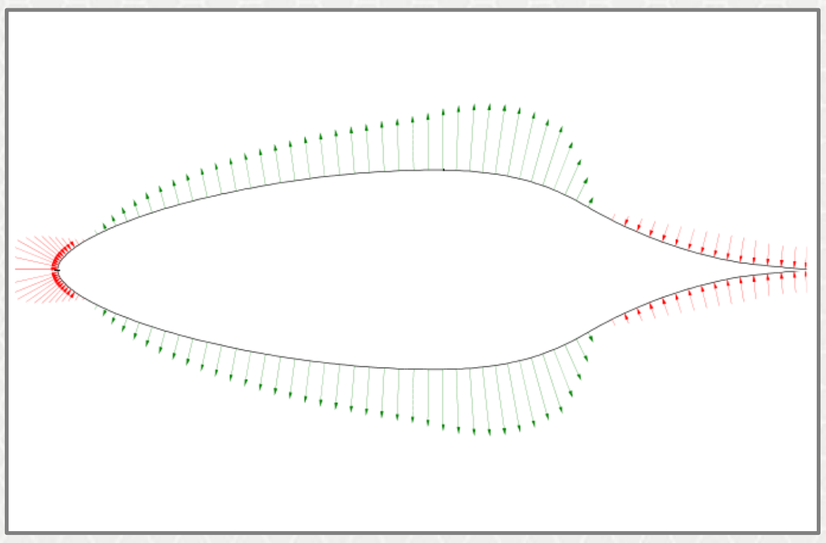
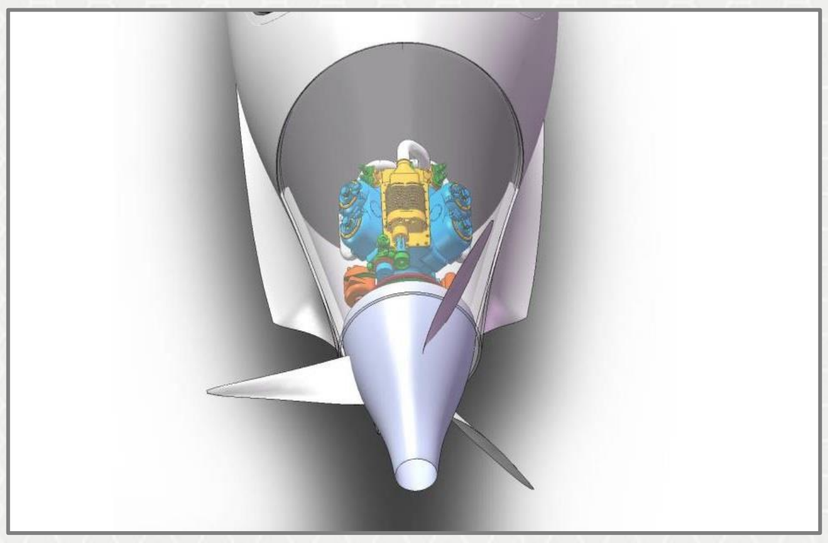
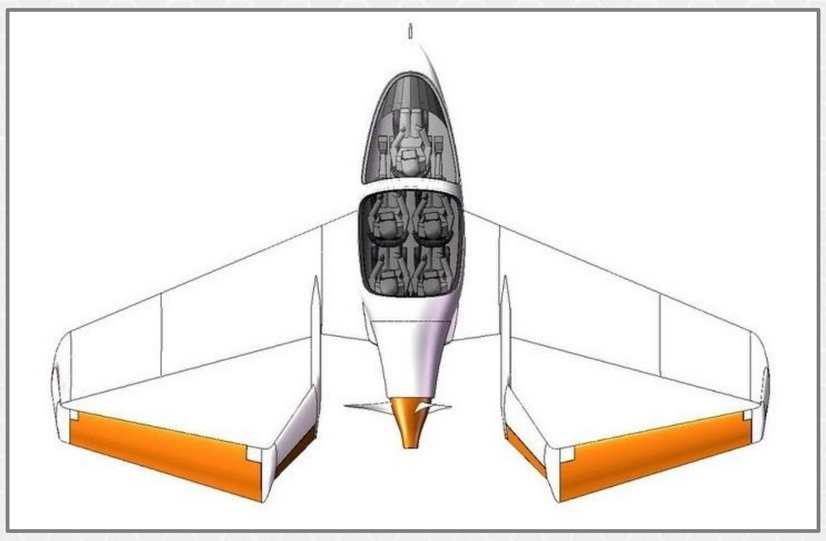
Active Drag Reduction

Synergy uses experimentally proven techniques for active drag reduction. A small amount of energy is used to ‘guide’ the air close to the skin for a tremendous reduction in overall power requirements, minimizing drag by creating ‘pressure thrust’ and 100% laminar flow. NASA describes this equation-changing field of ‘powered drag reduction’ by the term ‘open thermodynamics’. Active drag reduction takes general aviation far beyond mere ‘streamlining’ to explore new technologies for fast, efficient, comfortable flight in the 21st century.

Pressure Thrust

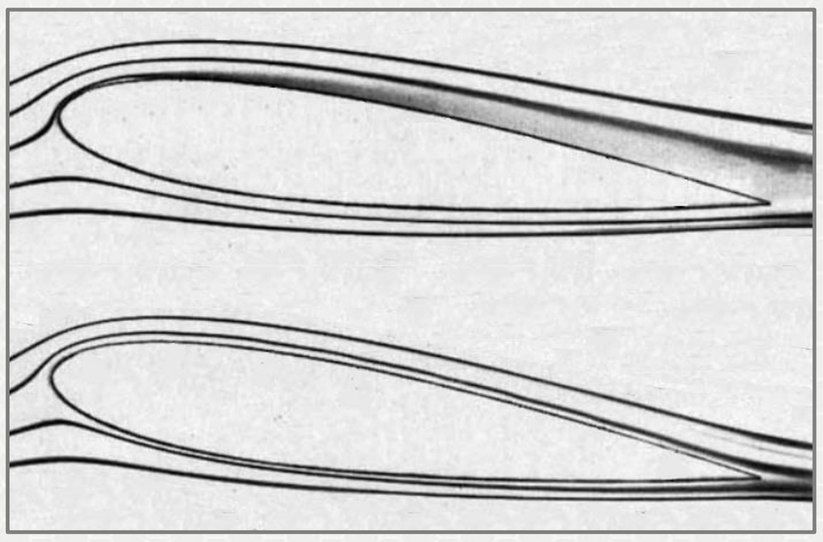


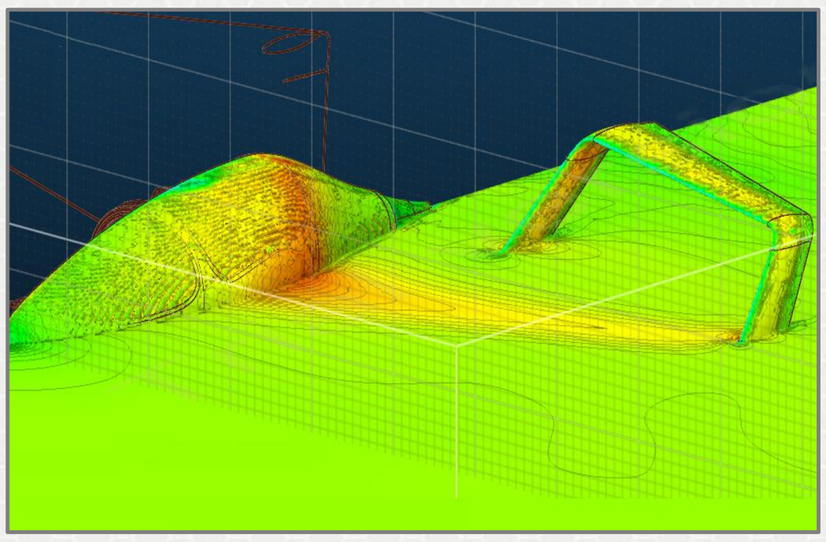




A small amount of engine power can be used to reduce the boundary layer thickness of the aft fuselage. This powered pressure recovery allows for a larger area of high pressure in the back than in front, creating a false ‘thrust’ called pressure thrust. Done properly, it’s actually just zero drag for the price of a little suction.

Boundary Layer Control





On Synergy, power can be used to create less drag on the airframe by sucking stagnant air off the wings in areas of turbulence. This not only stabilizes the boundary layer for 100% laminar flow, but also creates pressure thrust for extremely low drag. It’s like the difference between playing air hockey with the table turned off… or playing with it turned on.

Wake Immersed Propulsion

Hydrodynamicists have known for decades that wake immersed propulsion greatly reduces drag: because of the high drag environment of water, it was obvious. Synergy uses a specially designed quiet wake impeller, (not shown) which reduces turbulence ahead of the engine. Cooling drag is also minimized by pressure recovery flow design and integral exhaust scavenging.