Building a Better Propeller

Over the years, propellers have become progressively lighter, which increases the overall efficiency of the airplane's engine.

20's to 60's
Solid metal

60's to 80's
Metal spar is surrounded by foam and fiberglass

80's Spar is made of lighter carbon fibers

Source: Hamilton Standard

New blades use less fuel and make less noise.

Technologies, has been producing propellers since the 1920's and claims to be the largest propeller manufacturer in the world.

The use of propellers failed in commercial airliners in the late 1950's and 1960's with the introduction of jet aircraft like the Boeing 707 and 727. Jets were faster and seemed so much more modern than those thrashing old blades.

But jets are not necessarily less noisy, as anyone who has stood outside an airport can attest. Still, Hamilton Standard engineers say, the thriller sound produced by a pure jet is easier to block from the passenger cabin than the roar of a propeller.

Conventional propellers lose much of their efficiency as they near Mach 1, the speed of sound. "Traditionally, you went with propellers up to 0.8 Mach and then switched to a pure jet at higher speeds," said Bernard S. Gatzen, another engineering manager at Hamilton Standard. More recent developments have made propellers practical up to 0.8 Mach, engineers said.

But jets heat a relatively small amount of air in their flanks to push an aircraft forward, which consumes large amounts of fuel. "A pure jet is like a fast sports car, whose wheels are always spinning," Mr. LeVitan said.

The price increases of the 1970's, which pushed fuel prices from 30 cents per gallon to 50 cents per gallon, convinced the government to fund a research for a new type of propeller.

Greg Lajunnesse with a propeller at Hamilton Standard.