



IT seems inevitable that an airplane with a long production run

will nurture a hearty modification aftermarket whose aim is to make older airplanes like the shiny new ones (one hopes) rolling off the assembly lines. And given the great disparity between the value of older airplanes and the purchase price of the new ones, it's probably no surprise that many owners choose to modify older airframes in search of more speed, utility, and comfort. ■ Such a tactic works best in airplanes that have changed relatively little over the years—the

Modding Mooneys

Exploring the Mooney upgrade market

BY MARC E. COOK

Mooney certainly qualifies. Although it's true that the new Mooneys have substantially different systems, interiors, and—in some cases—powerplants, from those in the models of years past, they have a lot in common, too. For example, the wing is essentially the same, and the steel-tube main

PHOTOGRAPHY BY MIKE FIZER

structure and major cabin dimensions have not changed. Mooney has, over time, stretched the fuselage twice.

Given that it's physically possible to update a 30-year-old M20 to nearly the same level of equipment as that of a new MSE, somebody was sure to do so. In fact, there are four major modifiers in Mooneydom—Lake Aero Styling and Repair in Lakeport, California; Mod Works in Punta Gorda, Florida; Mooney Mart in Venice, Florida; and Southwest Texas Aviation in San Marcos, Texas. There is considerable overlap in the offerings of these companies, and in many cases one shop will offer modification parts produced by another; such is the fairly tight-knit world of the Mooney modifiers.

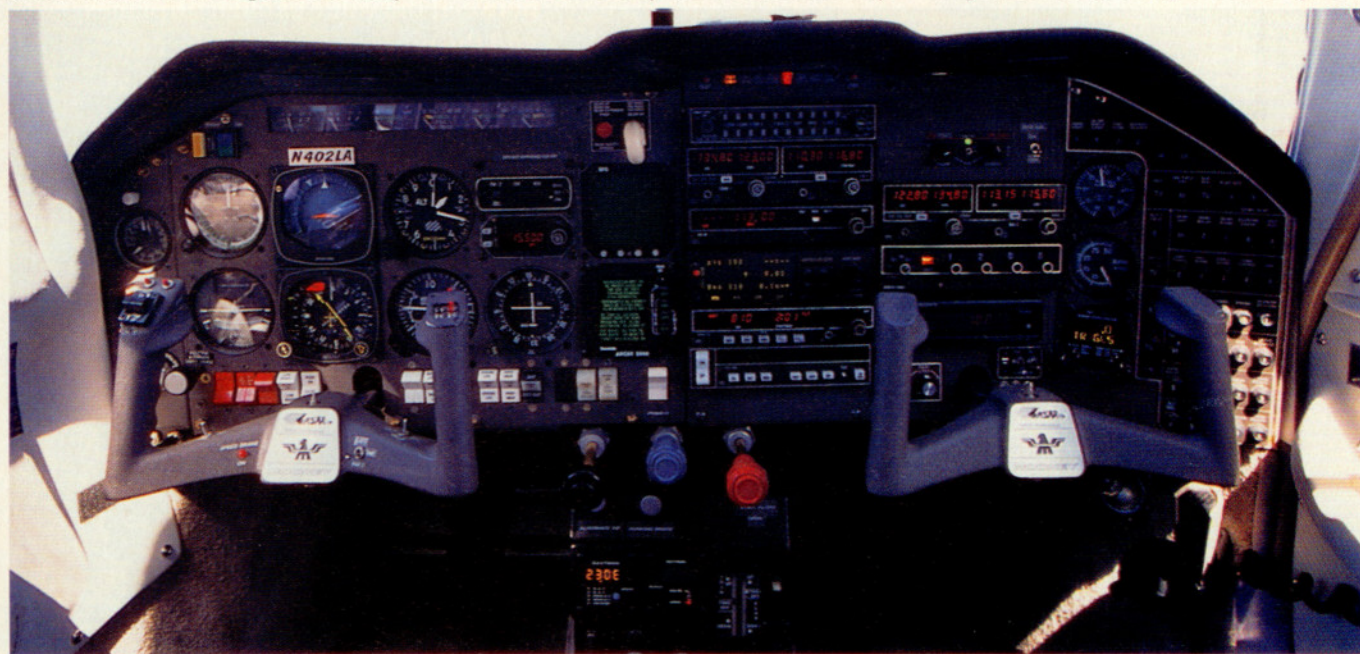
If you own an older Mooney (or are planning to buy one) and are considering substantial modifications, you should ponder some of the pitfalls. Think about the costs involved. It's remarkably easy to sink \$10,000 into an airplane that may be

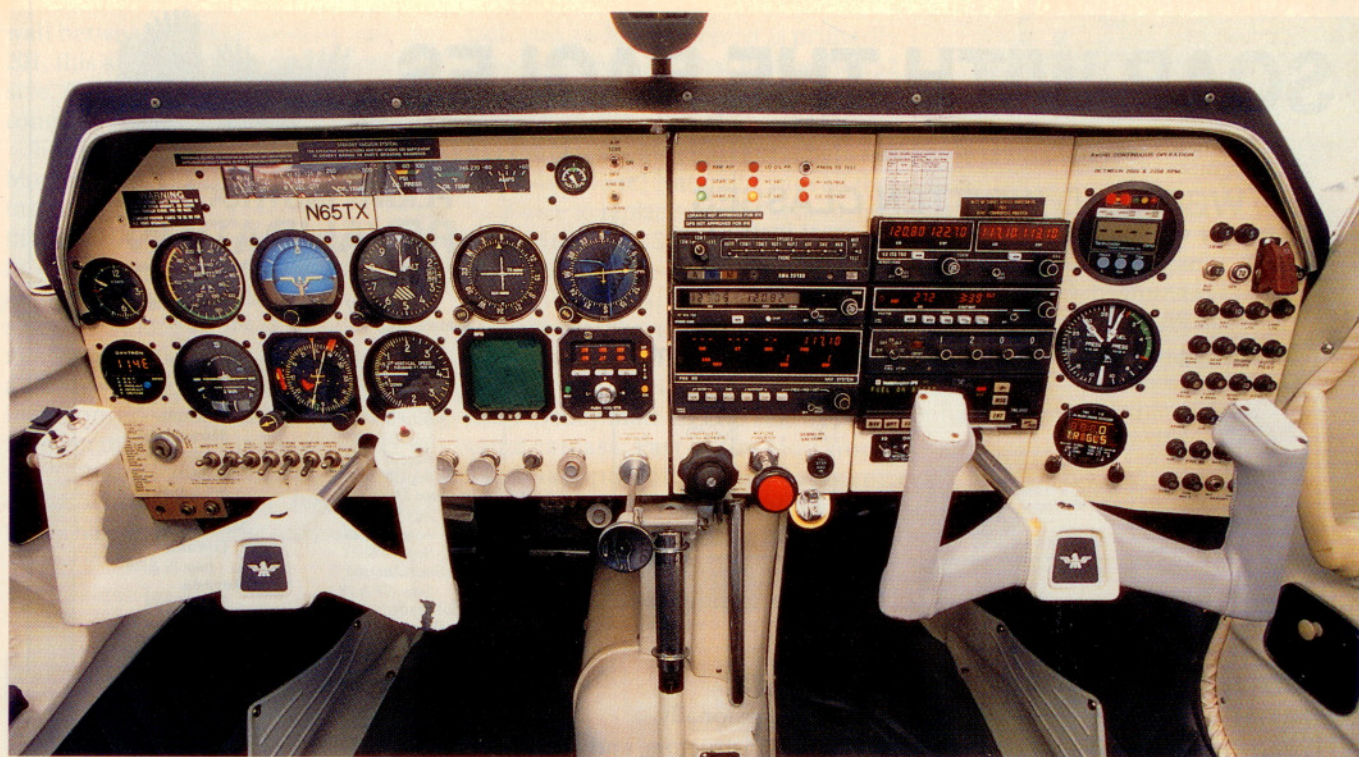
worth \$40,000—but such alterations do not necessarily make it a \$50,000 airplane. (Nor is this unique to Mooneys. Most extensive modifications fail to increase the resale value in step with the cost of the alterations.) Also, take some of the performance increase claims with a grain of salt. You might see a listing of mods with each one's speed gain. Fine—but remember that these increases are not cumulative; if you have five mods that deliver 5 mph each, don't expect to have a 25-mph-faster airplane when you've finished. Start with a 200-horsepower M20E or M20F, for example, and it's highly unlikely that even a full package of mods will make the airplane faster than a new MSE if you factor in the differences in weight. A highly tweaked M20C (with the carbureted 180-hp Lycoming O-360) will be about 10 knots slower. Finally, be certain your airplane is properly rigged; Mooneys are uncommonly sensitive to subtle rigging maladies. There are more than a few really slow older Mooneys

dragging themselves through the air sideways because of misrigging.

Okay, then...what *can* you do to your Mooney? Perhaps the most popular segment of the Mooney mod business involves—no surprise here—speed kits. In general, these are aerodynamic tweaks that follow what Mooney itself applied to the M20 in the transformation from M20F Executive to 201 in the mid-1970s. You'll find items like flap-, rudder-, and elevator-hinge fairings; gaps seals for the flaps and ailerons; replacement dorsal fin fairings; wing root fairings; and new-style wing tips. It's possible to drop \$2,000 in order to get some of the aerodynamic improvements of the vaunted M20J for your pre-201.

Later-style windshields can also be fitted to the early Mooneys with the two-piece glass; that retrofit requires some metalwork on the upper cowl and a new glareshield over the instrument panel. Three main benefits accrue: The airplane will pick up a bit of speed,





Southwest Texas Aviation's retrofit Mooney 201-style panel provides room for modern instruments and avionics.

thanks to the greater slope of the one-piece windshield, the leak-prone avionics access panels will be either removed or reworked, and the cockpit will be noticeably quieter. Depending upon the thickness of the glass, a windshield upgrade will run upwards of \$800 plus labor.

Prior to the 201, the Mooney cowling was something less than an aerodynamic work of art. The large opening and inter-

nal "dog house" baffling were not as effective in cooling the engine as the later 201-style cowling. The oil cooler, positioned right at the front of the cowling, was prone to foreign-object damage and was far less efficient than it would have been in another location. Many owners of the older 200-hp models complain of chronic high oil temperatures.

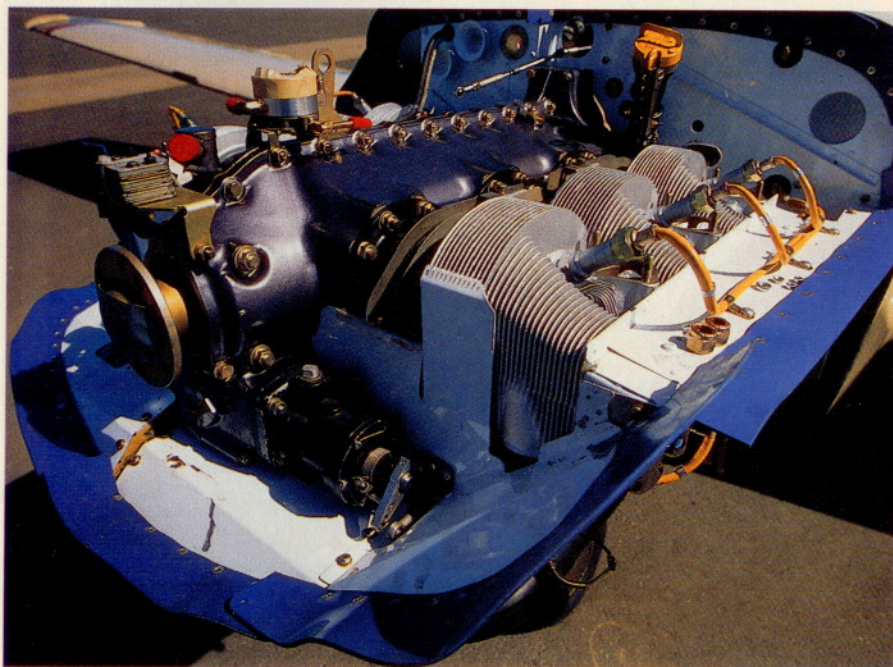
Each of these four modifiers ap-

proaches the cowling modifications a bit differently. Lake Aero offers a relocation kit that puts the oil cooler at the back of the upper-deck baffling, where it gets far more air and can therefore do its job much better. Lake Aero also makes a cowling closure kit that consists of small fairings to close out part of the standard inlet; the idea here is to better channel the flow of air into the cowling. Studies of the Mooney's older cowling indicate that a considerable portion of the cooling air reverses course and comes back out of the inlets because of obstructions in the lower part of the engine compartment. Lake Aero's closure and oil-cooler kit costs about \$800 plus installation.

Southwest Texas Aviation has designed and received STC approval for its own cowling for the pre-201 airplanes. Somewhat shorter than the stock 201 cowling, the STA kit includes fashionably small inlets, relocated oil cooler and air filter, and reworked internal baffling. This kit costs about \$4,000 plus installation and gives you the option of a second landing light in the nose. STA also sells a lower cowl closure kit for \$340.

Both Mod Works and Mooney Mart update pre-201s to use factory 201 or 205 cowlings. This is a more expensive way to go because the original-equipment pieces are not cheap, but it provides a stone-stock look and the benefit of easy replacement of parts. Because of the myriad differences ahead of the fire-

At Lake Aero, a 231 airframe receives the 252 engine package (below). The company's interior and avionics refurbishing have been applied to a 252 (facing page), with an upgrade to a three-blade propeller. Note the panel additions.



wall between the E/F models and the 201, this alteration is quite labor intensive. Figure on about \$10,000 for the complete installation.

Engine swaps are popular in the Mooney fold. Lake Aero has an STC for installing the 200-hp Lycoming IO-360 in the M20C airframe, which normally has a 180-hp O-360. Similarly, Lake Aero, Mod Works, and Mooney Mart can swap the Mooney 231's standard Continental TSIO-360-GB or -LB—which has a fixed-wastegate Rajay turbo and no intercooler—for the TSIO-360-MB found in the 252. The main advantage of the 252-style engine swap is that it comes with a better and more robust turbocharger, automatic wastegate con-

trol, and an intercooler; it is primarily the engine package that makes the 252 so much more desirable than the 231. (The TSIO-360-SB in the new Mooney Encore is very much like the beloved 252 powerplant.) Naturally, with all that hardware to replace—turbo system, factory-Mooney 252 cowling, engine, exhaust system—this engine swap is not inexpensive. Mod Works and Mooney Mart have basic installed packages that run \$44,995 and \$42,745, respectively. (Incidentally, Mod Works and Mooney Mart are two ribs from the same carcass. Part of the Mod Works team has spun off its own company, hence similar product names. Mod Works' 252 engine package is called the

Leather seats are a comfortable cabin feature in this 1965 Mooney modified by Southwest Texas Aviation. The manual gear handle and hydraulic flaps are the clues that it's an M20C. The panel has also received considerable attention.





Trophy 262, while the Mooney Mart's is dubbed the Award 262.) Lake Aero's package price has yet to be determined.

Replacement instrument panels also represent a large part of the market. Mooneys built before the mid-1970s had notoriously disorganized panels that thwarted all efforts at modernization. They also made use of plastic overlays that, after a couple of decades, begin to

look a bit rough. There are several options for the panel refurb. Lake Aero has a partial flight-group panel replacement that substitutes a flat aluminum sheet for the folded panel normally facing the pilot. This mod allows you to install modern gyros and to group them in what is now conventional fashion.

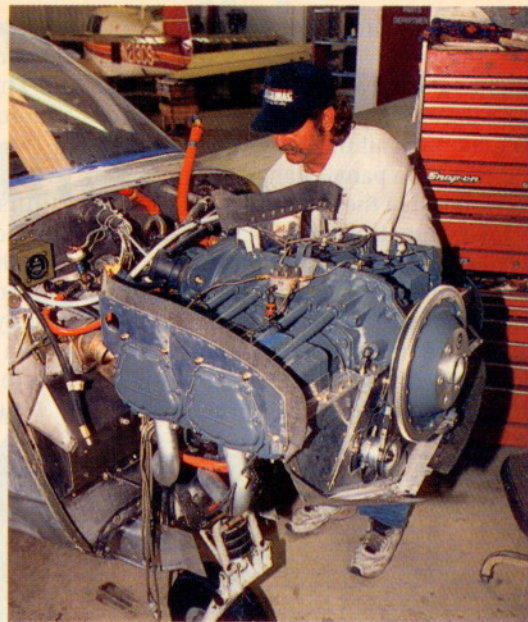
Mod Works and Mooney Mart will install 252 instrument panels. Again,

because replacing the instrument panel in any airplane requires major surgery—and those in Mooneys are further impaired by a lack of working space—the swap is a big project. Both Florida firms will do the job with official Mooney parts for about \$6,500 including the installation.

In typically Texan fashion, Southwest Texas Aviation charts its own course



Mod Works' Pursuit 221 ES (left) mates an M20F fuselage with a six-cylinder Continental. A reworked interior (above) does much to revitalize an older Mooney; this is an example of Mod Works' efforts. Many customers opt for new cowlings at engine installation.



with its own panel for the pre-201 airplanes. Designed and built in-house, this all-metal panel resembles the standard late-model Mooney arrangement but uses some less-expensive components (priced circuit breakers lately?) and so sells for about \$4,500 installed. STA also builds a left-side replacement panel that runs about \$1,000 installed.

Many owners perform the modifica-

tions piecemeal—a panel this year, and maybe a cowling swap after that. But it's also possible to get all the pieces for a major spinner-to-tailcone rework in one package. Southwest Texas' packages are called, not surprisingly, Texan conversions. We flew a Texan I Special Edition package that had been performed on the company's 1965 M20C. Including the new 201-style cowling, windshield,

side windows, wing tips, and various fairings, the airplane looks quite (but not exactly) like a newer and more expensive 201. Performance is surprising for 180 hp. We noted a maximum cruise speed of 158 knots true on just under 10 gph, with well-tamed temperatures and a decent (though not electrifying) climb rate. The different Texan packages—the I is for the M20C, the II is

for the M20E and 1968 and later M20F, and the III covers the 1967 and 1968 M20F—start at about \$6,300, including installation. A full package can run to \$11,000 with all the bells and whistles, but without a panel change.

While all of these modifiers will gladly take your airplane and complete the whole package of alterations in one sitting, Mod Works has been cutting a new niche in the Mooney-mod world in trying to create turnkey airplanes. The company buys M20C, E, or F models, does a comprehensive refurbishing,

adds a bevy of mods and some new avionics, and sells the airplanes ready to go. This is a popular alternative for someone who doesn't already own a Mooney. A reworked M20C (180 hp) with all the major Mod Works alterations, new instrument panel and avionics, and single-axis autopilot costs \$129,900. Start with a 231 airframe and the Mod Works treatment results in a Trophy 262—essentially a Mooney 252 with a few additional speed kits—that sells for \$179,900.

A new project at Mod Works is the



On Mod Works' Pursuit 221 ES, a modified 231 cowl housing a tuned-induction Continental IO-360 engine.

221 ES, your basic M20E or F airframe fitted with a normally aspirated 210-hp Continental IO-360-ES; this engine has a tuned induction system and promises somewhat better fuel economy than the Lycoming-powered models. We had a brief flight in the airplane while it was still in the experimental stage, and it turned in performance a smidgen better than a 201 on slightly less fuel. Mod Works hopes to sell a certified version for \$129,900, or \$89,900 if you provide the airframe.

The opportunities for the Mooney owner to alter his airplane are virtually limitless. The pilots who had put their familiar old airplanes through the mod process had, for the most part, high praise for the outcome. And while it's true that only Mooney can make genuinely new Mooneys, for many owners, the modification route is a cost-effective way to have an airplane much closer to new.

For more information on Mooney modifications, contact the shops directly:

Lake Aero Styling and Repair, 4725 Highland Springs Road, Lakeport, California 95453; telephone 707/263-0412, fax 707/263-0420.

Mod Works, Inc., 8250 Skylane Way, Punta Gorda, Florida 33982; telephone 813/637-6770, fax 813/637-9628.

Mooney Mart, 100 Airport Avenue, Venice, Florida 34285; telephone 941/484-0801, fax 941/485-4571.

Southwest Texas Aviation, 1815 Airport Drive, San Marcos, Texas 78666; telephone 512/353-3455, fax 512/353-0088.

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