Ovation Guitars

By Roger H. Siminoff

THERE WAS A TIME when cracks like, "You can't stand it up in the corner," or "It keeps sliding off my lap," got a big laugh in acoustic guitar circles; but the chuckles stopped a long time ago. The whole litany of tongue-in-cheek comments about the round-back, synthetic-body Ovation guitar faded into oblivion as Ovation's unconventional space-age instrument steadily won its way into the hands of leading players around the globe.

It didn't happen overnight. Fifteen years ago, the Ovation guitar was the brainstorm of an aerospace entrepreneur who had visions of combining his huge helicopter and aerospace manufacturing facilities with his hobby — guitars. Charles Kaman, president and founder of Kaman Aerospace, wanted to diversify his operations. His company was building various models of rescue helicopters, with blades made out of fiberglass-covered Sitka spruce. Kaman also happened to be a serious guitarist. To anyone else, there would have been no connection between planes and guitars. But Kaman got the

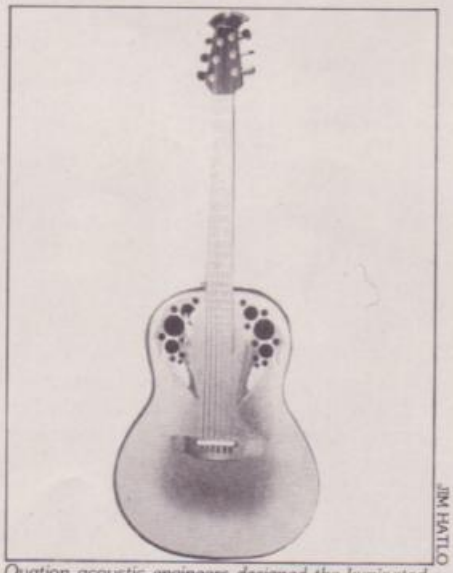


ROGER H. SIMINOFF

Charles Kaman started it all with a helicopter rotor.

notion that within his manufacturing techniques and advanced materials might lie the germ of a better musical mousetrap. Once the idea had dawned upon him, Kaman didn't stop until he had created a fiberglass-back, bowl-shaped guitar body that was married to a traditional Sitka spruce top.

Would his musical idea fly? That part of the story is history now. Thanks to a lot of hard work and a lot of persistence on the part of Kaman and his company, the Ovation guitar weathered snide comments from traditionalists that greeted its debut, and went on to earn international



JIM HATLO

Ovation acoustic engineers designed the laminated-top Adamas model with soundholes in the upper bout.

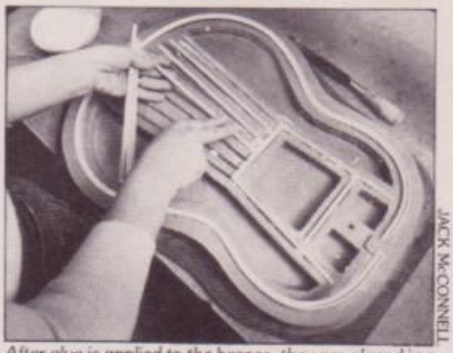
acceptance among both professional and amateur guitarists. Today it is a familiar member of the world's workhorse guitar fraternity.

The first production of the instruments took place in an old building in New Hartford, a quaint New England town in northwestern Connecticut. Since Kaman Aerospace was heavily involved in aircraft manufacturing, the company's tool and machining department was certainly qualified to turn out precision molds and fixtures. But unlike other guitar manufacturers, who made their jigs from hardwood and marine plywood, and high-density particle board, Ovation's engineering staff fabricated fixtures from aluminum and steel, fitting them with special toggle clamps and other trappings of space-age technology.

The Ovation guitars featured a one-piece body of molded fiberglass (the company developed a special formulation, which it called Lyrachord), a wooden headblock bonded to the inside of the backshell, a spruce top, and a standard wood neck with an adjustable truss rod. Although there were some variations on the traditional X-bracing pattern in the design of the soundboard's reinforcement structure, the main features of the X-brace design were initially retained.

As time went on, and Ovation expanded its line of guitars, there was a need to develop other bracing configurations to achieve the necessary tonal balance with the rounded synthetic backs. Research produced 12 different bracing patterns. The company now assigns these throughout its acoustic guitar line.

Around 1976, as Ovation expanded,



JACK McCONNELL

After glue is applied to the braces, they are placed in a rubber mold which locates them on the soundboard.

the New Hartford facility could no longer house the entire staff and the expanded manufacturing operations. There was some space available at other Kaman Aerospace locations in Connecticut. The engineering, marketing, purchasing, and sales departments were moved to offices near the Kaman corporate headquarters site in Bloomfield (Box 529, Bloomfield, CT 06002). At the same time, more room was needed for the development of the Adamas guitar — a newly introduced instrument that had a composite, laminated soundboard as well as a synthetic body. In the northeastern part of Connecticut, in a small town called Moosup, Kaman had a facility for manufacturing aircraft wing and body parts; but there was some room available for the guitar-making division.

Today the 12-string guitars, the Custom Legend, the classical, and the Anniversary models are made in New Hartford, as are all the Ovation solidbody electric instruments (except for the UK-2, which has a synthetic Urelite body). The necks and fretboards for all Ovation guitars also are made in New Hartford on automatic profiling and slotting machines. The body shells, or "bowls," come from Moosup, and necks are shipped in special padded cubby-hole containers to the Moosup plant for final assembly.

Various bridges, soundboards, and bracings are made in both facilities, according to need and according to the location of special tools. The Moosup



COURTESY OVATION

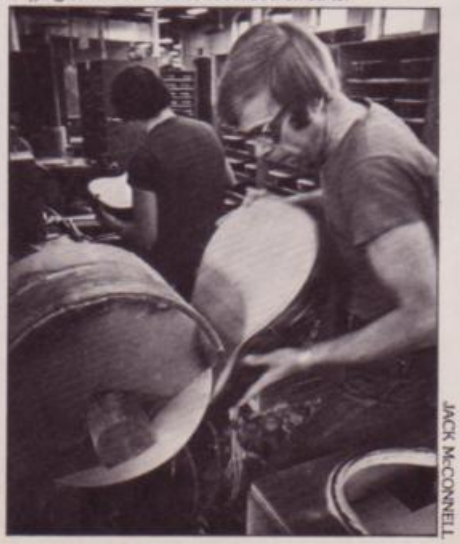
Roundback shells for the Balladeer model come out of their molds to cool before further processing.

plant makes the Matrix guitars (fiberglass bowls, wood-laminate tops, and synthetic necks with rosewood fretboards); Academy guitars (beginners' instruments featuring molded soundboards with integral braces); Applause guitars (beginner/student instruments); Balladeer model Ovations (braced with a modified "A"-bracing, and fitted with wood necks), and Legend model Ovations (standard "A"-braced tops, wood necks, and Lyrachord backs). Ovation's premier guitars — the top-of-the-line Adamas series — also are made in Moosup. The Adamas I features an epoxy-graphite soundboard, a solid walnut neck with a carved peghead, a walnut fretboard, and a carved bridge. Ovation's Adamas II features the same graphite soundboard and has a five-piece neck laminated with maple and mahogany; a walnut fretboard; and fancy veneers on the peghead. And



JACK McCONNELL

Above: Prior to spraying, the soundboards are sanded flat and smooth in a special sanding machine. Below: A finished soundboard is polished against an extra-wide buffing wheel to reduce localized streaks.



JACK McCONNELL

the newest addition to the Adamas family is the prototype Adamas cutaway model [see "NAMM Expo '81," *Frets*, Oct. '81].



JACK McCONNELL

A special machine automatically cuts, drills, sands, and shapes bridges — from blanks to finished piece.

Jim Rickard, *Frets*' Acoustructure columnist and Ovation's Engineering and Quality Control Manager, gave us some background on the fiberglass bowl. "Charles H. Kaman set out to build a better guitar by using synthetic materials," Jim recalls. "He had quite a lot of experience working with fiberglass and with spruce. With Charlie's direction, we proceeded to experiment with guitar construction. When we looked at the back, we found that from an acoustic standpoint, the square back was really not the most efficient shape to make. There was no feeling that any real acoustic research had gone into the evolution of the squarish back, and we felt more comfortable with a rounded shape.

"The fiberglass back does give you a change in the sound; and the sound can be modified by changing the bracing on the top. Is wood still a better material? It may be better if you only make a conventional X-braced dreadnought; but if you use some of the special bracing we have designed to go along with the fiberglass back, I do not believe you can say that. 'Better' is a very subjective word. We built a lot of prototypes and we played them all, and then let our ears make the decision. We found that the curved back has a lot of advantages in its reflectance of sound."

Today, the Ovation wood neck block



JACK McCONNELL

Until recently, Ovation backs were "laid-up" with fiberglass cloth. Today they are molded in one piece.

has been replaced by a molded-in-place fiberglass block; and instead of "laying up" two fiberglass sheets to make a molded back, as the company did at first, the backs are molded in a single stage.

The Ovation instrument's round back has been its most striking feature, and more than a few buyers have made their purchase on looks alone. But, according to Rickard, there is far more to the shape than cosmetics. "One of the keys to the



JACK McCONNELL

Braces, precut and preshaped for use in Ovation's twelve bracing patterns, are stored by type in a rack.

instrument's success is that it has been seen on stage a lot," he explains, "and the one main reason for that is that the guitar proved it could hold up well for traveling. Compared to traditional designs, the guitar is practically indestructible. Players also have seemed to like the way the Ovation acoustic/electric pickup unit handles."

Rather than using conventional nitrocellulose lacquer finishes [see Repair Shop, *Frets*, Sept. '79], Ovation applies a polyester finish to its instruments. The company has found polyester to be more durable, easier to apply, and far more resistant to checking, cracking, and temperature changes than is lacquer.



COURTESY OVATION

A conveyor system carries guitar bodies out of the spray booth to allow their polyester finishes to dry.

Having pioneered the use of synthetic materials for guitar body parts, Ovation is currently advancing the technology of synthetic soundboards. The laminated Adamas guitar soundboards feature an outer .005" layer of a graphite/epoxy compound, an .030" inner-core birch veneer, and an outer .005" layer of graphite/epoxy. "That produces a top," says Rickard, "of similar overall stiffness to a spruce top that is .100" thick. It has better resistance to the effects of humidity, and a far more even stiffness [inch for inch] across its entire surface. Additionally, the graphite is more reliable. The characteristic problem with spruce is that in time the spruce has a tendency to arch up or buckle and become less than flat. The graphite tends to remain very flat. Although it will deflect somewhat, it is stable and does not continue to arch more and more."

Today, Larry Coryell and *Frets* Advisory Board member Roy Clark are among the guitarists who perform on Adamas instruments. The detractors who ridiculed Charles Kaman's first roundbacks little imagined that one day they would see the descendants of those guitars on the stages of the *Tonight Show* and Carnegie Hall, but Kaman enjoyed the last laugh. And now all the erstwhile critics can say is, "What will he come up with next!" ■