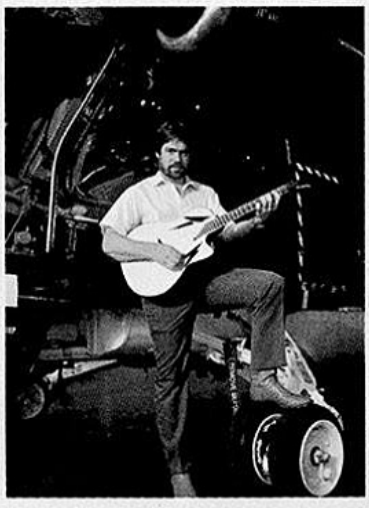
THE KAMAN FACTORY PRODUCES HELICOPTERS AND OVATION GUITARS. THE CHOPPERS ARE FAST AND AGILE; THE GUITARS ARE BUILT FOR COMFORT, NOT FOR SPEED.

Kaman Performance

BY MATT RESNICOFF

CHARLES KAMAN launches ideas inspired by imperfection. Forty-three years ago, his dissatisfaction with helicopter design sent him and his engineers rifling through blueprints in rabid pursuit of the perfect flying beast, one dedicated to full, effective and unflawed response to the commands of its hopelessly flawed human conductor. And if the quality of civilized life is weighed by the speed and ingenuity of progress, that surely must have been on Charlie Kaman's mind that brisk day on barren Bradley Field in Windsor Locks, Connecticut, when the refined K-125 helicopter completed its first steady run after a series of bumpy test flights and unceremonious rejections by potential military-minded investors. Sleek, agile, pragmatically designed and flyable by the layman with an hour's instruction, the K-125 represented one of the first fertile seeds of progress engineer/guitarist Charles Kaman tossed into the furrows of practical public interest. He didn't invent flight per se, but gave it an unprecedented controllability, which helped revolutionize modern flight itself. He built an iron bird and made it fly...better.



Bill Kaman casts a Thunderbolt within a cavernous hangar somewhere in Connecticut, U.S.A.

With a no less turbulent ascension, Kaman's next generation of development took the best of what he learned from flight—sleekness, agility, mobility and scientific deliberation—and claimed its foothold in the forum of the traditional acoustic guitar, where it currently occupies a respectable market share of approximately seventy-five percent.

PHOTOGRAPHED BY JONNIE MILES

Even within the oppressively mechanized context of modern music technology, the Ovation roundback acoustic guitar, with its futuristic appearance, unique feel, distinctive sound qualities and, most intriguingly, its partially synthetic construction, is as much an anomaly as it is an institution.

"Any time you come up with something new like that," grins Bill Kaman, president of the enormous Kaman Music Corporation, itself a subdivision within the Kaman Corporation, of which the Ovation guitar represents a mere speck of innovation, "there's a certain chunk of people that likes it because it's radical, another chunk that likes it for what it does, and then a great big chunk that says, [*dramatically*] 'That's not the way it's supposed to be, so we don't like it!'"

It was against just such disregard for dedicated progress that guitarist Charles Kaman battled to help blur the line between nature and nurture when he went into acoustic guitar design twenty-two years ago. "He'd always have problems with his guitars," Bill recalls. "He's a great one; he puts them on the wall, and doesn't really store them in cases. He says, 'That way, it's always there if you want to play it.' But the necks would always move or the backs would crack, things like that. So he came up with a synthetic back and sides, because in the early sixties, rosewood was getting difficult to get, particularly the Brazilian rosewood, which was what everybody says is the best stuff." He pauses, then adds with an irony-packed smile, "We use Brazilian fiberglass now—it makes it sound a lot better.

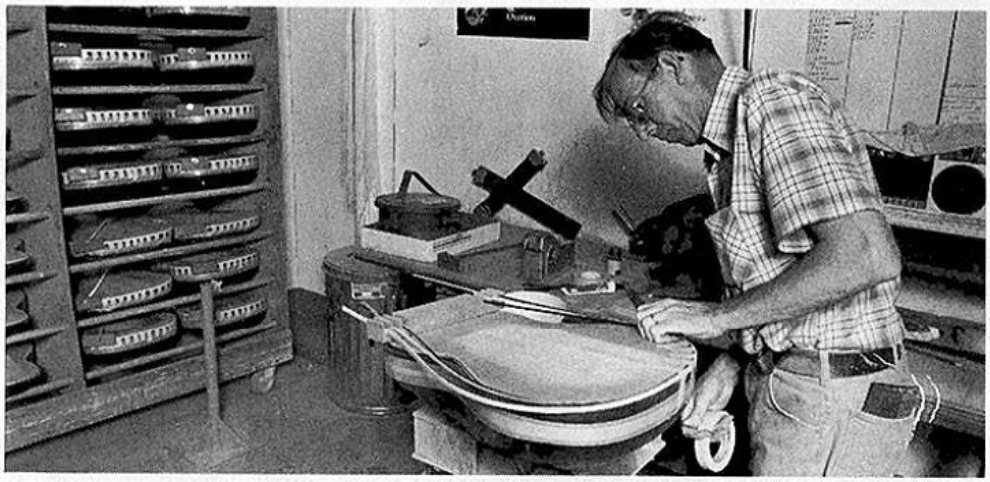
"We wanted to eliminate the cracking in the back of the instrument," Kaman continues, "and with the rotor blade technology we had, with the synthetics and composites, we decided to use the fiberglass, because it has about the same resonance properties of some woods, and it's almost impossible to break. The first back we made was actually square, but because it's a thin material, it still needs to be reinforced from the inside, so we were putting braces in, and all of a sudden my father said, 'Wait a minute; there's got to be a better way to deal with this.'"

There certainly was. The result was the implementation of the roundback design, which relies on the physics of its compound curve for strength, and the angular structure of its fibrous composite fiberglass material for its durability and sonic properties. David Bergstrom, Kaman's Manager of Fretted Instruments and Advertising Director, explains the advantages of the Ovation design scheme as compared to more conventional guitar body structure: "In a regular (flatback) guitar, the backs and sides have lots of angles where sound waves get trapped. The benefits of *our* body come from the





Fretted instruments Manager Dave Bergstrom offers a view of the five-piece Ovation neck from infancy to completion. It consists of stacked slabs of black Honduras mahogany, maple veneer, mahogany veneer, more maple veneer and a final slab of mahogany. (right:) Piles And Piles To Go: Fiberglass roundbacks await tops. Technicians experimented with the material to create the proper compound with just the right number of angles to best enhance sound. Globs of the special composite "batter" are shaped into the familiar Ovation bodies.



Once the top is in place, binding is affixed with common plastic adhesive modeling cement. A white filler strip is set in place and later removed to accommodate abalone inlay.

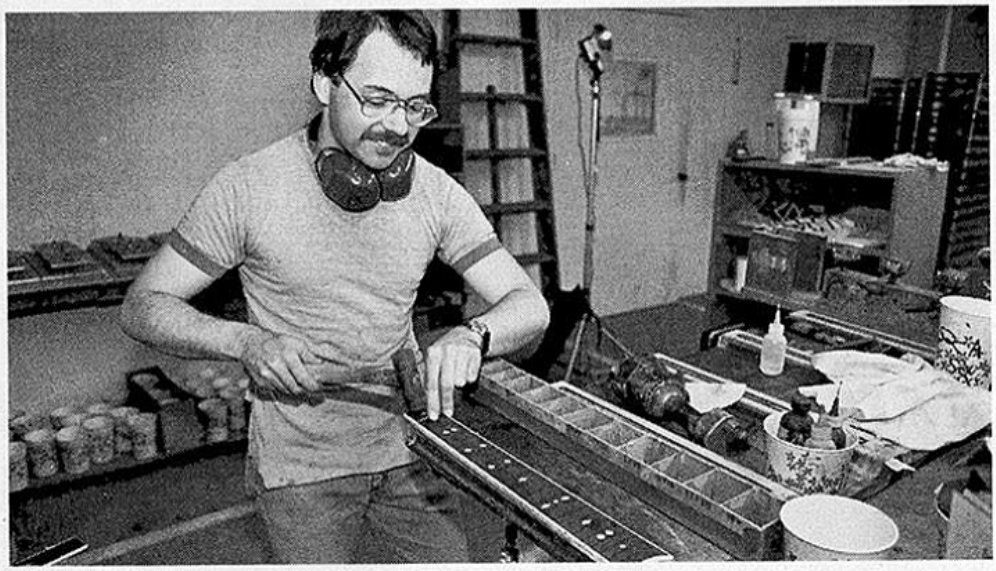




Mike Markure, Ovation's Manager of Customer Service, stands before a machine fitted with rotating dies once used to shape gun stocks, now used to shape necks. (right:) A worker shapes a twelve-string headstock on the Onsrud.



The panagraph machine sets up templates for accurate detailing of abalone inlays. Inset: The inlays are fitted into the raw fretboard.



Most Kaman employees like to enjoy an Irish Jig at least once a working day. Here, nickel silver alloy frets are fitted into a bound fretboard. Frets for Classics and unbound necks are cut in the factory on a lathe, or hand-cut on a grinder as needed.



A top-assembly emerges from the ultrasonic bonder. Says Markure, "When other companies get flexible tops, the first thing they do is throw a traditional X-brace across it, which negates flexibility. We brace parallel to the grain to retain flexibility, and the counteraction of the string pull retains strength as well." The halafatic resin glue used to affix the braces to the tops takes about four hours to bond; this bonder sends high-frequency soundwaves through the top, the mold and the glue, excites the molecules and bonds the assembly in one minute.

very hard, smooth and reflective surface which pushes the soundwaves out, rather than trap or absorb them.

"There's also a ring which joins the top to the roundback body which is also very important, because in most guitars the top is held on by little chunks of triangular wood all the way around the rim, which actually work as sound *dampeners;* the top has to flex to project properly, and a wood-to-wood connection helps to *mute* the top. A lot of guitar makers choose materials for the backs and sides to affect sound, and that's totally different from our philosophy—we try to isolate the top. We don't have the tops and backs contribute to the sound of the instrument, and we try to make the top flex as much as possible."

Because the Ovation guitar design has been perennially tweaked and refined to a developmental plateau, and because labor-saving technology is being gradually introduced into the workplace, Kaman Music has been freed up to move in great force towards almost complete diversification. The company presided over by Bill Kaman presently controls two large distribution divisions, C. Bruno and Son and Coast Wholesale, and distributes four distinct product groups: sound electronics (which includes KMD amplifiers and PA's and Seiko keyboards and metronomes); percussion products; music educational products for most traditional instruments and academic apparatus; and the guitar products division, which, aside from handling Ovation Guitars and Kaman Musical Strings (the only two products the company actually manufactures), also distributes Takamine guitars, Korean roundback counterparts Applause and Celebrity and Mako solid-bodies.

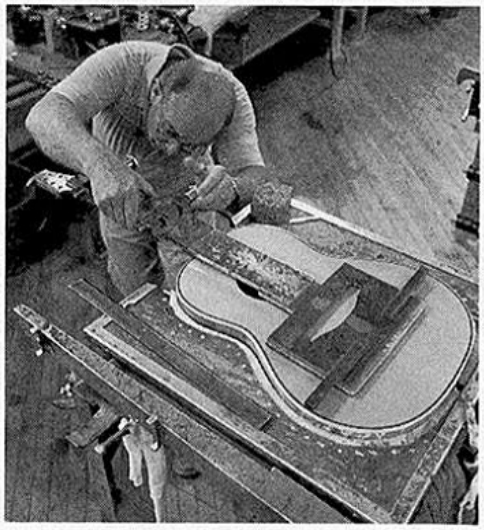
With so much attention and finance invested in what might be considered periphery, the assumption inevitably circulates that product development for the Ovation guitar might be receiving shorter shrift than a creation of such significance might seem to deserve. Actually, Kaman's confidence in the acoustic/electric's firm foothold in today's processing-oriented market *has* eased the tech bustle and executive pressure in Bloomfield, Connecticut, but loving respect for their precious, streamlined music-making machines help keep at bay the fanciful divisions of a parent company which also, quite typically, happens to be directing one of its foci towards purifying special bloodlines and eliminating inbreeding to create the perfect dog.

"It's fun working in a guitar factory," chuckles Kaman, who today takes an affably "told-ya-so" pleasure in seeing his father's technological "folly" take on Mother Nature so successfully at her own game. "The enjoyable part is always designing and creating new models. At this

point, more of it is running the overall business, the distribution thing. Guitars continue to be a major piece of it, but they're not the whole thing. It's getting to where within the company, the business will survive if something dies; we could lose Ovation, but Kaman Music would still be okay—not the *same*—but it would survive. And it's the same with any of our product lines. So the amount of time I can spend on it is a lot less these days, but I sort of look at it as the *fun* time now. When I want to relax, or do something a little different from the everyday stuff, I'll say, 'Let's go out to the factory and see what's going on there, and work on the new stuff.' Don Johnson, Rick Weldin, David and I contribute a lot to what the new models will be, and the biggest thing we're working on now is, 'What's next year's Collector's Series going to be? And the year after that?' We'll get ideas and talk, someone else will suggest something and we'll put *that* on, and things evolve that way. I guess I'm the member of a team who helps them evolve and maybe shapes the way they're going.

"Y'know, talkin' about music," Kaman muses conclusively, "one of the nicest things happened when I was coming in one day. I live out towards the factory, and I was driving in early, must've been about 6:15 one cold February morning—fresh snow *everywhere*. So it's daybreak, the sun's coming up, there's ice in the trees, everything's sort of hazy, I've got the Rippingtons on tape playing this one great acoustic piece of theirs, and I'm thinking, 'God, that's a great picture.' And all of a sudden, out of nowhere, the helicopter just comes *zooming* right across over the trees. Would've made a great video, I thought, 'I'm gonna remember this.'"

Technology subsuming nature. Now, *there's* an idea...●





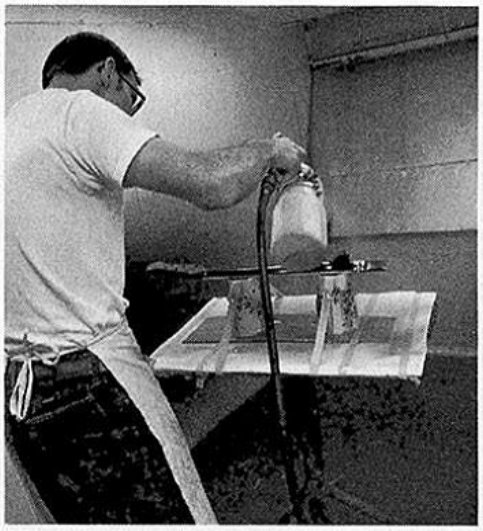
Once complete, the neck is mated to the body. The attachment is then inspected for gaps. Vertical angles are adjusted to determine the trueness of the guitar's action, while horizontal measurements insure that the neck runs parallel to the braces so the bridge will rest precisely in the top's center. If necessary, shims are placed in the joint for alignment. (right:) Binding bridges on Adamas. Pressure is applied periodically to the point of adhesion to squeeze out excess glue and to create a clean, airtight bond.

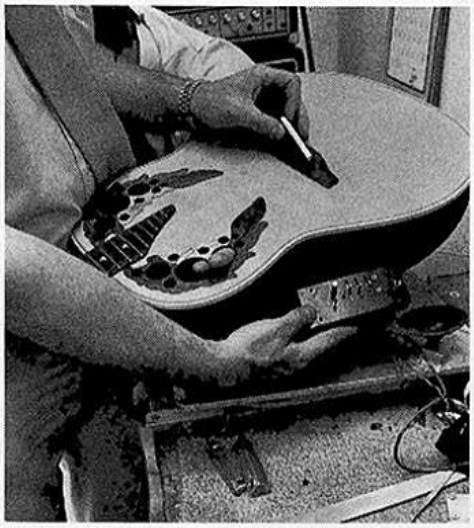


The Ovation logo proudly finds a home on the highly-crafted 1988 Collectors Series. Says Kaman, "The biggest thing we're working on now is cultivating ideas for *next* year's series."



When the body assembly nears completion, it is carefully buffed. Foreign build-up collected during assembly and other impurities of the production process are then removed.





Finish is applied to a neck. The artificial waterfall at back brings down the mist into a trough, where it's collected and then brought away as sludge. (right:) Towards the end of the building process, the frets are leveled, crowned and polished and the fingerboard is cleaned. The electronics are then installed and tested (shown here), the machine heads are put on and the guitar is strung.