www.musictrades.com

The Music Trades

OCTOBER 2004 PUBLISHED CONTINUOUSLY SINCE 1890

Ovation's Encore

How A Host Of Product Refinements Have Rekindled Growth At Kaman Music's Flagship Guitar Division

Imagination has always been one of the critical engines driving the music products industry. In the mid-'60s aerospace engineer Charles H. Kaman, who was also a guitarist, imagined that the principles of vibration that helped him design helicopters for his own aviation company could apply to making a superior guitar as well. Within two years he and a small team of fellow engineers and technicians developed a truly revolutionary guitar with a synthetic resin semi-parabolic back designed to focus the sound energy on the soundboard. They also fitted it with a piezo-electric transducer to create the world's first (and for about a decade, *only*) acoustic-electric guitar.

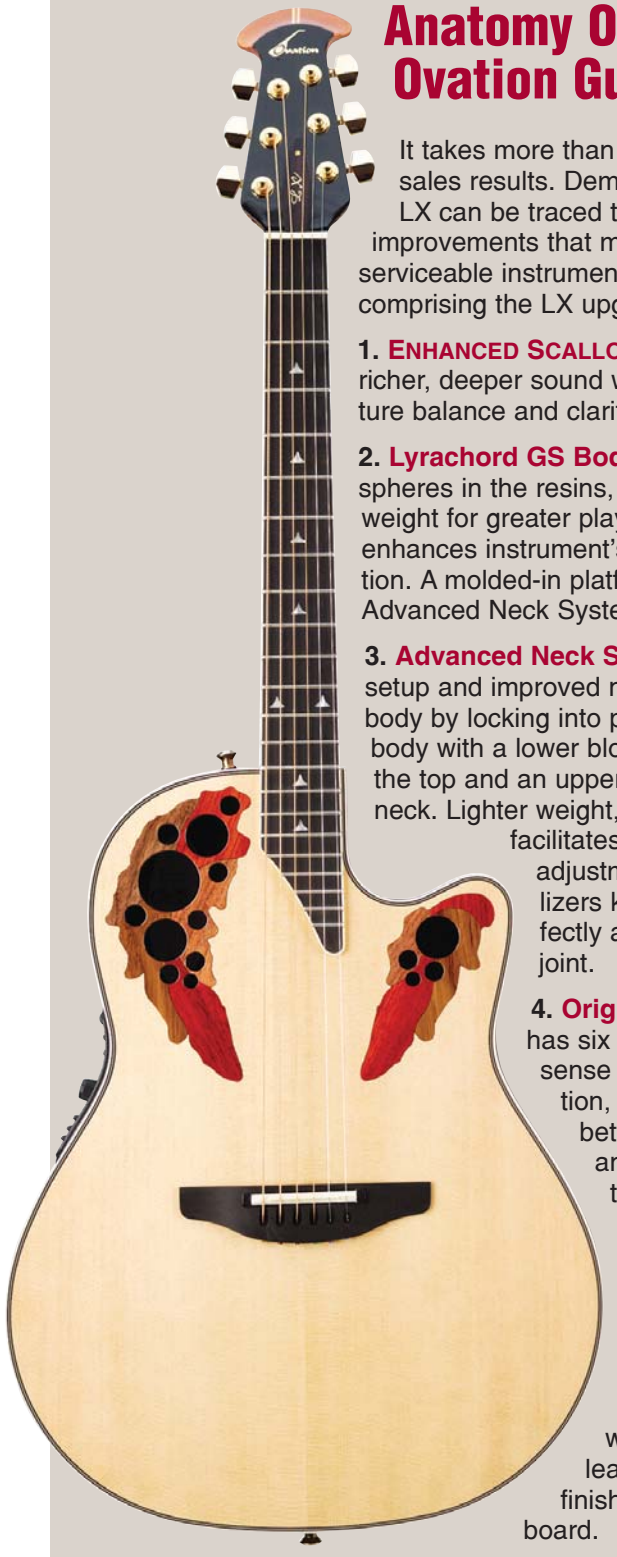


Rick Hall, product manager (left), and Frank Untermyer, vice-president and general manager, at Ovation's factory in New Hartford, CT.

REPRINTED, WITH PERMISSION, FROM THE OCTOBER 2004 ISSUE OF *THE MUSIC TRADES*

Later Kaman imagined—and brought to market—models with multiple small soundholes on the upper bout to reduce the weight of the top bracing without compromising its strength. Traditionalists were aghast at this roundback assault on convention. But the guitar's clarity, projection, tonal balance, and solution of perennial miking woes won the allegiance of a few players of such undisputed stature that the guitarist community's collective consciousness was soon expanded, and legions of fans followed.

Anatomy Of A Better Ovation Guitar



It takes more than hype to generate strong sales results. Demand for the new Ovation LX can be traced to a number of significant improvements that make it a more playable, serviceable instrument. Below, the changes comprising the LX upgrade package.

1. ENHANCED SCALLOPED BRACING produces richer, deeper sound while maintaining signature balance and clarity.

2. Lyrachord GS Body, with glass microspheres in the resins, is stronger and lighter in weight for greater playing comfort, and it enhances instrument's resonance and projection. A molded-in platform interfaces with new Advanced Neck System.

3. Advanced Neck System ensures a perfect setup and improved neck support over the body by locking into platform molded into the body with a lower block on the underside of the top and an upper block integrated into the neck. Lighter weight, dual-action truss rod facilitates precise, easy relief adjustments. Carbon fiber stabilizers keep the fingerboard perfectly aligned at the neck/body joint.

4. Original Patented Pickup has six separate elements that sense both string and top vibration, yielding true tone and better string-to-string balance, regardless of string type.

5. Op-Pro Preamp provides huge sound and tonal flexibility to suit any music and playing style.

6. Upgraded Aesthetics, with inlaid exotic wood leaf-shaped epaulets, gloss-finish neck, and ebony fingerboard.

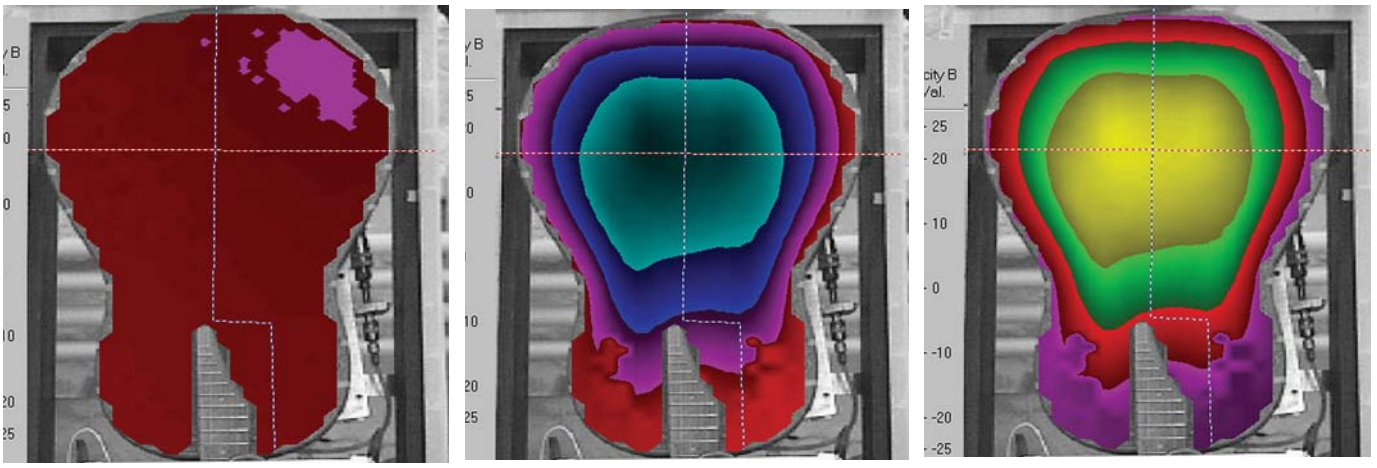
The instrument's unique design kept it alive through the anti-acoustic '80s and early '90s, and in recent years periodic refinements brought respectable sales. However, as with most "mature" products, the Ovation's glory days might have been wistfully resigned to history. But as of January 2004, with Kaman's unveiling of the LX upgrade package, the thirtysomething Ovation guitar is young again and turning heads like it hasn't done since it was seen on *The Glen Campbell Goodtime Hour* in 1969. The level of praise for the new LX models has been astounding to even the people who sweated for the past six years to make the series a reality. And its commercial success might surpass even what Charlie Kaman ever imagined. Six months after their debut the LX models account for more than 90 percent of the guitars being manufactured at Ovation's plant in New Hartford, Connecticut. More telling, the LX's overall boost to company sales has resulted in the factory being backordered by thousands of units.

Because Charlie Kaman was a guitarist, and because the Ovation was the Kaman Music division's inaugural product, the company has continually invested significant resources to ensure its success. In fact the six major improvements that comprise the LX upgrade package began as unrelated projects on separate completion tracks. But according to Ovation Product Manager Rick Hall, they all seemed to come together around the same time.

Available only as a package, the LX upgrades (see sidebar) address every aspect of the guitar, including playability, ergonomics, aesthetics, and sound quality. Echoing terminology from the automotive industry, the "LX" designation denotes "luxury." Hall explains, "The Standard Balladeer model has been around for Ovation's whole history. But for an extra $150, the customer can buy it with the LX upgrade package, so it's like getting the leather seats, the moon roof, and all the other goodies."

True to its founder's "when in doubt, experiment and explore" nature, Ovation's management took a totally different approach to launching the LX. "First," Hall says, "we sent out mailings and email blasts about LX to

Art & Science: Using Laser Technology To Design A Brace Pattern



OVATION'S R&D TEAM use a laser vibrometer to measure, analyze, and create graphic representations of the vibration patterns at thousands of points across the top of a guitar. These three still "snapshots" represent the continuous "pumping action" of a guitar top vibrating at 93hz, where negative numbers indicate the top in concave deflection, positive in convex.

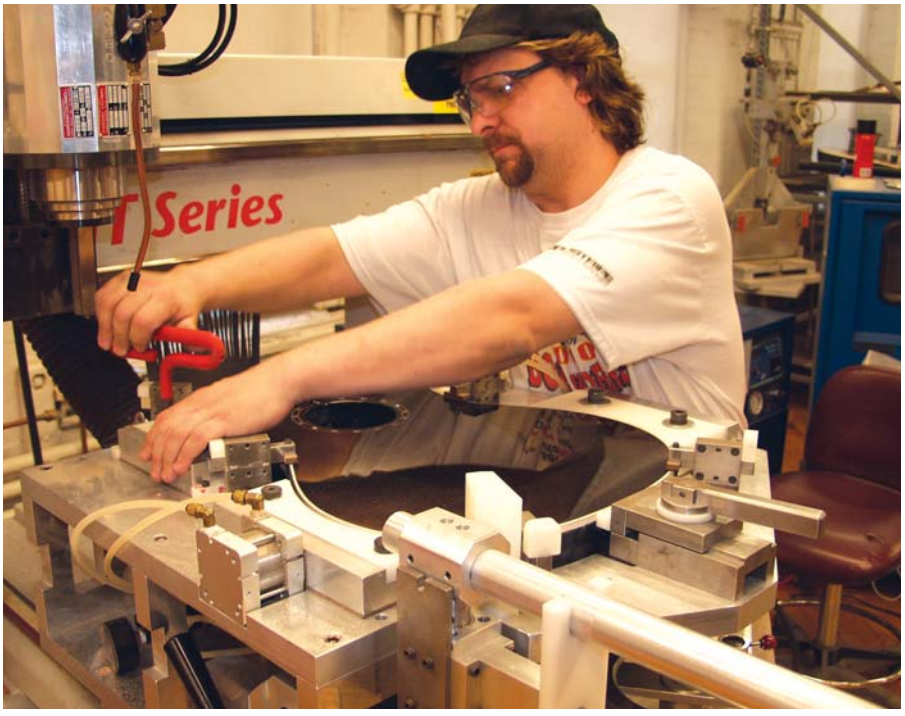
existing Ovation players. Our strategy was to excite everybody already in the Ovation Club and motivate them to go to their local music retailer to check it out. Secondarily we sought to get non-Ovation players to give it a listen with everything from increased dealer training and point-of-purchase merchandising to new brochures, email blasts, etc.; we basically threw the kitchen sink at the LX to make people pay attention."

At the same time, John Shand, who heads up Kaman Music's International Division, brought distributors from all over the world to tour the factory and see how the guitars are built. Even though Ovation has historically sold well overseas, the extra effort—and of course the new turbo-charged product—lit a fire under the company's export initiatives.

Given the scope of the LX improvements, the "kitchen sink" marketing strategy was appropriate—and it worked better than anyone anticipated. "In terms of its marketing success," comments Ovation Instruments Vice-President and General Manager Frank Untermyer, "the LX is Ovation's iPod."

Hall points out that pent-up demand may have contributed to the buying frenzy that the LX has inspired since its debut at NAMM earlier this year. "When we offered all the improvements in a single instrument, from people who'd been on the fence about buying their first Ovation to longtime Ovation fans who were waiting for the next great one, it's as if they were suddenly compelled to buy this guitar."

Notably, pent-up demand for "the next great" Ovation was fulfilled by upgrades that accentuate the sound Ovation was already known for. To understand the philosophy behind that sound, says Hall, you have to know a little about Charlie Kaman. "He played jazz. He didn't stick to the first two or three frets—what the country players call the 'money frets'; he played all over the fingerboard. His biggest complaint with guitars being built then was that their sound was unbalanced. They were voiced for those first few frets, with a fat but not especially clear low end and a bright, jangly high-end, as if



THE FINISHED TOP and bowl assembly is securely mounted into a custom-built fixture for three precise CNC operations: milling for neck angle, routing the lower neck support block, and routing the finish to accept the bridge.



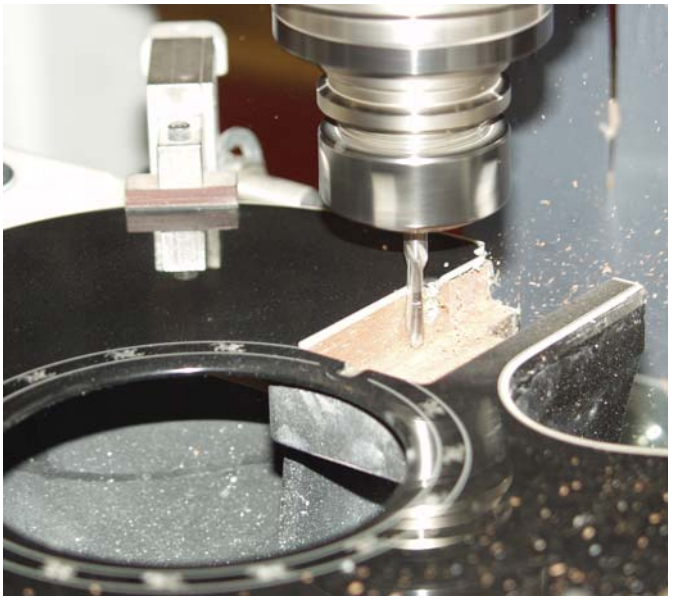
THE DUAL-ACTING TRUSS ROD is seated into the neck blank. A wooden spline is then bonded over the rod, ensuring a wood-to-wood bond with the fingerboard.

they had a smiley-face-shaped EQ. Having a guitar with that sound is okay, but it's like going to play golf with only one club."

Historically pop music, representing by far the bulk of the music products market, has rested squarely on those "money frets." But Hall and Untermyer suggest that acoustic music trends are changing. "Today's music scene is more diverse," says Untermyer. "Many players have different guitars to play different types of music. Starting with a balanced sound gives you much greater flexibility. Also, more musicians are experimenting with things like alternate tunings, which work great on Ovations precisely because their sound is so balanced.

"Decades ahead of this trend, instead of just copying what was already being done, Charlie Kaman chose to offer something really different that sounded the way he thought a guitar *should* sound. Now, with the LX series, we've really brought it to a height it never achieved before."

Ovation's R&D team spent years perfecting the bracing patterns to work optimally with the other LX modifications, including a better-supported neck and lighter-weight neck and body. To facilitate this complex, interdependent process, about five years ago the team "borrowed" one of the Kaman Aerospace Division's laser vibrometers, which it uses to measure and analyze vibrations in helicopters. Adapted to measure and study the vibrations on the top of the guitar, it creates graphic representations of the vibration patterns at thousands of points across the top of the instrument. "We can zoom in to the point that we can analyze a very tiny spot on the top of the guitar," explains Manager of Engineering and R&D Darren Wallace. "We can see, for example, when one part of the top is moving down while another one is moving up, which results in phase cancellations." The team used a variety of these graphic representations to indicate precisely where the top had to be stiffer and where it had to flex more. They also "mapped out" and cataloged the vibration patterns of the tops of many of the world's most respected and most popular guitars to create a baseline for the shaping and configuration of Ovation's redesigned bracing.



THE LOWER NECK SUPPORT BLOCK is routed to the proper dimension, depth, and angle and matches the top arch and neck angle *individually for every guitar*. The neck angle is then set to match the top arch.

Hall says of the laser vibrometer, "The final voicing and design decisions are always based upon what humans hear, but it's an advantage to take a technical, scientific approach that takes the guesswork and subjectivity out of the equation." Untermyer adds out that the laser vibrometer dramatically reduces R&D time. "It allows us to pinpoint both problem areas and optimal vibrations with one guitar by simply modifying the bracing rather than building one prototype after another."

As work on LX's Enhanced Scalloped Bracing progressed, Ovation R&D began developing a new preamp by consulting with two of its highest-profile artists: Al DiMeola and Melissa Etheridge. "Their styles are totally different," observes Hall, "and that worked in our favor: If we could make one preamp that would satisfy such a broad range, we'd have something very special.

The combined result of the LX's tone-related upgrades is a sound that is even more *more* balanced over the entire fingerboard—in short, more "Ovation," and more consonant with Charlie Kaman's ideal.

The LX's aesthetic improvements are aimed at reinforcing consumers' perception of Ovation's value by burnishing its brand identity and distinction between models. "Our imports have done very well over the years," Hall explains, "but outwardly many of their features look very similar to those on higher-end models. Appointments like gloss necks, ebony fingerboards, and inlaid epaulets put the LXs' aesthetics on a level that's appropriate for their premium quality sound. When you think about how rare and special it is to offer a U.S.-made guitar, we should highlight that distinction in their appearance."

Although Kaman produces some lower-level models in Asia, it continues to build many Ovations, including all LX models and the entire premium Adamas line, in New Hartford. The locale's tradition of fine hand-built furniture has all but succumbed to market forces redefining many U.S. industries, but it has helped Ovation build a highly skilled workforce. Since 1971 the operation has been housed in a three-story antebellum building, still regal with its original bell tower, that in previous generations served as a textile mill and a typewriter factory.

The factory's layout—not to mention competition with Asian manufacturers—demanded creative solutions to maximize the facility's efficiency. Untermyer says, "Ideally, a manufacturing facility this size would be on one floor, in a single building, but our production system has developed around the building and the space that we have. The workflow is extremely logical and efficient. We strive to make our guitar bodies and necks move together to maximize single-piece flow. We have very low work-in-process inventories and eliminate as much handling as possible."

As with its use of space, Ovation's use of its human resources contrasts assembly lines associated with some large manufacturers. "We've really benefited from our employees' high skill level," says Untermyer. "Rather than endlessly assembling a single part and passing it on to the next person doing another single function, so that one person's mistake quickly becomes another person's mistake, a person follows a guitar a lot further through the process. As we developed that approach we saw our quality improve dramatically. It's more interesting for the employees, it's better for them ergonomically because it eliminates repetitive motion stress, and it encourages a greater personal investment in the product."

Hall and Untermyer confess that as they walk through the factory they feel a bit bewildered by its many new faces, employees recently hired to meet the increased demand for Ovation's new LX series guitars. In general though, the factory workers have remained at Ovation for a long time, many for 15 or 20 years. Untermyer stresses, "We've embraced a lot of cutting edge technology, including a lot of CNC, but when it comes to putting a guitar together—carving and fitting the necks, installing the frets, setting it up, doing the inlays, and spraying the finishes—there are very capable human beings doing it all. For example, the wood's grain structure of every neck is a little different. It takes the human eye and touch to sand it perfectly; a machine can't do that. You see it in hand-carved necks and in inlays—"



RICK HALL SHOWS OFF LX'S new enhanced scalloped bracing pattern that is scientifically designed to optimize the sound of a roundback guitar.

"We use the real thing," Hall interjects, "not those ribbons of synthetic abalone or mother-of-pearl; we consider that 'cheating.'"

"—That amount of handwork surprises some people who assume that a roundback guitar made by a company with its roots in the aerospace industry doesn't just happen with the push of a button."

Together with a concerted effort at the management level, skilled employees who can perform a number of functions also afford Ovation with a much higher degree of production flexibility. In its early years, the factory produced many copies of a particular model before it set up for the next one. Now, thanks in part to changes instituted to manufacture the LX models, production is mixed with different models, one after another, throughout the day. "As a U.S. manufacturer competing against some other nations' labor-cost advantages," Untermyer stresses, "it's very important for us to have that flexibility to get different models to different customers, with special runs, short runs, and very short runs. If a U.S. manufacturer can't rise to those challenges, it can't survive."

In fact, retooling for the LX upgrades yielded numerous unforeseen benefits to both products and processes at the Ovation factory. For example, workers can create high, well-crowned frets, always a priority at Ovation, with a minimum of fret dressing because the new neck system yields much flatter,

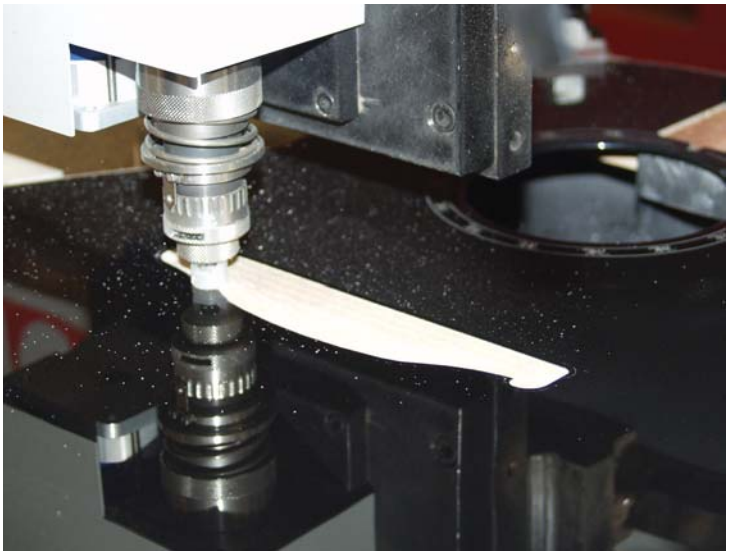


CNC TECHNOLOGY enhances the fine craftsmanship of highly skilled luthiers to ensure Ovation guitars' precise construction and exceptional playability.

truer necks. Similarly, to bond the system's wood and resin parts, Ovation worked with 3M to develop a new adhesive that reduced curing time from four hours to four *minutes*. Guided by a new mindset about manufacturing efficiencies, this allowed one production stage's minimum lot size of 28 guitars to shrink to a *maximum* lot size of just two guitars with no net production loss. Says Untermyer, "This approach allows us to turn over product much more quickly with minimal work in process, which in turn gives us greater flexibility to create exactly the models to fulfill specific orders. Lean manufacturing cut millions of dollars out of our work in process; it's hard to argue with the results when you have that money in the bank and not on the shop floor.

"There were a lot of goals in this," he continues. "The guitars' repairability, decreasing the waste of materials during manufacture—the manufacturing process is a lot 'greener' now—and better ergonomics at the employees' workstations." Unfortunately, the more efficient processes did not adapt to the non-LX Traditional models still being made in the same facility. This situation has further challenged Untermyer to optimize the factory's total operation while whittling down the large number of back-orders. "For U.S. manufacturers to compete," he says, "this is exactly the kind of thing we need to address."

Continuing to build Ovation's Traditional models despite the new production challenges is in part to support the company's dealers, who are still selling and servicing them. But the decision is more aimed at end-users, Hall explains. "Some of our customers belong to an Ovation fan club, and they know a lot about the history of the brand and its different models. They talk about treasuring their 1972 Balladeer or some other particular Ovation model. Those customers have a strong connection to those models, so we'll continue to make products for them. We're not going to abandon our roots."



A SPRING-LOADED ENGRAVING head follows the top arch, allowing a fine cutter to skim off the finish for bridge bonding. In the Ovation LX arched top system, all components are arched, including the inner ring, the underside of the braces, the bridge bonding surface, and the underside of the bridge.



THE UPPER NECK SUPPORT BLOCK is fit into the pocket of the lower neck support block, and the aluminum neck tenon is securely bolted to the bowl.

Though sounding confident about Ovation's place in the industry, Frank Untermyer returns to the theme of directing change in an increasingly larger, more competitive market. "Over the past few years the bar has been raised for acoustic guitar manufacturers," he says. "Even on lower-priced instruments, expectations are a lot higher for sound quality, finish quality, materials, and *every little thing*. To distinguish our products in that much-improved category, U.S. manufacturers have to really pull out all the stops to do *everything* better than we've ever done it. That attitude is reflected in the LX. We weren't just guessing about these changes. It was a company-wide effort, from R&D to Marketing, and [Kaman President] Bob Saunders was part of this project. We all wanted to make a difference for this brand since, as Charlie Kaman once said, 'Ovation brought Kaman Music to the dance.' And we did that with the LX—they play better, they sound better, they look better. But it's important to keep in mind that just because we've created something amazing in the LX doesn't mean we stop development. If Ovation is about anything, it's about change. Ovation redefined 'guitar' 40 years ago. We're not going to sit back and rest on our success."

"Even so," adds Hall, "you gotta love hitting the home run!"