

# The Music Trades

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## WHAT MAKES Consumers BUY?

New CEO At  
Guitar Center

Steinway Unveils

New research on how consumers view brands, retailers, and the whole buying process.

## Digital Pioneer Line 6

Having transformed the guitar amp market, the company set its sights on pro audio with a new line of digital wireless products

How School Guitar Is Expanding The Market

A Tribute To Django Reinhardt At His Centennial

# *A Beautiful Marriage Of Ancient And Advanced Technologies*

By using digital software to imitate the venerable vacuum tube, Line 6 redefined the amplifier market and created a thriving business. Now the company is aiming for a similar impact with a unique digital wireless technology.

**T**he Line 6 headquarters in Calabasas, California, is an interesting study in contrasts. The software engineering department that occupies much of the second floor of the 80,000-square foot facility is all high-tech. In dimly lit cubicles, digital engineers, who could be working for Apple or Intel, stare at large-screen terminals, writing algorithms and programming microprocessors. Yet just off the entrance lobby there is an expansive display of working tube amps that could pass for either a shrine to deceased amp pioneers or an awe-inspiring vintage shop. This simultaneous reverence for the venerable vacuum tube and appreciation of digital technology may seem a bit schizophrenic, but it has fueled one of the most significant industry success stories of the past decade. By using advanced signal processing technology to mimic the tube distortion that has defined contemporary music, Line 6 has reshaped the guitar market and built a formidable business in the process.

In 1967, when Jimi Hendrix cranked up his Marshall to “10” on the stage of the Monterey Pop Festival, his wonderfully distorted tone sent shockwaves throughout the industry. Before that fateful night, companies like Fender and Marshall regularly touted the “crystal clear tone,” “fidelity,” and “lack of distortion” of their amplifiers. Afterwards, they began scrambling to better understand and control distortion. They quickly discovered that, for a variety of technical reasons, tubes distorted in a sonically appealing way, while overdriven transistors produced an ear-jarring square-wave. That’s why you can still find guitar amps with vacuum tubes, even though every other consumer electronic product has long since moved to circuitry etched on bits of silicon.

The quest for a solid-state alternative to the vacuum tube began in the early ’70s with limited success. Solid-state amps were less expensive and easier to service, and they produced acceptable tones in a “clean” mode. However, the distortion never quite captured the feel and warmth



*Line 6 CEO Mike Muench and company co-founder Marcus Ryle with the new Variax guitars that combine modeling technology with instruments designed by James Tyler.*



of real tubes. Credit goes to Line 6 co-founders Marcus Ryle and Michel Doidic for developing a software-based system that has delivered the most realistic tube alternative yet. For some diehards, tubes are still the only source of true tone: Everything else is a lesser alternative. For a newer generation of guitarists, though, Line 6 software-based amps, with their broad palette of easily accessible tonal colors, aren't an alternative; they have become the real thing.

When Ryle and Doidic introduced their first amp at the 1996 NAMM show, they faced an immediate challenge: what to call their software-based product? For a solution, they coined the term "modeling amp," because it "modeled" the audio signal of classic tube amps. Since that 1996 debut, Line 6 has incorporated tube modeling technology in amps at every price point, as well as a broad range of effects processors, and even guitars. Line 6 products are now consistently among the industry's top sellers, but perhaps the best testament to the company's success is the fact that its approach to tone generation has been embraced by most of its competitors, and the "modeling" adjective is no longer necessary.

Summing up the product development strategy that guides Line 6 Ryle says, "You could say our overriding goal has been to make great tone simple." This concern with simplicity is reflected in the full line of Line 6 amps and effects. From the Spider series to the POD effects processor, every product is "guitarist friendly" with a straightforward interface that makes it easy to access a wide range of amp sounds. Retail sales people also appreciate the fact that Line 6 gear is among the easiest to explain and present. Unlike a lot of high-tech gear, it's so intuitive, just about anyone can make it work without having to read a dense instruction manual.

In the '60s and '70s, musicians discovered degrees of distortion through a trial and error process, often conducted in a drug-induced haze. By contrast, Line 6 engineers soberly approach distortion with a scientific method, clinical precision, and the latest in audio measuring tools. The first step towards re-creating classic tone is precisely quantifying it. That's where the extensive vintage amp collection comes in. On any given day at Line 6, a team of engineers is analyzing the audio characteristics of some vintage amp. They don't just sample the loudspeaker output, they quantify how the input jack, the point-to-point wiring, the potentiometers, the individual pre-amp and power tubes, and the loudspeaker all interact to shape the final audio output. These data points are distilled into thousands of lines of software code, and then subjected to a rigorous AB test against the original amps. Success is measured by how closely their digital code mimics the performance of the original tubes.

Getting the first 90% of the amp sound right comes relatively quickly. Getting the last 10% right takes an extraordinary amount of time. However, it's laboring over those final details that has generated Line 6's global market acceptance. Steve DeFuria, vice president of strategy and planning who formerly worked as a synthesist for Frank Zappa, says, "Zappa used

to call this working on sound 'tweezing.' We do a lot of 'tweezing' to get great tone, but ultimately that's why people buy our products."

Even though the classic amps don't change, Line 6 keeps updating its models because improved processing technology makes it possible to include more sonic detail. Ryle compares it to the evolution of digital camera technology. "Newer cameras produce sharper pictures because they can process more pixels," he says. "With faster processors, we can include more detail, so the amps play and feel more like the original." This library of fully 'tweezed' amp sounds provides the basis for the entire Line 6 line, including amps, effects, and plug-in software, like POD Farm, which can be used with a wide range of recording software programs. And now the last several years of modeling and technology evolution have just resulted in the launch of the POD HD series and DT50 amplifiers, the most tonally detailed modeling solutions Line 6 has ever produced.

Ironically, it originally took a pair of keyboard engineers to figure out how to distill guitar tone into software code. Marcus Ryle's father was a NASA engineer and entrepreneur, and his mother descended from a family of European musicians, and he fortunately inherited talents from both of them in equal measure.

After high school, he skipped college to work as a keyboardist in the Los Angeles studio scene. In between performing with artists such as Lee Ritenour and Christopher Cross, he honed his engineering skills at Oberheim, where with Michel Doidic he helped design the top-selling OB-8 synth. Oberheim lacked the resources to make

**Although the interface on the first Line 6 amp confused guitar players, they bought the amp anyway because the sound quality was so good.**

the transition from analog to digital, and began to struggle financially in the early '80s. Just before the company folded in 1985, Ryle and Doidic left and launched Fast Forward Designs, an engineering consulting business.

Fast Forward quickly landed work with a number of audio and music companies, including Dynacord and Digidesign. However, the company's most notable breakthroughs came after it teamed up with Alesis. Working closely with Alesis founder Keith Barr (see obituary on p. 143 of this issue) Ryle and Doidic helped develop more than 40 products including the top-selling Alesis HR-16 drum machine and the revolutionary ADAT digital multitrack recorder. Although the relationship was intellectually and financially rewarding, Ryle and Doidic were uncomfortable being so dependent on a single customer and began looking for opportunities to diversify.

In 1994, while scanning a copy of *The Music Trades Industry Census*, Ryle was struck by the comparatively large size of the guitar amp market, and had an inspiration: "Why not use digital signal processing to make a versatile guitar amp?" he wondered. Texas Instruments had just released a new \$10 chip with enough processing power to make the concept practical, and he and Doidic had ample experience with digital audio. The name Line 6 was coined to separate the fledgling amp project from their consulting business, and referred to the then-nonexistent sixth line of their phone system. "We didn't want design clients to know we were developing our own

# The Line 6 Digital Hit Parade

## Modeling Technology In A Variety Of Formats



The POD modeled a variety of amp and mic combinations, making it possible for guitarists to plug directly into a board or recording device and easily achieve great tone.

Line 6 revolutionized the amp market with the AxSys 212, the first amp to use digital signal processing to emulate tube distortion. Players loved the sounds but were luke-warm about the front panel that looked like it belonged on a synth.



The same modeling approach was used to create a line of effects processors that captured the performance of 50 years worth of classic pedals and effects.



Continual refinement has yielded the top-selling Spider family of amps that combine great sound with a guitarist-friendly interface.



Variac guitars are equipped with DSP that allows players to easily modify tunings and tone. With a single instrument, a player can mimic everything from a Strat to a sitar.



Digital wireless technology is the latest venture for Line 6. The new products promise exceptional fidelity and ease of operation. External interference is no longer a problem.

products, so we would refer to ‘Line 6’ when they were in the office,” recalls Ryle. “The name just stuck.”

The first Line 6 amp, the AxSys 212, was introduced at the 1996 Winter NAMM show. Designed by two keyboard engineers, it was hardly a guitarist-friendly product, with a front panel that looked like it came right off a synthesizer. Although the interface either confused or repelled players, they bought the amp anyway because the sound quality was so good. With several thousand firm orders in hand, Doidic and Ryle returned from the show, confident they had a real business. The royalty income from their previous products provided the funding to start a production line and hire more staff, but after several months they still struggled to keep up with the demand. To ramp up production as quickly as possible they secured venture capital funding in 1997 from Sutter Hill Partners, which had been an original investor in Digidesign. Along with the funding, they also recruited former high-ranking Apple executive Mike Muench, as CEO in 1998. Muench grew the sales, marketing, and production staffs to swiftly move the new products into the marketplace.

### TAKING AIM AT WIRELESS

1998 also saw the introduction of the Line 6 POD, a product arguably as significant as the AxSys 212. Incorporating models of various microphones as well as a battery of classic amps, the kidney-bean shaped POD made it possible to plug a guitar directly into a recording device without having to hassle with room acoustics, mic placement, or speaker cabinets. Originally designed for project studio use, the POD also gained popularity among live performers who wanted to plug directly into a mixing console. “The POD was successful because it took the mystery out of getting great sound,” says Ryle. “You didn’t have to know about what kind of mic to use or where to put it, you just plugged in and you were ready to go.” Thirteen years later the appeal of plugging in and playing right away remains strong, as reflected by continued sales of the POD. The POD was followed by a line

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of effects pedals that used modeling to capture 50 years of classic distortions, echos, and delays. Players, including The Edge of U2, have since used that vocabulary to create their own unique tonality.

Line 6 modeling technology was applied directly to the guitar with the introduction of the Variax acoustic and electric guitars. Modeling circuitry embedded in the guitars enabled players to instantly change tunings or model instruments ranging from a banjo to a Dobro. At the product unveiling at NAMM in 2002, an audience watched in disbelief as a demonstrator conjured credible sitar, slide guitar, and humbucker tones from a conventional looking thin line electric. This year, the Variax technology is being offered in a completely new line of guitars developed by luthier James Tyler. "The Variax technology was always great, but the guitar we put it in wasn't as inspiring as it should have been," states Ryle. "With the James Tyler designed guitars, it makes for a much more appealing package."

Having revolutionized amps, Line 6 is now setting its sights on the far larger pro-audio business. Two years ago, the company quietly acquired X2, a pio-

neering manufacturer of digital wireless systems. The initial appeal of X2 was its success in creating a digital wireless system for guitar, but an expanded engineering team has since applied the digital technology to create a full line of vocal wireless systems marketed under the Line 6 brand.

#### KEEPING IT SIMPLE

Just as Line 6 used digital technology to simplify guitar tone, Ryle contends it's poised to do the same thing with wireless microphones. "To successfully use analog RF wireless today, you need a lot of expertise in setting frequencies to avoid audible interference with local TV stations and other radio sources," he explains. "With a digital system, interference isn't a problem because each signal has a specific address. It works like WiFi in an airport where lots of people can download email simultaneously, but no one gets each other's mail. There's no interference and anyone can make the system work flawlessly in any setting." Ryle also says that tighter Federal Communications Commission limits on the spectrum available for analog RF wireless systems will make Line 6 digital even more appealing. "Analog

RF will only get harder," he says. Muench adds, "This aspect of our business has tremendous potential."

The fact that venture capital firms have invested in Line 6 gives rise to the question of "what next?" Is there a public stock offering in the works, or a possible sale or merger? Ryle and Muench concede that anything is possible, just not in the immediate future. With sales just shy of \$100 million and solid profits, they say that there is no urgency to act now, and that their investors are patient. Muench explains, "Len Baker, a lead investor and a member of our board, is concerned with building a solid business, not generating transactions on an arbitrary timetable. This gives us the latitude to explore a lot of potential opportunities." Ryle interprets this latitude as an extremely broad mandate to explore new potential markets. "Our function is to use technology to create inspirational tools for musicians," he says. "We are not going to be pigeon-holed as a guitar company or a wireless company. We can go just about anywhere and there are a lot of interesting opportunities out there."

[www.line6.com](http://www.line6.com)