

## Pioneering Self-Powered Loudspeakers for Over 11 Years



*Norah Jones Tour; Red Rocks Amphitheatre, Colo.*

In the 1970s, the whole idea of high-level sound reinforcement was still nascent, and the few sound companies that existed were figuring things out as they went along, relying primarily on their experience and building most of their own equipment, especially mixing consoles and loudspeakers. Operation of equipment was haphazard, with many sound crews having no understanding of how to choose appropriate combinations of amplifiers and speakers, or make all of the proper electronic settings involved in configuring the system. There was also a notion that different kinds of music called for different components and setups. Reliability was only a dream, which meant that many shows were interrupted or ended prematurely by failure of the sound system.

San Francisco-based McCune Sound Service (now McCune Audio/Video/Lighting) was one of the sound companies braving the new world of high-level sound reinforcement. McCune had heard a unique loudspeaker system, called the Glyph, at a local club and quickly hired its designer, John Meyer, to design better loudspeaker systems for them.

From his position at McCune, Meyer could see that no one was being well-served by the situation: the variability of the equipment was a logistical nightmare for the sound company, and the unreliability meant that audiences were denied the full show they came to see, while the sound company figuratively pulled its hair out just trying to stay functional all the way to the end of the show.

While each sound company searched for its own way to take sound reinforcement through its growing pains, Meyer had a vision that the key to bringing the field to maturity was in introducing consistency in the tools and their use. A truly good loudspeaker system should be capable of reproducing any kind of music, and with the same setup. If there was a single group of optimal settings for the components of a given system, why should system operators ever need to deal with making them? Why couldn't they be set up properly once at the shop and then left alone? The idea made sense to McCune, which was supplying sound systems for everyone

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from Creedence Clearwater Revival to Herb Alpert to the Boy Scouts of America.

This one idea led to self-powered loudspeakers as we know them today, but achieving usable self-powered loudspeakers proved decidedly easier said than done. Like line array technology, the idea of self-powered loudspeakers had been invented years before, but, again like line arrays, it had never had a realization practical enough to attract attention from those fighting the sound system wars. In fact, the first attempts at self-powered loudspeakers had garnered a bad reputation for unreliability. The path to self-powered systems turned out to be littered with issues — technical, functional, and even attitudinal. Convinced that self-powered systems were the solution to numerous problems, Meyer was undaunted by any of this.

Meyer set to work and came up with the JM3 (named by McCune for Meyer), a three-way, tri-amped system that enclosed the power amplifiers and all of the electronics associated with the loudspeakers in an equipment rack with no controls beyond an on/off switch, the settings having all been calibrated at the shop.

Even at this stage, Meyer recognized there were numerous features beyond the amplifiers and crossovers that needed to be implemented to make a practical self-powered system. He started by adding limiters to make it harder to blow up the loudspeakers with too much power.

Meyer gleaned a great deal of information about areas of loudspeaker design that needed improvement from the experience of building the system and watching it in use. He then proceeded to tackle each problem from the standpoint of its underlying fundamental cause, in the process establishing many of the basic principles Meyer Sound operates from today.

By 1979, Meyer was ready to start another loudspeaker company (Glyph having been his first). Times were changing and the growth of touring was bringing about the birth of companies devoted to manufacturing equipment for the industry, reducing the need for sound companies to design and build it themselves. John and Helen Meyer's formation of Meyer Sound was a classic example of this shift.

At the very beginning, Meyer Sound manufactured the ACD studio monitor, a design that came from the year and a half Meyer spent researching at the Institute for Advanced Musical Studies in Switzerland. The ACD was a self-powered system, with a rack that contained its amplifier and dedicated signal processing, all of the settings for which were factory-calibrated. However, within a year, Meyer Sound moved into manufacturing sound reinforcement loudspeakers with dedicated outboard processing (a highly controversial move at its introduction), but not amplifiers.

With his own company, however, Meyer was no longer in the controlled environment of McCune, where he could configure a system and direct how it would be used. Now, he had customers all over the world using his products, all with their own opinions on how to put together a sound system. He could make all the recommendations he wanted, but the decisions

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*A 1970s-era John Meyer-designed McCune JM10 system in use with the Grateful Dead in San Francisco.*

were not within his control: people were going to do whatever they wanted in the way of amplifiers, gain structuring, and other critical parameters.

Even with Meyer supplying more linear and reliable loudspeakers, people still didn't understand how to choose appropriate amplifiers for them. Meyer put sense lines in the processor to monitor the actual output of the amplifier, but the connections were often made incorrectly or not at all, undermining the system. Further, amplifiers were getting more powerful and many people had a "more is better" attitude, especially amplifier manufacturers, who started trying to convince users to buy different amplifiers than Meyer Sound was recommending for their loudspeakers.

"A lot of people thought that the higher an amplifier's power supply rail voltages were, the better," says Meyer, "but someone who thinks that has no idea that this amplifier is not driving a resistor; it is driving something that has force and energy. Every volt you put into a speaker creates acceleration, so there's a limit to what you can do before things break. One peak of very high voltage can break things because you get a lot of peak acceleration. It's like dropping a glass on a table: when you get to a certain point it shatters. It just takes a moment."

It was frustrating. Meyer Sound even built and sold its own amplifier, but was unable to overcome the ingrained brand preferences held by many in the industry. Through the '80s, as the new sound reinforcement equipment industry matured, the problem persisted, stymieing Meyer's attempts to attain greater linearity, consistency, and reliability in sound reinforcement systems.

Still convinced of the rightness of self-powering, in 1990 Meyer delivered the HD-1 high-definition studio monitor, a fully self-contained, self-powered system originally developed as an in-house test source. As the HD-1 established itself, self-powering caught on quickly in studio monitoring, where relatively low power demands made weight and heat less pressing issues than in sound reinforcement.

Meyer made the UPL-2, a sound reinforcement version of the self-powered HD-2 mid-field studio monitor that followed the HD-1, but it was still a comparatively low-power system.

By the mid-'90s, Meyer had had enough of the hassles of unpowered systems. The time had come to confront the problem once and for all. "It just became clear we had to resolve the issue," recalls Meyer, "so I said, 'Let's take a year and really repackage the whole electronics system, but this time, let's put it in the speaker.'"

It took a year to develop an amplifier to put inside the new, self-powered product, but once the technical challenge was solved Meyer faced the even more considerable hurdle of changing the industry's mindset. Putting the electronics in the cabinet

was a paradigm shift that made many in the industry uneasy, especially given that rigging sound systems was a standard method by then.

"We hired an ad agency to research how people felt about powered speakers for sound reinforcement, and they came back after a survey and said that nobody wanted them," Meyer recounts. "There were a variety of reasons for this. One is that customers felt that if they had the whole system up in the air, it



*The HD-1, released in 1990, started the trend towards self-powered studio monitors.*

would be more difficult to service. If it broke, they'd have to bring it down. They wouldn't know when they were using it what the status of each loudspeaker was, so they wouldn't even know if it was broken or not without going to a lot of trouble. The way it was, they had their amplifiers on stage and could see the meters. So we started thinking how we could address these issues."

The result was ease-of-use and reliability efforts like Intelligent AC™, which enables a loudspeaker to automatically adjust to a wide range of incoming line voltage, parts manufactured with such consistency they can be replaced in the field without requiring alignment, and the RMS™ remote monitoring system to allow real-time monitoring of the operating status of each loudspeaker.

There were other important benefits of integrating the amplifiers and electronics into the cabinet, too. "One of the nice things about the powered stuff is that we could work out the grounding, eliminate hums and buzzes, and make the thing quiet, rather than have users fighting hums and buzzes at the show. People started to recognize this was really a savings."

What's more, signal degradation from long loudspeaker cable runs was also banished, since the speaker cable run in a self-powered system is a matter of inches long.

By late 1994, Meyer Sound was ready to release the MSL-4, the first self-powered, high-level sound reinforcement loudspeaker. At first, some sound companies and system designers were hesitant about this new idea. After all, Meyer Sound was packing 1240 watts of power into each loudspeaker cabinet. (Today, self-

*The MSL-4,  
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system.*



powered Meyer Sound systems contain up to nearly 5000 watts of power.) But within a year, the MSL-4 had proven itself and the 10 or 20 percent of sales that the company had expected self-powered products to constitute was already looking like an underestimate.

Touring productions realized that the logistical advantages of self-powered systems went beyond easy setup. "People like Cirque du Soleil realized that it's a lot more efficient to run three-phase power to a cluster of speakers than it is to have an amplifier on the ground and run speaker cable," Meyer recalls. "The whole power cable can be like an inch in diameter, where the speaker bundle is more like six inches in diameter. Right away, just the weight, mass, and cost of copper is horrendous (with unpowered loudspeakers), especially if weight means anything to you. In traveling shows, every pound you carry with you costs you money." Meyer Sound set about converting its entire line of loudspeakers to be self-powered.

The industry took notice, and competition was...absent. For the first five years or so that Meyer Sound produced self-powered systems, it would have been difficult to find any other self-powered products intended for sound reinforcement, though the studio market was quickly filling with them. Other companies shied away, perhaps because of how difficult the idea was to actually implement. To do so, a company had to contend with the issues mentioned above, plus obvious issues of heat and weight, and less obvious ones like differences in governmental regulations around the world concerning

powered and unpowered products. Meyer Sound forged ahead, converting products to be self-powered, one by one, and learning more about the technology as it did so.

Over the 11 years that Meyer Sound has been making self-powered systems, the industry has come to understand and accept the advantages of the idea. The most obvious sign of this is the slow appearance of self-powered products from other manufacturers; slow because they are just now grappling with all of the thorny issues Meyer Sound successfully solved in the mid-'90s.

With the spring 2006 release of the M'elodie™ ultracompact high-power curvilinear array loudspeaker, Meyer Sound offers about 40 models of self-powered sound reinforcement loudspeakers, and only one unpowered product. The concept of self-powered systems has been globally accepted, with Meyer Sound systems used on tours from Slipknot and The White Stripes to Diana Krall and The Three Tenors, in performance venues from Carnegie Hall to the Sydney Opera House, and in top theatrical productions on Broadway, in London's West End, and in the hotels of Las Vegas. In more recent years, self-powered systems from Meyer Sound have been filling houses



*M'elodie  
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of worship from the American South to ashrams in India. In fact, Meyer Sound systems show up everywhere groups of people assemble, from political rallies to stadiums, and cruise ships to the Kremlin.

Each successive generation of self-powered loudspeaker exhibits the kind of refinements and performance improvements that can only be attained once a company is long past laying basic issues to rest. In the area of self-powered loudspeakers, no one can contest that Meyer Sound is the voice of experience.



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