

Europe

Behind the wheel

Growth and product development are keys to success in the ultra-competitive world of driver manufacturing, writes **Erica Basnicki**

It's a funny thing trying to talk about the future of loudspeaker transducers and compression drivers with the people responsible for making them.

For starters, it is a small, and fiercely competitive sector of pro-audio. Depending on who you ask, there are roughly half a dozen companies out there able to compete in the big league – certainly no more than 10 – and they are all jousting for the same customers. There's also a lot of money involved... but no one wants to talk figures.

The majority of manufacturers supply drivers under non-disclosure agreements (NDAs), so talk about sales and partnerships – with very few exceptions (see box out) – is nigh impossible. In a similar vein, press releases are few and far between. The PA manufacturers are the ones taking all the glory for the components inside their boxes. Driver manufacturers are the wallflowers at that party.

Getting a glimpse into what the future may hold for driver technology is a closely guarded secret. Talking about what's important right now is only slightly less so, but several themes did emerge from chats with several companies at the recent Prolight + Sound event in Frankfurt.

The more you know, the more you grow

In the last few years, Eighteen Sound has made several moves towards growth on a global level. In October 2014, Pierpaolo Marziani was appointed as the new CEO, bringing with him extensive experience in business development. The company added to its global sales force through the appointment of Davwinder Sheera as director of sales for the Middle East, Asia and the Pacific Rim, and Jeffrey Cox as director of sales for North America.

"Growth is important in this global business, and expanding our client base has two vectors: geographic and market," explains Cox. "Eighteen Sound has been available through distributors and relationships in a great portion of the world, but there are new clients and customers becoming available every day throughout the globe. Our recent expansion throughout Asia and our new growth initiatives in North America are opening doors and pathways that we had not explored in the past. Secondly, we are expanding into market shares of the audio industry that welcome the high level of quality and performance that Eighteen Sound provides as their product designs and customer expectations elevate."



Beyma's Jorge Serrano aims to "develop more efficient and powerful neodymium magnet drivers"



FaitalPRO's Flavio Naggi (left) with Arao/DEM sales manager Andrew Richardson

Elsewhere in Italy, FaitalPRO is equally keen to expand its operations: "We're still experiencing strong growth, but we see an evolution that is teaching us that growth needs to come from different places from when we started," says Flavio Naggi, pro-audio division manager of FaitalPRO. Faital has been in the business of making transducers for over 50 years, and in 2004, with experience on its side, expanded its operations into the pro-audio sector, creating a new division, FaitalPRO. Ten years on, and Naggi is ready to take that division to a new level.

"When we started, no one knew us, but everyone needed compression drivers and woofers and pro-audio drivers in general, and any opportunity was good. Now that we have developed a very extensive line-up and have good distribution partners all over the world for commercial products, we have shifted our focus heavily into more OEM approaches and opportunities."

For FaitalPRO, that means fewer developments each year, but ones that are "very focussed and very advanced. We pay a lot more attention to materials, geometries and mechanical assemblies to try and refine our technologies [rather than] learning how to apply them, like we did in the beginning," says Naggi.

Model four times, build once

Paying attention to those details prompted a cooperative investment between FaitalPRO and the University of Ancona in Italy. Together, they are working on a piece of software that uses specific features of COMSOL's Multiphysics finite element analysis tool to "help in the design of the vital components of compression drivers – diaphragm and faceplug – and in their coupling. This tool is a novelty because it requires a lot of engineering

capability and knowledge, but it needs to be translated into something that computers can actually work with, so there was a lot of interaction between a lot of different sciences. It was great fun, especially for the R&D guys," laughs Naggi.

The compact design of drivers and their multiple parts working together over very small ranges of motion have seen many companies look to modelling for rapid prototypes and more consistency in the final product. At Celestion, marketing manager John Paice believes the company has "a jump on most of the other speaker builders because we model electrically, acoustically, mechanically and vibrationally. I think we're the only company that does all four, and that just gives us a little bit of extra accuracy, so we need fewer iterations to get to the point where we want to be."

As Paice explains, Celestion has applied that technology to standard conventional magnet assemblies and reduced them in size and weight, with a specific focus on taking coaxial driver technology further: "Rather than just having a low frequency driver with a high frequency driver stuck on the back of it, we've integrated the two motors. What you get is one magnet structure driving both low and high frequency at the same time. We gain in terms of weight, size and cost."

Size. Weight. Cost. A trifecta of reduction that system manufacturers are demanding more than ever.

The result, explains Jorge Serrano, director of R&D at Beyma, is to use these modelling techniques and other research in an effort "to develop more efficient and powerful neodymium magnet drivers, which are lighter, smaller and delivering higher SPL output. Line array application is a clear explanation to many of

the products in a transducer manufacturer portfolio. Also the compact boxes and columns have caused the development of smaller woofers, full range drivers and compact point-source coaxial drivers, which some years ago were not so common."

Ron Tizzard, director of sales at B&C Speakers, puts it more bluntly: "In the high-frequency driver side, [size] to me is the most important thing. Not materials."

Living in a material world

Does Tizzard deny there is a focus on materials? Absolutely not. "There's two buzz phrases being used nowadays: one is 'treated diaphragms', or they're made out of different materials like beryllium which is a harder material, very light, so diaphragms can be made thin and hard, adding to efficiency," he explains.

"The reality is it depends on the process you've used to form your diaphragm. B&C has been using some unique methods since the 1990s to make diaphragms that are lighter and harder just by the way that we form them. When we look at these alternatives of treated diaphragms or special materials, there's just not as much benefit for us."

Other manufacturers such as Eighteen Sound have more enthusiasm for advances in driver material. Although coy about where their research is taking them, the company is certainly pleased with the success they've had so far: "High-frequency compression driver diaphragm materials such as beryllium and coating techniques are yielding fantastic results in HF resolution and extension," explains Jeffrey Cox.

"We are experimenting with new materials that can deliver performance beyond expectations and deliver greater acoustic output throughout the product



Celestion's John Price: "We model electrical, acoustically, mechanically and vibrationally"



Ren Tizzard (left) and Alessandro Pancani of B-C Speakers

ranges: deeper low frequency output in our LF woofers, extended HF range in our compression drivers, with unparalleled accuracy. Refinements in cone pulp, surround design and composition are explored constantly.

With the 'neodymium crisis' still in mind (whereby the magnetic material rocketed in price from mid-2009 to mid-2011, before dropping back and levelling off, Beyma has taken a different approach, developing two temperature-regulating technologies – Helicex and Maltcross – that increase power handling while simultaneously decreasing the losses in SPL due to power compression, for an overall power increase in the system.

"In fact Maltcross has been also applied to some products in order to offer solutions to system manufacturers at a critical moment when rare earth prices rose above 200 per cent," explains Serrano. "During that time, applications where neodymium drivers were the perfect choice, because of the weight benefit, became completely uncompetitive. Our answer to this was to develop lighter ferrite magnet speakers, the MCS500 family, with the performance and characteristics of the neodymium drivers."

Quiet confidence

Despite the shroud of secrecy surrounding the future of driver technology, there is comfort to be had in the optimism exuded by manufacturers. New materials, whatever they may be, hold promise. New markets, whatever they are, encourage growth and expansion. Tiny increments of improvement are creating huge advances in sound quality. If there's a big breakthrough on the horizon we won't know until it arrives. But hey, why spoil the surprise? ■

www.bcspeakers.com
www.beyma.com
www.celestion.com
www.eighteensound.it
www.fatalpro.com

AN OPEN RELATIONSHIP

Not all loudspeaker manufacturers are shy about what goes into their boxes. UK-based Flipside is more than happy to share how it benefits from an ongoing relationship with fellow British company Precision Devices (PD), one that began in early 2014.

"At that point we had been using some extremely competent designs from large European driver manufacturers but kept hitting brick walls with product development," explains James Cooper, managing director of Flipside.

"There's not always a good off-the-shelf model around for whatever frequency or enclosure application we're working on. I guess this is due to the level of compromises that have to be made to deliver a crowd-pleaser of a driver as far as the market is concerned. We see every stage of design work, no matter how technical, as a creative process at its heart. It's easy enough to work by numbers and look to achieve technically great products but if they don't sound good we don't want to put our name to them. Working with Precision Devices has enabled us to extend this somewhat artistic approach right down to the component level."



James Cooper (left) and Michael Layton of Flipside

The PD relationship has also enabled Flipside to overcome the significant hurdle of minimum order quantities in the thousands, "which just makes this sort of organic development impossible," adds Cooper. "Precision Devices were the only people who had everything we were looking for: great drivers, uncompromising build quality, a good sonic aesthetic and the ability to work together on low-quantity OEM. On top of that they enjoy doing it and it shows. I look forward to getting a call or a visit from the guys saying, 'Have a play with this driver we've been working on.'"

To date, the whole of Flipside's FS-xx range, as well as the majority of the larger format FS-xxx range, is loaded with Precision Devices drivers.

"To me the crowning achievement of our partnership is our FS-8.1 fibre glass mid/high loudspeaker. It's a 1" CD above an 8" mid driver. It's the 8" mid that I love the most, and it took us a while to get there with the design. I seriously doubt if we could ever have got to this point with anyone other than Precision Devices."

www.flipside-soundsystem.co.uk
www.precision-devices.com