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A great disturbance by M-Force

Jon Chapple finds out how Powersoft is gaining traction throughout the pro-audio galaxy with its 'paradigm-shifting' M-Force transducer technology. These are the components you're looking for...

The announcement at Prolight + Sound 2013 of Powersoft's M-Force transducer marked a major change of direction for a company hitherto known for its amplifiers and modules. Characterised by a moving magnet and 'push-pull' behaviour, the application of positive and negative electromagnetic fields allows for the M-Force motor to oscillate at an "unprecedented level", says the Tuscan company, marking a "true paradigm shift from the old, fashionable coil and cone".

Two years on, with its inclusion in speaker systems by two major manufacturers and countless bespoke enclosures, it looks increasingly as though the industry at large is inclined to agree.

"It was a 'Eureka moment' when we imagined something not axisymmetric but 'planar' in its magnetic design," explains Powersoft co-founder Claudio Lastrucci, recalling M-Force's genesis. "However, the idea for a new transducer technology came from our knowledge of switch-mode amplifiers and their native properties, and the desire to fully exploit the real benefits of their native energy recycling capabilities. No switch-mode amplifier, no M-Force..."

Lastrucci says it became clear to him that Powersoft's research into what would become M-Force, begun in 2008, could result in a new product for OEM applications "as soon the results from the initial prototypes provided some effective performances. We [then] started to pursue a process of optimisation and engineering that led to a finished product. Since our goal, as Powersoft, is not to be a speaker manufacturer but a supplier of components for their products, this was natural: in line with the company's vision."

Super Mario

M-Force's first outing was at the last year's Grammy Awards, where ATK Audiotek, of Valencia, California – production sound provider for the awards' television

broadcast since 2000 – augmented its audience PA with a prototype sub-bass system featuring the transducer technology, developed with ATK by Italian loudspeaker design consultant Mario Di Cola.

The ATK set-up, which has also been used as the audience PA system for the US version of The X Factor, incorporates into each cabinet an M-Force motor with a 30" polypropylene cone, and is driven by a single Powersoft K10 class-D amplifier generating 9,000W.

Scott Harmala, ATK Audiotek's CTO and vice-president of engineering, reveals that the company has implemented M-Force in a short-transmission-line cabinet design: "The design does load the cone but it doesn't have the characteristics of a bass-reflex ported enclosure, where you have a fairly reactive port resonance."

"Because the M-Force motor has so much travel and its cone has so much surface area, this design allows it to create a tremendous amount of SPL at very low frequencies and still be within its operating parameters," he continues. "The motor's strength is somewhere in the order of 50 to 60 times greater than even the best 18" driver on the market. At 25Hz it has 8dB more output than two of our double-18" subwoofer boxes."

Flying colors

Finnish manufacturer Aura Audio, which uses M-Force technology in its XD30 subwoofer, first encountered the technology at its PL+S 2013 launch. "We started working with it immediately, so that by Frankfurt this year we were able to present our own M-Force product, the XD30 subwoofers," says its managing director, Mika Isotalo.

In July, hire company AMJ Turku Audio equipped both the main and second stages at the Colors dance festival at Kaapelitehdas, Helsinki, with an Aura sound reinforcement



MAYBE THE INDUSTRY IS BEGINNING TO TRUST THAT WE CAN MAKE CRAZY IDEAS REAL

**CLAUDIO LASTRUCCI,
POWERSOFT**



system comprising the XD30 plus Powersoft X8-powered A2 line arrays.

"As a loudspeaker manufacturer focusing on acoustics and new loading techniques, we already had a new patented enclosure design which we had been using with different cone drivers for several years," explains Isotalo. "When we saw M-Force, we immediately thought it would be good for more compressed loading because of that huge motor strength."

"A single XD30 is able to produce more than 150dB peak SPL in floor, and we used four of those in a two by two end-fire configuration, so we were hitting average of 140dBs at 10m. Low frequency cut-off is around 30Hz, but it does go lower than that if necessary."

The Aura system has this year also been heard



Clever little motor: M-Force up close

THE FUTURE'S BRIGHT

Sub-bass for Italian hip-hop artist Caparezza's 2015 tour, which garnered a 2015 Pro Sound Awards nomination for best tour/production sound, came courtesy of four bespoke M-Sub enclosures built by Mario Di Cola's Audio Labs Systems.

Caparezza's FOH engineer, Antonio Porcelli, describes himself as being "blown away" when he first heard the M-Force-equipped subs: "The sound of the MSub was faster and deeper, and the shocking thing is that it had no distortion compared to traditional systems.

"I realised that I was *in the future*: I was at the forefront of what I consider a turning point in sound systems comparable to that of the line array."

at DBTL Festival in Turku, Raumarock Festival in Rauma and Helsinki Pride.

"The reaction from pretty much everyone has been one of positive surprise," says Isotalo. "They have all been impressed by the size to SPL, fast transient response and effortless infra-bass."

Joining the club

It's not just events companies which are well served by M-Force: The world's largest-ever subwoofer club installation, at the Avalon Hollywood nightclub in Los Angeles, features a giant 40" Powersoft cone in each of its EAW-built speaker cabinets – something made possible by M-Force, which enabled increased air movement, faster response time and zero power compression, says club owner John Lyons.

Lyons, also president of club sound/lighting designer John Lyons Systems, completed his 'Avalon by EAW CLUB. one' sound system – dubbed the 'Bugatti of club sound' – last February. The club, named one of the 10 best in the world by Resident Advisor, can now boast an even "louder, cleaner and clearer" sound that was previously impossible to produce, particularly in the lower frequency ranges," says Lyons, "and "earth-crushing sub-bass".

M-Force has also found its way into the Sound Force series of club systems

by DAS Audio, announced in May, making the Spanish speaker manufacturer the second (after Aura) to build a system around an M-Force transducer. The Sound Force range comprises the SF-112, a mid-high three-way cabinet; the SF-215, a bass system comprising two 15" DAS speakers; and a double-21" sub.

"With M-Force it was exciting to see the reaction when we started to talk about this new technology [to manufacturers], says Lastrucci, "and above all, getting them listening to it and playing with the first samples. We know well that new technologies take a very long time to be accepted in our industry – it has happened so many times to us – but it sounds like this time the word is spreading faster. Maybe the industry is beginning to trust [us when we say] we can make crazy ideas real."

Aura Audio's Mika Isotalo expects to see M-Force-equipped speakers becoming increasingly common in club installs, both in Finland and beyond: "We expect to see some new ones using M-Force in the future. [...] [It] opens up new ways to make high-power subwoofers and, coupled with DPC and the endless power capabilities of Powersoft amps, we're able to make a new reference for high-end subwoofers in both SPL dynamics and sound reproduction accuracy." ■

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The Aura Audio XD30/A2 system at Colors festival in Helsinki

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