VERO®

SLS Sound Light Spain

THE NEXT LEVEL OF TOUR SOUND

Vero is a large format touring sound system, which has been engineered for new levels of audio and operational performance

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Introduction >

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Vero is a large format touring sound system, which has been engineered for new levels of audio and operational performance. It has been designed, developed and perfected over the last six years by some of the most knowledgeable and experienced audio experts in the world.

Vero is a complete system, featuring loudspeakers, amplification, cabling, rigging, software and transportation hardware. Vero's feature set and ergonomic design ensure that the user experience is straightforward, efficient and delivers outstanding results.

Vero's unique loudspeaker technology and proven touring amplification combine to present accurate sound evenly across large audience areas. Through beta testing on tours and festivals around the world, every element of the Vero system has been thoroughly refined.

Features >	< Benefits
Complete System >	Speakers, amplifiers, cabling, rigging, transport dolly, weatherproof covers and software specified and designed to meet the Vero standard of quality.
High-Efficiency >	Unprecedented dynamic headroom allowing vocals to sail over the band, high SPL without duress, minimum enclosure count and stress free electronics. A 12-enclosure flown array is powered by only two Labgruppen PLM 20K44 amps.
Superior Sound Quality >	Precise, transparent, accurate and present sound. Even dynamics across the frequency spectrum. Rich, warm, intelligible vocals
Precise Engineering >	Meticulously crafted proprietary waveguides and driver technology produces naturally even frequency response. Uncompromised system dynamics, headroom, and phase coherency.
Geometric Energy Summation > (GES)	Precise natural tailoring of sound density and coverage pattern. Delay positions and array 'shading' not necessary. Sound focused on the audience, reducing offsite environmental impact.
Patented Lambda Flying System >	Quick and easy deployment. Rotational axis exactly between cabinets maintains class-leading coherency between enclosures. Allows for adjustment under load and simple curve straightening, facilitating easy placement of enclosures on transport dolly.
Predictive Software >	Free-flowing user experience. Easily built virtual venues and arrays. Array optimization in 3D real time workspace. Live load information allows for safe rigging. Automatic equipment listing.

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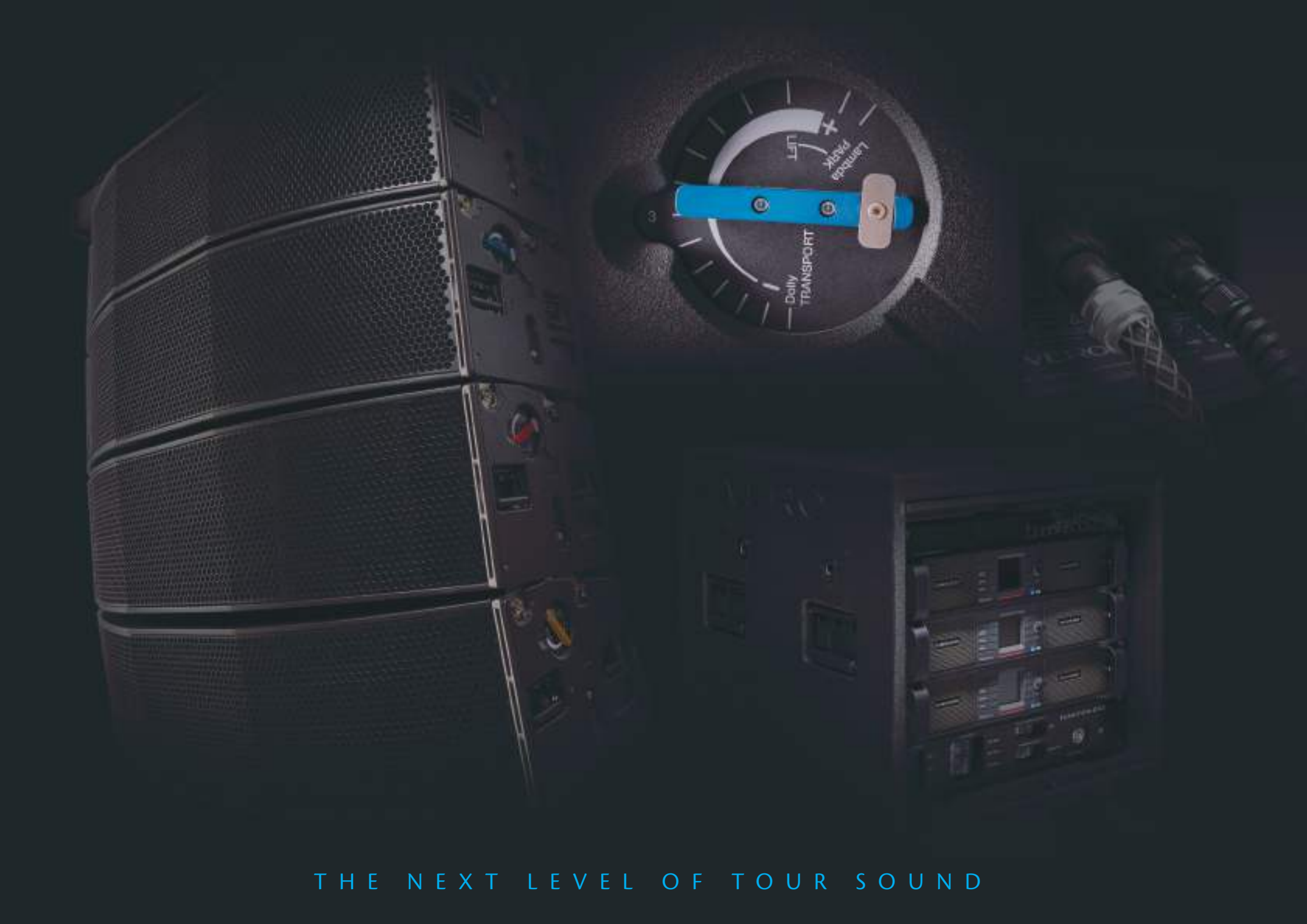

THE NEXT LEVEL OF TOUR SOUND

A vertical array like no other

The foundation of this new approach is the unique ability of the vertical array enclosures to deliver fully functional audio as single units without the need for mutual support from surrounding enclosures, as is the norm with traditional line arrays. When multiple Vero units are combined, they mutually focus and reinforce each other across a range of vertical inter-cabinet angles, allowing sound density to be tailored. Put simply, for a given set of enclosures, vertical coverage can be traded for SPL. As vertical coverage is increased so SPL reduces or vice versa.

Sound density

(GES)
Geometric Energy Summation

Intensity at different array angles

Vero's designers have managed to achieve the seemingly impossible task of coherent summation of audio energy from finely angled adjacent enclosures (up to 5 degrees) and extended vertical coverage at coarser angles (5 to 12.5 degrees). This innovation, combined with natural geometry, in both the waveguides and the relationship of one enclosure to another, has led the company to name this new development Geometric Energy Summation (GES)

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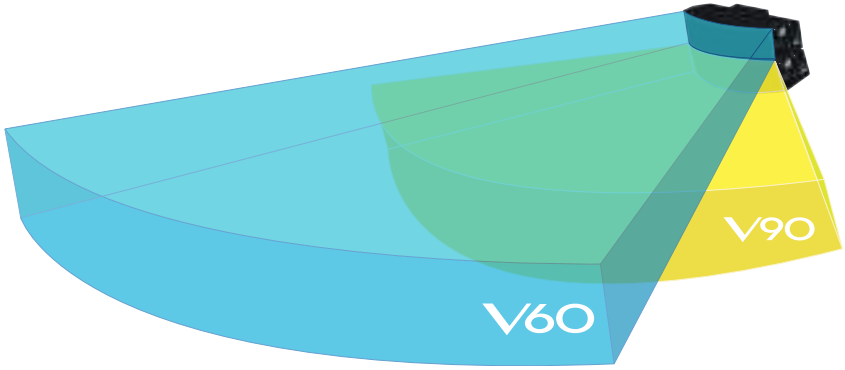
Advantages of its GES technology are its near immunity to windy conditions and elimination of inconvenient and expensive delay positions up to distances of 1,000 feet or more.

Mid-high directivities

The dynamics, sensitivity, speed and presentation of this completely new development in loudspeakers offers a new level of mixing engagement and audience experience.

Geometric Energy Summation (GES) has opened a door to new thinking with regard to directivity and audio spectrum division. Typically a vertical array relies on the coupling of multiple boxes to mutually reinforce and give directivity control. Vero doesn't. In the Vero system, a single box or group of boxes are able to perform independently of each other, which means that the entire audio spectrum doesn't have to be present in the same enclosure. This allows us to dedicate enclosures to mid-bass and mid-high frequencies.

There is also a further division of the mid-high enclosures into a more focused and narrower dispersion V60 long throw enclosure for the top of the array and the wider dispersion V90 for the medium to nearfield. Therefore, there are three different types of Vero enclosure, V315 mid-bass and two directivities of mid-high, V60 and V90. These may all be deployed singly or in groups within an array, enabling precise tailoring of power and directivity in accord with a venue's coverage and SPL requirements. This ensures the focus of the audio is solely on the audience, which in turn leads to a reduction in unwanted room excitement and a consequent overall improvement in audience experience.



The system's physical width has been optimised for natural control of mid-bass directivity. Vero's outstanding sensitivity (three to four times that currently possible with other systems) minimises the number of enclosures required and translates into a massive improvement in dynamic headroom, high SPL without duress and stress free electronics.

Further advantages of (GES) technology are its near immunity to windy conditions (a well-known shortcoming of standard systems) and elimination of inconvenient and expensive delay positions up to distances of 1,000 feet.

The dynamics, sensitivity, speed and presentation of this completely new development in loudspeakers offers a new level of mixing engagement and audience experience.

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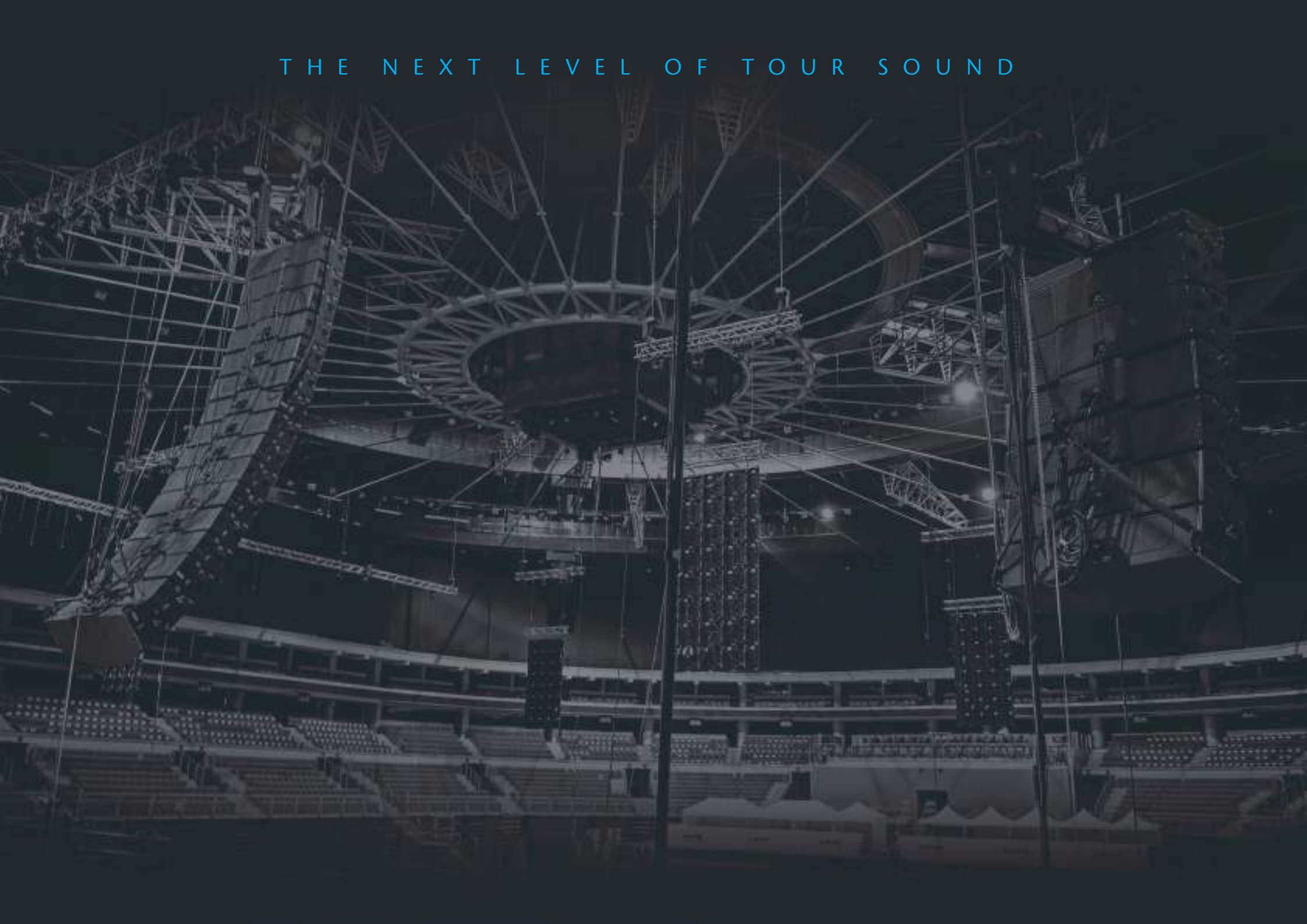

Speaker system

The Vero range features six highly-efficient, low distortion horn-loaded loudspeakers - the V60 mid-high, V90 mid-high and V315 mid-bass with a choice of V221, V124 or V132 bass. The V60s, V90s and V315s all have identical dimensions enabling them to be flown in the same vertical array. The ground stacked V221, V124 or V132 bass enclosures offer a choice of size and low frequency extension.

V60 mid-high 60° horizontal coverage / 6° vertical

The Vero V60 is a flown mid-high loudspeaker providing 60° horizontal and 6° vertical coverage with a frequency response of 200Hz to 18kHz. It comprises two 10in Neodymium mid drivers with a sensitivity of 109dB 1W@1m and three 1.4in Neodymium HF drivers with a sensitivity of 112dB 1W@1m. The V60's narrower dispersion angle projects mid-high frequencies to the far field. Weight 120kg

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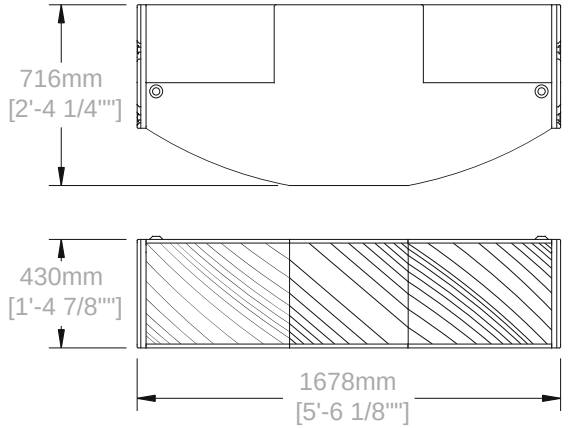
V90 mid-high 90° horizontal coverage / 12° vertical

The Vero V90 is a flown mid-high loudspeaker providing 90° horizontal and 12° vertical coverage with a frequency response of 200Hz to 18kHz. It comprises two 10in Neodymium drivers with a sensitivity of 108dB 1W@1m and two 1.4in Neodymium HF drivers with a sensitivity of 111dB 1W@1m. The V90's wider dispersion delivers mid-high frequencies to the near and medium field. Weight 112kg >

V315 mid-bass operates from 45Hz to 250Hz.

The Vero V315 is a flown mid-bass horn loaded loudspeaker. It has three 15in Neodymium drivers with a sensitivity of 107dB 1W@1m and operates from 45Hz to 250Hz. Weight 120kg >



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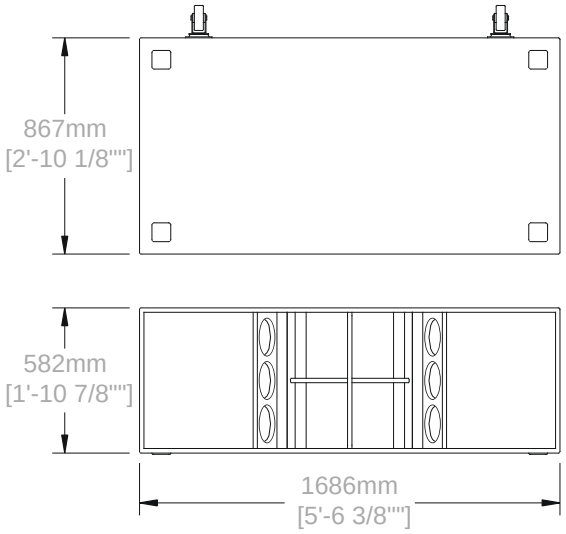
BASS RANGE

Bass range

A range of exceptionally efficient high-intensity bass loudspeaker enclsoures delivering frequencies as low as 24Hz

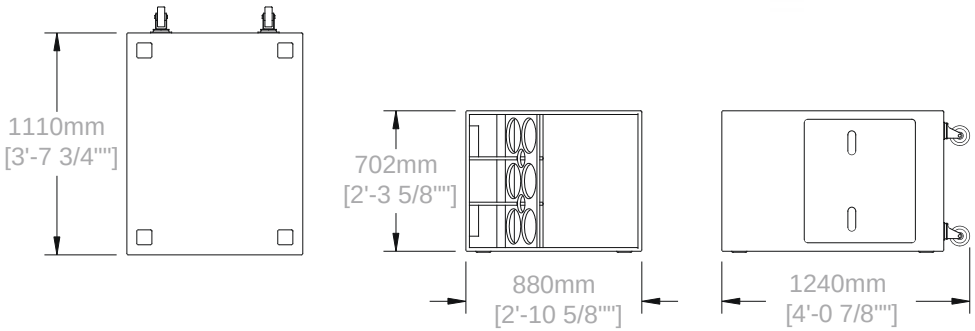
V221

The V221 is an exceptionally efficient high-intensity bass enclosure that provides fast, accurate and dynamic bass. Two 21in Neodymium drivers give frequencies down to 40Hz. >



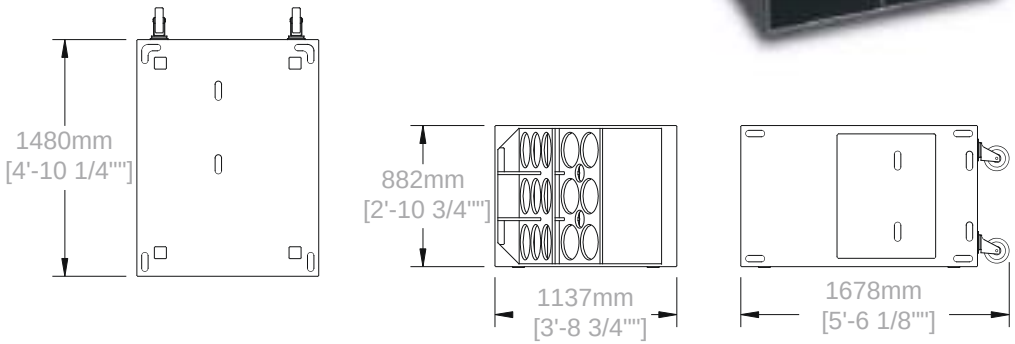
V124

The V124 is a powerful and efficient enclosure that provides extended and defined low frequency bass performance. One 24in Neodymium driver gives frequencies down to 30Hz. >



V132

The V132 is an extraordinarily powerful horn-loaded bass enclosure featuring Powersoft's 10kW linear motor and Funktion-One's cone and enclosure technology. One 32in driver gives a frequency response of 24Hz to 70Hz >




LAB.GRUPPEN
PLM+SERIES
MUTE ENABLE
METER
MENU
EXIT
PLM 20K44
SUPPLY
R/L1
S/L2
T/L3
Amplifier feeds
ON Upper
ON Middle
ON Lower
Rear panel auxiliary outputs on L1
ON
Front panel output on L1
ON
FUNKTION-ONE
10A + RCD 30mA

Amplification

Vero is powered by Lab.gruppen PLM 20K44 amplifiers featuring bulletproof reliability, tremendous power from a compact package, onboard processing and the sonically superior Dante networking for signal distribution.

Three PLM 20K44 amplifiers and mains distro are fully shock mounted in an innovative, compact rack, complete with sliding doors that conveniently stow in the roof of the rack.

The speaker cabling features curl resistance, large cross section conductors and mil spec, quarter turn, multi-pin connectors. A 12-enclosure flown Vero array is powered by only two Lab.gruppen PLM 20K44s, making the system incredibly amplifier efficient. Vero has been designed and optimised without recourse to corrective EQ, preserving system headroom and transient response.

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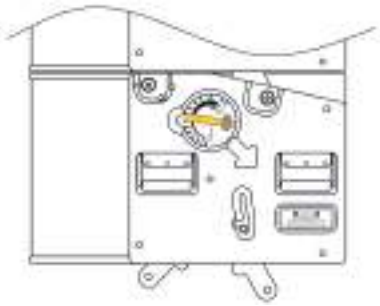
Rigging

Vero's patented Lambda flying system is designed for speed, safety and ease of use. It allows Vero arrays to be deployed accurately and efficiently. All rigging settings can be calculated using Vero's Projection software. Unlike most other flown arrays, Vero's inter-cabinet splay angles can be adjusted with the system in suspension.

The Lambda system consists of the FlyGrid with telescopic boom and enclosure FlyPlates which are integral to the V60, V90 and V315 enclosures. The FlyPlates are detachable for testing and maintenance. The FlyGrid comes complete with inclinometer, laser aiming guide and tension indication pod. A customised FlyGrid road-trunk makes transport and on-site assembly straightforward and provides stowage for all related hardware.



Vero's patented Lambda flying system is designed for speed, safety and ease of use.








Every detail of Vero's flying system has been developed so that its operation is as slick as possible. The indexer/angle dial is clearly marked and straightforward to set. Even the captive pip-pins that link cabinets together have been designed in-house and are flush when engaged, as are the sprung handles.

Inter-cabinet splay angles are pre-set using the indexer. The system lifts and lands as a straight hang, making rigging operations much easier. Once flown, the array is tensioned to its pre-set splay angles using a rear lever hoist, chain and bridle. Fine adjustment of the inter-cabinet angles may be made with the system off the ground.

Crucially, the Lambda flying system keeps the audio sources in correct alignment regardless of the angle between enclosures, ensuring coherency and accurate timing.

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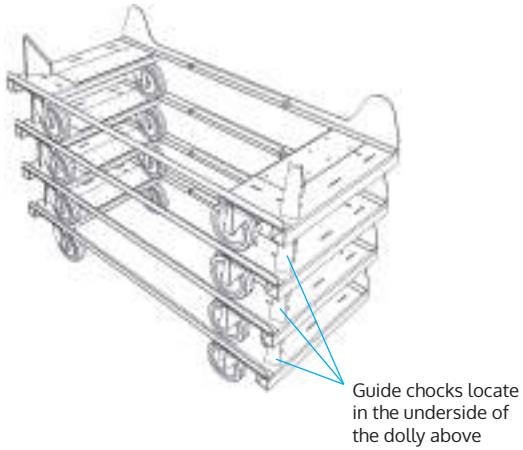
Transportation

Every aspect of the system's transportation has been methodically considered to make handling Vero as quick, easy and as safe as possible.



The Vero speaker system's transport dolly is specifically designed for the various challenges of live event and touring productions. The platform of the dolly is fitted with guides that ensure a Vero column settles into the correct position when landing. The guides also work as restraints, securing the load in transit.

Each dolly is designed to carry four pre-rigged Vero V60, V90 or V315 cabinets. The eight-inch, polyurethane wheels resist deformation and their castor bearings are able to handle high levels of lateral force, while sealed wheel bearings ensure smooth operation. Dollys can be stacked one on top of the other for tidy storage during events. They are robustly constructed from steel and are powder coated black. Each corner of the dolly has a reinforced section that neatly accommodates a hand-operated jack, allowing the user to level the system when flying it off uneven ground. Finally there is a 1000 denier Cordura nylon waterproof padded cover to protect four Vero enclosures while stacked on a dolly, with windows for enclosure identification.

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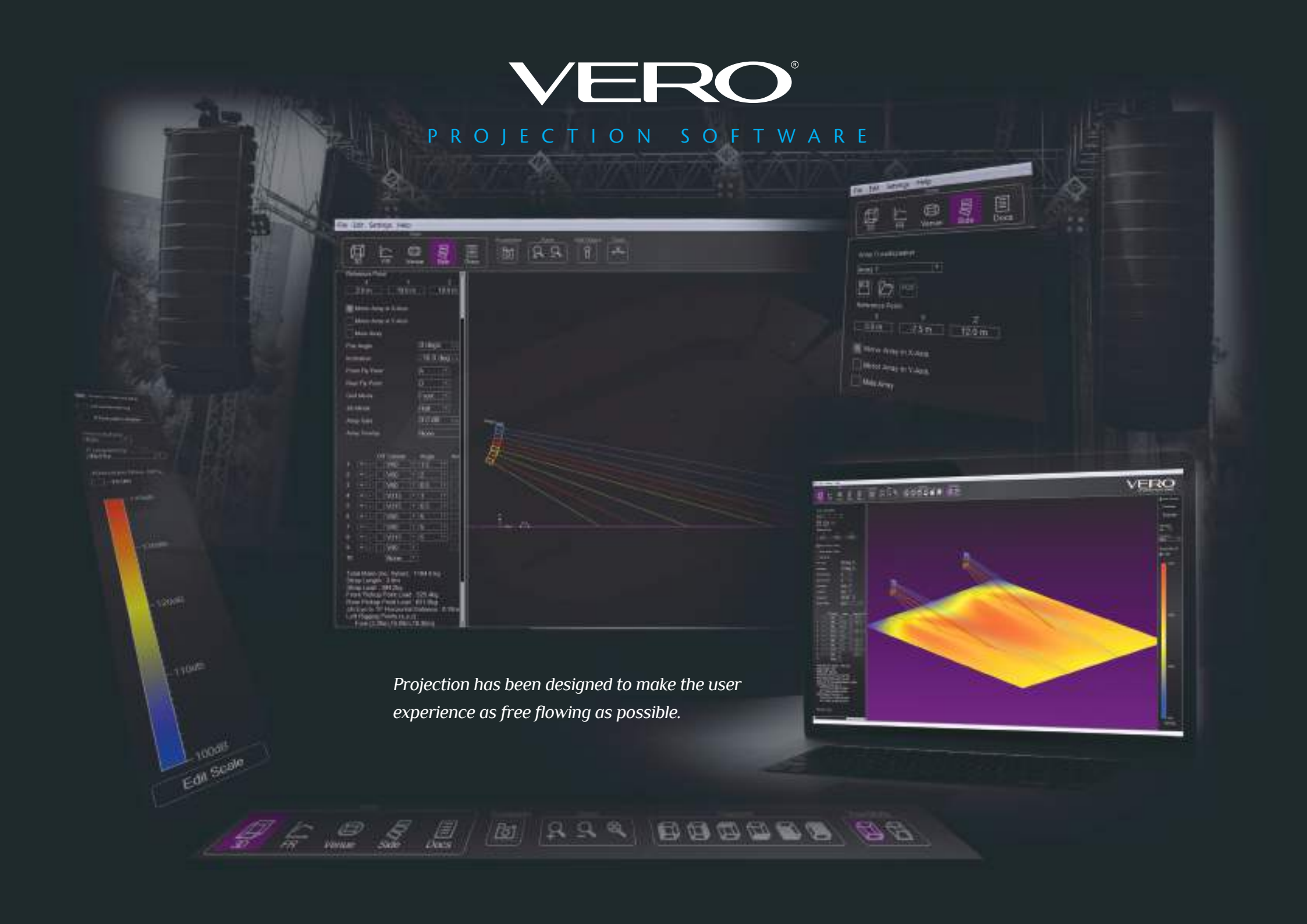
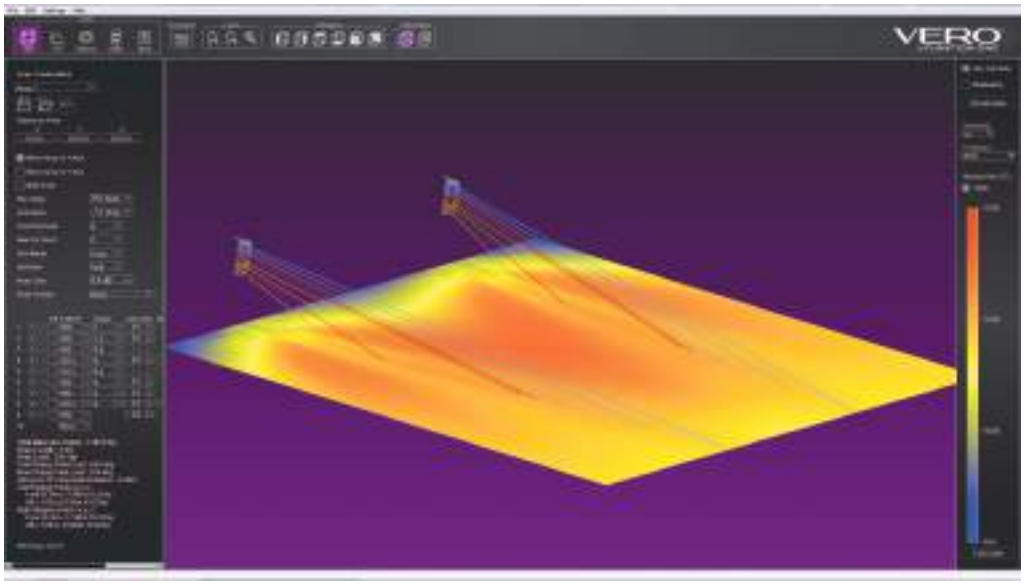
PROJECTION SOFTWARE

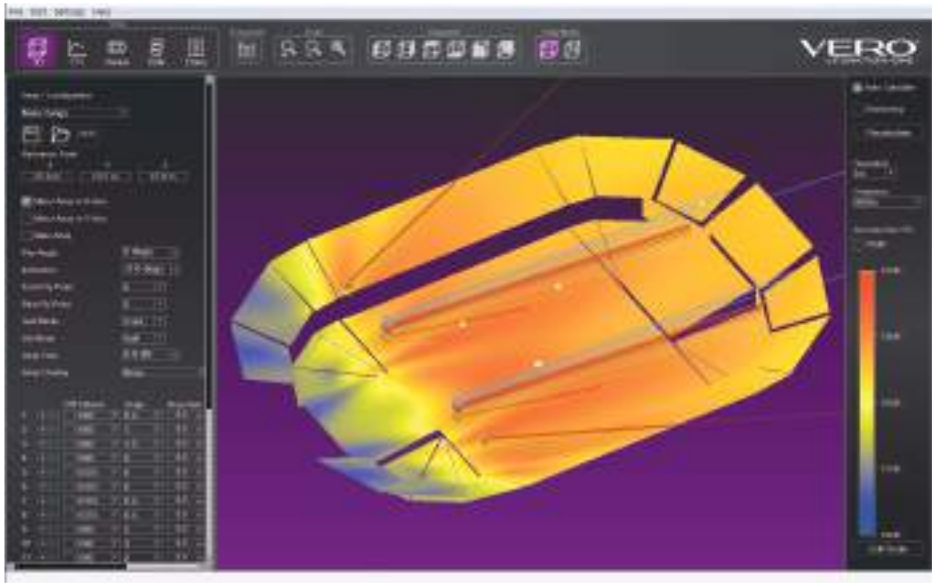


Projection has been designed to make the user experience as free flowing as possible.

Projection Software - System design

Vero's Projection design and prediction software allows users to optimise array designs for smooth audience coverage in any venue. Projection provides venue plan, cross-section and 3D screens. Features include a user-friendly interface, a measurement tool calibrated in distance and time at the speed of sound, and colour coding to differentiate between the different types of enclosure. Distances and weights can be set to imperial or metric.





In the venue screen, it is possible to build virtual venues using a pallet of geometric shapes and add arrays in a matter of minutes. Arrays are usually designed in the side view, where height and position are set and enclosures added, angled and adjusted. Rigging info, motor positions and weight loadings can be seen and the flybar pickup points and jib setting adjusted for optimum weight distribution. A warning is issued if design loading is exceeded.

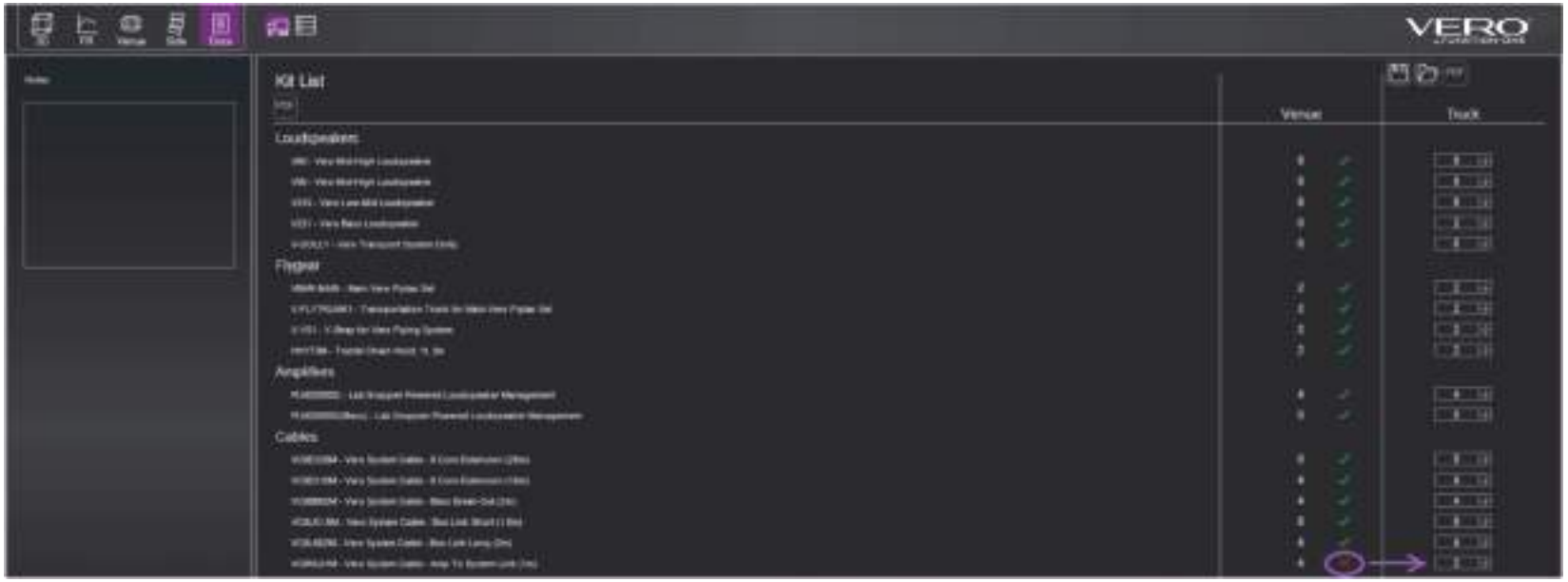
The coverage and SPL can be seen in the 3D View, where most of the array adjustments can be fine-tuned and the resulting SPL changes seen in real time. This coloured 3D pannable sound level map of the venue also shows shadowing in areas that do not receive direct sound. The Microphone function provides a frequency response at any position within the venue (or offsite if using for open air festivals) with optional A-weighted filter. Venue, Array and Truck Lists can also be saved as Projection specific files and recalled when building new projects.

PDF export feature

Projection allows users to export detailed design information in PDF form. The Array PDF includes all of the rigging and set up information required to fly the PA. Parameters include: pan and tilt angle; fly grid settings; number of cabinets and what type, order and splay angle; gain balance (if required); load informationsuch as total mass and fore/aft load; and xyz co-ordinates of array flying points for rigging.

The Truck Pack PDF lists the total amount of equipment available and the Kit List PDF details the equipment actually required to do the gig. These listings include: speakers, amplifiers, cabling, rigging and transport equipment. Amplification information can also be exported.

Projection has been designed to make the user experience as free flowing as possible.



VERO® HERITAGE

1971

Tony Andrews is integral to the sound for what is regarded by many as the seminal Glastonbury Free Festival.

1972

Tony builds a sound system for Joe Cocker at the Lillie Yard, London.

1974

Tony's sound system is deployed at Wembley for Sly and the Family Stone, with dedicated bass, mid and HF cabinets.

1977

Tony joins forces with John Newsham to form Turbosound.

1979

Revived Glastonbury uses what comes to be known as the Festival System – designed & developed by Tony and John.

1980

Festival System is used for Genesis and Iron Maiden European tours.

1980s

Festival System is used on gigs and tours by Jackson Browne Frank Zappa, Status Quo and Santana.

1981

Third Glastonbury, building the Pyramid using condensed, all in one box version of Festival System, known as the TMS 3.

1987

TMS 3 confirmed as the world's largest-selling modular full range PA cabinet, resulting in the prestigious Queen's Award for Export Achievement.

1988

Monsters of Rock at Castle Donnington, headlined by Iron Maiden uses the largest ever PA System (Guinness Book of Records)

1990

Prototype Flashlight system used for Roger Waters at The Wall, Berlin - 350,000 people.

1990s

Flashlight goes on to be used by artists around the world, including: Depeche Mode, Dire Straits, Simply Red, The Cure, Oasis, Robbie Williams, Peter Gabriel and Pink Floyd.

VERO® WHAT THE EXPERTS SAY

"I've never heard the Manchester Arena sound so good. It's been a running theme that mixing in stereo doesn't add anything to the sound, VERO blows this theme into myth. The stereo imaging, even well off axis, is phenomenal. It's the cleanest and most precise sound I've ever had the privilege to mix on, and that was the first phase of beta testing."

David Swallow - FOH Engineer

"Over the past four decades, some of the most satisfying shows I have ever done have been mixed on speaker systems designed by Tony Andrews and John Newsham. It's a legendary partnership that has never deviated from the pursuit of audio excellence, regardless of passing trends. Vero embodies all the qualities that have made all their previous ground-breaking systems stand out. "When I first heard the prototype in a muddy field in pouring rain, it still impressed enormously, and the finished product has lost nothing in the final translation. You may be surprised just how far large scale sound systems have advanced. Anyone can produce a 'new' system, but not everyone can produce a better sounding system. Listen with open ears and an open mind, and you may well agree with me."

Roger Lindsay - FOH Engineer

"I believe I was one of the first beta users of an early version of the Vero, during a festival in Berlin with Nile Rodgers and Chic. We often work on one-offs and festivals with this artist, without a sound check and using whatever resident system is supplied, so it's not always easy to get the mix right at the first song, but once the show started I had the impression I was working on a system I already knew, with very little to correct on the system EQ and settings. I'm looking forward to using the Vero again and to listen to Tony's updates on this system."

John Ryan FOH Engineer

"I wanted to send you a note to tell you how much I enjoyed your new system. I wish the venue would have been better. But I feel the quality of the new system saved us from potential disaster. Even with all the challenges, I only got positive reviews on the sound. Nobody has a bad thing to say about our work or gear, only the venue acoustics. Good going and thanks. Hope to see you again in a proper place so we can make this awesome new system really rock."

Dennis Moody - FOH Engineer

"I have had experience of Vero at two major UK festivals and on both occasions achieved music noise levels in audience areas which were higher than we expected to achieve, and maintained a level at residential locations well below the noise limits. I have found the Vero system to be highly directional with limited overspill from intended coverage areas."

Warren King - Senior Acoustic Consultant, Vanguardia Consulting

"My first major contact with Vero was at 'Into the Valley' in 2015. Sound pressure versus optical impression was the best ratio I've ever experienced. Clarity and transient behaviour are amazing and it can be fed via Dante to avoid unnecessary AD/DA conversions in the signal chain. Vero requires only a tiny amount of EQ. The situation at Into the Valley was not the easiest for a sound system, as it's a bit of a Greek amphitheatre layout. I was surprised how constant the sound stayed in 50 metres and more, when I went upstairs. Combined with well-trained personnel, that system is capable of incredible results."

Johannes Krämer - FOH Engineer

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