

PrimaLuna EVO 400 series

The ultimate expression of PrimaLuna's EvoLution amplifiers not only accommodates a raft of different output tubes but also offers triode/ultralinear switching on the fly
 Review: **David Price** Lab: **Paul Miller**

Shortly after the turn of the new millennium, PrimaLuna began manufacturing valve amplifiers for buyers hankering for an alternative to the stereotypical solid-state sound. The Netherlands-based company launched accessible tube designs with up-to-the-minute styling, starting with the Prologue and then DiaLogue ranges. These played an important part in proselytising the joys of 'glass audio' to a new generation. Now, the company's new EvoLution range – EVO for short – has taken over the mantle, with 100, 200, 300 and 400 levels. The EVO 400 pre/power amplifier combination you see here (£4150 apiece) is the company's third-generation flagship.

There's no mysticism to PrimaLuna, no pretentious backstory that warrants a high-end price tag. This pre/power is devoid of gimmicks, with a neat and uncontrived design allied to solid engineering. Although the preamplifier has no internal DAC, there's a good selection of inputs – including, for the first time on a PrimaLuna amp, balanced XLR connections – that let it form the heart of a modern hi-fi system.

PERFECT PAIRS

The power amplifier offers excellent loudspeaker driving ability and switchable triode/ultralinear operation to taste. The traditional valve amplifier issue of reliability is addressed by careful component choice and the use of two unstressed pairs of EL34 power valves per channel, when many rivals deploy only a single pair each side. Lest we forget, the EL34 is probably the world's most popular audio output tube of all time – guitar amp users swear by them – so the valves are inexpensive and plentiful.

The EVO 400 preamp sports a number of noteworthy design features. This fully dual-mono design has twin custom-wound toroidal power transformers, said to be low

RIGHT: Underneath the EVO 400 power amp reveals its dual-mono construction with high quality tube bases [top], point-to-point wiring with Teflon insulation, and choke-regulated PSU with tube rectification [lower left]

in hum and electromagnetic interference. Selected passive components are fitted, including Japanese Takman resistors, DuRoch tinfoil capacitors and a motorised ALPS Blue Velvet volume pot.

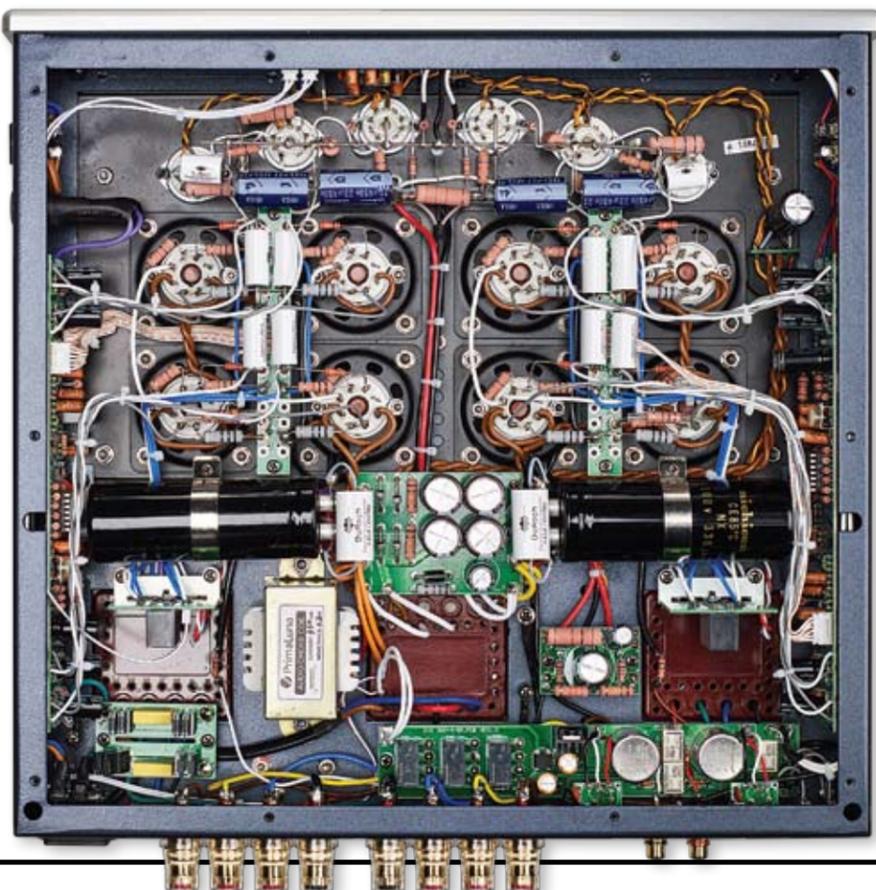
Input selection is achieved using sealed relays, mounted right behind the rear panel for short signal paths. Neat, hand-wired, point-to-point wiring is employed, using Swiss-made silver-plated OFC wire. Alongside a pair of 5AR4 tube rectifiers there are three 12AU7 triodes per channel, with the four outermost being the drivers, and the central two the input valves.

The EVO 400 power amp shares the same approach in terms of power transformers, passive component choice and so on – yet there are a number of

features specific to it. It sports six 12AU7 triodes and, in the standard version tested here, eight EL34 output valves, the latter configured in either triode or ultralinear modes at the press of a button on the IR remote! Claimed power output is 2x70W/8ohm in ultralinear mode, dropping down to 2x38W/8ohm in triode mode [see PM's boxout, p41 and Lab Report, p45].

READY TO ROLL

One bugbear of valve amplifiers is biasing the tubes – an essential job but not every owner's idea of fun. PrimaLuna has removed the need for this with its 'Adaptive AutoBias' circuit, which continuously monitors the condition of all the valves. PrimaLuna does not run its valves hard, but



LEFT: The EVO 400 preamplifier's chassis is almost identical to that of the power amp [p43] with rotaries added here for volume and input selection. Three 12AU7 double-triodes are employed per channel with the two larger 5AR4 tubes as rectifiers in the PSU

when the inevitable finally does happen and a tube goes down, it instantly switches the amp into protection mode and illuminates a red LED beside it.

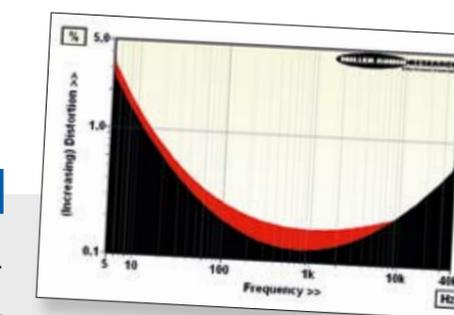
The 'Smartwatts' system runs the output valves at minimum dissipation without going into crossover distortion. Lower plate and screen voltages mean the tubes are less stressed – the company says both are set at 417V, compared to many rivals that push north of 600V.

Meanwhile, and key for tube-rollers, the AutoBias facility also ensures the EVO 400 will accommodate almost any power tube you desire – including the 6L6G, 6L6GC, 7581A, EL34, EL37, 6550, KT66, KT77, KT88, KT90, KT120 and even the huge KT150. So power output, and sound, will also vary with your choice of tube.

TRIODE OR ULTRALINEAR?

With praise for the 'sweet sound' of pure triode amplification reaching near-religious zeal in some quarters, some of the smarter tube amp brands have been offering switchable ultralinear (UL)/triode modes on their integrated and power amplifiers. With its 'AutoBias' facility and ability to accommodate almost any choice of pentode or tetrode, PrimaLuna's EVO series is one of the most flexible in this regard. Historically, and partly by design, the EL34s fitted here are perfectly suited to triode adaption – the control and suppressor grids are disconnected (or linked to the cathode) while the screen grid is coupled to the anode (plate) typically via a 100ohm resistor. So the screen grid no longer has a fixed DC potential but swings with the audio on the anode.

Distortion is reduced in this triode configuration, but gain is almost halved so, in practice, negative feedback is typically reduced to boost the gain at the expense of distortion. PrimaLuna walks a sensible compromise – there's 2dB less gain, but also 2dB less noise, in the EVO 400's triode mode and maximum power is 45W in place of UL's 75W. So direct A/B comparisons may fool your ears if you do not tweak up the volume control when switching to triode... The reduction in output impedance from 4.8ohm (UL) to 3.9ohm in triode mode confers better bass control and a more uniform frequency response. As for distortion, within the more limited dynamic range of triode mode it still has a slight advantage offering, at best, a x1.5 reduction in THD [black, with UL in red, inset Graph]. PM



The amplifier comes with 4, 8 and 16ohm taps at the back, and can be switched into monoblock operation should you find yourself able to afford an additional EVO 400. In this mode, it thumps out a claimed 140W/8ohm in ultralinear and 82W/8ohm in triode mode with the supplied EL34s.

Build quality is extremely good and there's a choice of black or silver front panels to complement a removable rounded safety cage – not just decorative but for protecting against high voltages.

Both units are physically quite large, and virtually identical in size, so you'll need a chunky hi-fi rack to house them.

THOROUGHLY MODERN

The company's founder, Herman van den Dungen, has voiced this combination to sound crisp, punchy and modern. It's a very long way from the soggy sound of Leak Stereo 20s huffing and puffing their way through beat-driven music. Despite this, the PrimaLuna EVO 400 combo still has something of a 'valve sound' – fulsome in the bass, while the midband has a subtle richness that's not something you hear from all transistor amplifiers. This said, it's also surprisingly insightful and one might even say 'well lit' in the upper mid. Treble is clean and smooth yet retains plenty of energy.

The overall effect is rather intriguing then – it's almost a valve amp for someone who's not quite willing to go fully 'native'. Especially when running in ultralinear mode, it has a distinctly upfront sound that will be more familiar to solid-state fans than long-term users of Quad IIs. Indeed, cue up Steely Dan's 'Home At Last' [Aja; MCA Records 088 112 056-2] for example, and this normally fairly smooth and silky '70s rock track actually becomes rather forward and feisty. That's not to say it sounded harsh, but neither were Donald Fagen's distinctive vocals shy and retiring. This complemented the well-lit treble, as cymbals came over with bite. Bass was punchy and thumpy, the power amplifier delivering a big thwack into my loudspeakers, as if to make a point.

The EVO 400 pre/power combination sounded unexpectedly barrel-chested for things that glow in the dark, and anyone walking into the room without seeing the electronics being used would most likely laugh if you told them it wasn't solid-state. ☺



ABOVE: At 31kg, the EVO 400 power amp's bulk stems from the toroidal PSU transformer and two custom output transformers [all in screening can, behind]. Red LED on the fascia means the two pairs of EL34 pentodes (per channel) are configured in Ultralinear mode; green LED indicates triode mode

This combo has real guts and oomph then, with just a slight padding out of the upper bass to signal its valve origins.

WHISTLE-CLEAN

When I switched to triode mode, the same Steely Dan song was instantly transformed. No longer did this combo sound so physical, as there was a subtle diminution of bass power and a slight flattening of treble. Yet the midband came into its own, the textures of the many different instruments now distinct, vibrant, less generic. I began to hear real tonal colour, with the saxophones presenting themselves in a softer and more subtle way, their rawness unabridged but better resolved. I was also struck by the piano sound in triode mode, as it was deliciously rich and bristling with whistle-clean harmonics. By comparison, in ultralinear mode, this same instrument sounded more artificial and processed.

In practice the switchable ultralinear and triode modes completely define this amplifier for while it's a great feature to

have, it's also quite distracting. During my listening, the more I got to know the amplifier, the less I fiddled with the remote, and indeed began to realise that my choice of programme material was beginning to make the decision for me. For example, when I cued up Nookie's 'Give A Little Love' [*The Sound Of Music*; RIVET CD 05] the jury wasn't out for long. This is no slinky Steely Dan jazz-funk, it's banging early '90s jungle/hardcore, bristling with scratchy 8-bit samples and a massive sub-bass.

Here triode mode sounded a touch too soft – it was clearly better in the midrange but all the action was with the sub-bass modulating up and down, and the frenetic hi-hats crashing away above it.

Ultralinear mode added a welcome bite that made the song sound wonderfully visceral. Even at seriously high listening levels, the EVO 400 power amplifier held on tight and showed few signs of its output transformers saturating. Indeed, I couldn't help thinking to myself, 'Gosh, all this power from pairs of EL34s!'. ➔

It's a valve amp for those not willing to go fully "native"



LEFT: The EVO 400 power amp has balanced (XLR) and single-ended (RCA) inputs, switched alongside. There are also three 4mm speaker outputs per channel fed from 16ohm, 8ohm and 4ohm transformer taps, respectively

HERMAN V. DEN DUNGEN

Editor PM caught up with PrimaLuna's CEO, Herman van den Dungen, while visiting his 'home town' for the ISE show. Surrounded by technology from over 50 vertical market sectors within the 'AV channel', and not a tube in sight at ISE, it seemed appropriate to revisit PrimaLuna's own tech timeline.

'We started off by modding early Marantz CD players with a tube stage', said Herman. 'it was easier buying the Marantz players wholesale than sourcing a Philips CD transport and starting from scratch! A friend, an ex-Goldmund engineer, created the "tube clock" for us before developing the Adaptive Auto Bias scheme used in our tube amps.'

The first generation of PrimaLuna amps, in the early 2000s, were more conventional in design. 'Yes, and we soon realised it was unrealistic to expect audiophiles to fiddle with a small screwdriver and multimeter. We needed to offer a user-friendly, plug-and-go solution.

'Our Adaptive AutoBias circuit not only accommodates a wide range of tubes but also optimises the music signal,' Herman revealed. And his tube of choice? 'That'll be the EL34. In fact we buy more EL34s from Suguang than anyone else. They send us selected tubes, but we re-test and keep only about 60% of the stock, returning 40% to be used in guitar amps, etc.'

Anything bigger than the EVO 400s in the pipeline? 'Yes, we will be launching a Reference Series integrated, pre and power amp, at about €6500 apiece, later this year.'



PRIMALUNA EVO 400 PRE/POWER



ABOVE: The EVO 400 preamp offers five line inputs (two balanced on XLR), two balanced outs, one single-ended out, one tape out and an HT bypass

Just to complicate things, the ultralinear/triode divide doesn't confine itself to power and tonal colour. The former is brighter and bassier, while the latter still delivers music in a more fluid, free-and-easy way. Even the frenetic Nookie track flowed a lot better in triode mode, so I loved the way the drum machine's rim-shots and snare loops were more easily distinguished.

This was even more obvious with pop music such as ABC's 'Date Stamp' [*The Lexicon Of Love*; Phonogram 32PD-90], which bounced along at a cracking pace. The song's subtle rhythmic nuances, such as the rhythm guitar work and phrasing of Martin Fry's vocals flowed better, and to great emotional effect.

LARGE 'N' LUXURIOUS

This pre/power seems able to get into the song's groove right down to an almost granular level, as if to celebrate what was secreted inside this classic early '80s recording. By contrast, to these ears, many more expensive solid-state amplifiers sound far more matter-of-fact.

Finally, the sense of recorded space never failed to impress, whichever way one ran this pre/power

LEFT: PrimaLuna's system remote offers transport controls for its CD players; input select, volume and mute for its amplifiers plus UL/triode switching for the EVO 400 and 300 models



combination. Good valve amps seem to have a special knack of making music seem larger than life, and this PrimaLuna duo was no exception. The haunting modern jazz of Herbie Hancock's 'I Have A Dream' [*The Prisoner*; Blue Note TOCJ-4321] had a luxuriously wide acoustic. This classic late '60s track is simple but effective, and the EVO 400 pre/power amps opened it right up.

The combo's confidence when driving even awkward loudspeakers meant it threw images far stage left and stage right, yet was subtle enough to hang things back nicely, especially in triode mode. The beautiful flute, trumpet and flugelhorn playing also charmed me, being locked confidently in space, panned hard to either side and dancing between the speakers.

At the same time, I was struck by the sheer absence of noise and hum when using this pair of amplifiers, which only further helped the sense of scale and three-dimensionality on offer. It was yet another reminder that this is a thoroughly modern valve pre/power design. ☺

HI-FI NEWS VERDICT

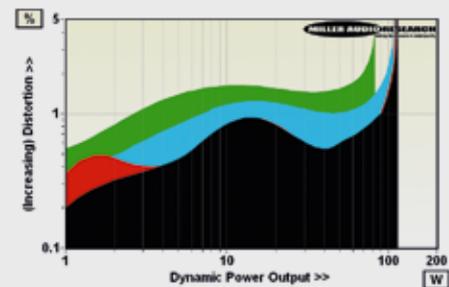
The PrimaLuna EVO 400 pre/power gets embarrassingly close to the top tier for a fraction of the price of high-end equipment. Given a good source and loudspeakers, it's the impressive centrepiece of a serious hi-fi system – one with a charm that many rivals conspicuously lack. A great affordable audiophile valve amp combination then, built to a high standard and with masses of upgrade potential.

Sound Quality: 86%

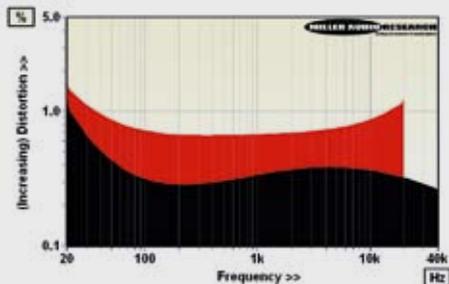


PrimaLuna devotes considerable webspace detailing the quality of its PSU and output transformers, its 'AutoBias' regime, passive component selection, dual-mono layout and other engineering niceties – but the upshot is a preamp and, particularly, a power amp of exceptional quality. Noise, as claimed, is very low indeed with A-wtd S/N figures of 98dB for the preamp and a full 94dB for the power amp (re. 0dBV and 0dBW, respectively). The latter is 10dB better than that achieved by many solid-state amplifiers! Distortion increases with output in both amplifiers, from 0.03% at 100mV to 0.38%/1V and 0.8%/2V with the preamp and 0.19% at 1W to 0.8%/10W and 0.9% at the rated 70W/8ohm for the EVO 400 power amp (UL mode). I discuss the differences between triode and ultralinear/pentode modes in my boxout [p41] but in both cases THD increases at low frequency through transformer core saturation, reaching ~2% at 10W/8ohm and ~1.3%/20Hz at 0dBV from the preamp [see Graph 2, below].

This is perfectly typical, as is the increasing source impedance of the preamp at LF from its moderate 270ohm midband figure to 1.1kohm at 20Hz. The power amp has a high but consistent ~5.5ohm output impedance that will influence the overall system response according to the impedance trend of the attached speaker. Into a 'flat' 8ohm load it offers an extended bass (-0.3dB/20Hz) allied to a treble that rises slightly above 20kHz/+0.5dB to 'peak' at 40kHz/+1.55dB. This will be 'magnified' in practice because the EVO 400 pre also has a +3.1dB lift at 42kHz. Power is plentiful too, those double pairs of EL34s achieving 2x73W/8ohm and 2x85W/4ohm with 112W, 110W, 105W and 82W into 8, 4, 2 and 1ohm under dynamic conditions [see Graph 1]. PM



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 9.0A



ABOVE: THD vs. frequency for EVO 400 pre (1V out, black trace) vs. EVO 400 power (10W/8ohm, red)

HI-FI NEWS SPECIFICATIONS

Continuous power (<2% THD, 8/4ohm)	73W / 85W (2.45V, preamp)
Dynamic power (<5% THD, 8/4/2/1ohm)	112W / 110W / 105W / 82W
Output imp. (20Hz-20kHz, pre/power)	264-1.1kohm / 5.6-5.0ohm
Freq. resp. (20Hz-20kHz, pre/power)	-0.0 to +0.0dB / -0.3 to +0.5dB
Input sensitivity (for 0dBV/0dBW)	429mV (pre) / 147mV (power)
A-wtd S/N ratio (re. 0dBV/0dBW)	97.5dB (pre) / 94.0dB (power)
Distortion (20Hz-20kHz, 1V/10W)	0.36-1.25%/0.70-2.0% (UL)
Power consump. (pre/idle/rated o/p)	57W / 273W/475W
Dimensions (WHD, Pre/Power/weight)	386x206x404mm/24kg/31kg