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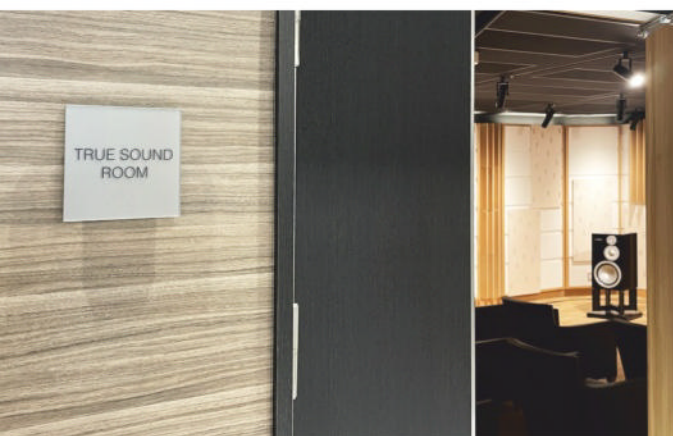
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MODWRIGHT KWA 99

Reviewer Greg Borrowman

MONO POWER AMPLIFIERS

While Modwright has been around as a company since 2000, it did not build its first product (the PH9.0 vacuum tube preamplifier) until 2003. Up until that point, the US company's founder and owner, Dan Wright, had been modifying other manufacturers' designs rather than producing his own. In fact, Wright had been in the audio modification business for many years prior to 2000 but had simply not bothered to incorporate as a legal entity.

The PH9.0's circuit topology was based largely on Alan Kimmel's 'Mu Stage' design, which itself was originally developed as a modification for the Dynaco ST70 stereo valve amplifier, then available as a kit for home DIY builders. Kimmel's original Mu Stage circuit was published in 1993 in *Glass Audio* magazine, but a version of it was used in a bestselling preamplifier kit developed by Welbourne Labs called the "Compleat Hybrid Line Stage" (and yes, it was spelt 'Compleat' rather than 'Complete').

Design input from Kimmel is evident in many of Modwright's designs because, according to Wright, a 'Solid State Music Stage' voltage gain stage developed by Kimmel is at the heart of its KWA 100 and KWA-100SE power amplifiers as well as its KWI 200 integrated amplifier. Indeed 'KW' in the model names stand for 'Kimmel/Wright', so the same is no doubt the case for the KWA 99 mono power amplifiers I am reviewing here.

According to Wright, that trademarked Kimmel design is "a unique and proprietary design using all transistors, a single gain stage and zero global feedback. It is transformer input-

coupled and direct-coupled from there out. Sonically, Alan feels that the circuit delivers the holographic imaging and tonal warmth of tubes but without any excessive coloration, while also delivering the sonic strengths of solid state, those being tighter and more controlled bass, extended highs and an extremely low noise floor."

Although Wright is a great fan of valves (he says the ear-opening moment that kick-started his interest in high-fidelity sound was when he first heard the Jolida JD-302B valve amplifier, which employed 12AX7, 12AT7 and EL34 valves), the Modwright KWA 99 is a solid-state design from input through to output. The output devices are current production Exicon Lateral MOSFETs configured in a conventional Class A/B topology, albeit operated with very high bias to mimic Class A operation.

Wright says that using these

MOSFETs results in "unparalleled sound, performance and reliability," while the KWA 99 itself "offers the sound of our best amplifiers with an even greater degree of resolution, detail, and live sound".

Why Wright specifies the use of "current production" Exicon transistors is likely down to their history. You see, Exicon (its name stems from 'EXcellence In SemiCONductors') produced its first lateral MOSFETs (the ECF10N16 and ECF10P16) in 1993 and they became an instant hit with amplifier designers for their high level of performance — though it helped that Hitachi ceased production of its very popular 2SJ50 and 2SK135 MOSFET devices at roughly the same time! Exicon redesigned its range of lateral MOSFETs in 2015, and it is these newer devices that are used in the KWA 99.

One thing we learned when reviewing Modwright's PH 9.0 some years ago, which we believe is well worth





repeating here — not least because we had entirely forgotten it ourselves — is that the Modwright logo reads the same no matter whether you look at it straight on, upside down or even in mirror-reverse. No matter what you do, that stylised 'M' becomes a 'W' and the 'W' becomes an 'M'. They don't make fonts this way so it must have been intentional on Wright's part, or that of his graphic designer. It's neat! We like to think that the two dreamed it up while having a bite in Nick's Bar and Grill, which almost neighbours the Modwright Instruments factory in Amboy, Washington, USA.

RETRO STYLING

As there are two separate chassis, there are two power buttons to press, which presented a slight problem for us as those buttons are recessed into the front panel and require being pressed in quite a way



“...circuit delivers the holographic imaging and tonal warmth of tubes but without any excessive coloration”

to activate. This means that if you, like us, have fat fingertips, you will likely need to use your ring or little finger to press the buttons in far enough to switch the amplifiers on. That said, they can also be powered on remotely, via a 12V trigger socket on the rear panel.

Once powered on, blue LEDs inside the chassis will flash on and off — or to be accurate, flash brightly and then not-so-brightly — for about 30 seconds until the internal circuitry has stabilised and the protection circuitry has established that nothing is amiss (such as a short-circuit on the output terminals, about which more in a moment). When this light show has finished, the LEDs remain on, for no good reason we could establish perhaps other than to improve the amplifier's appearance in a darkened room. These LEDs can, however, be deactivated via the rear-panel micro toggle switch.

As you can see in the image on the right, the KWA 99's heatsink fins are also blue, which we found rather unusual considering black-anodised heatsinks are the most efficient at dissipating heat from solid-state output devices. It seems that both the blue LEDs and heatsinks

were the choice of Wright for the simple reason that, in his own words: “I like blue.” We suspect that blue is almost as good as black in terms of thermal efficiency, though we did note that the

KWA 99's heatsinks become quite hot,

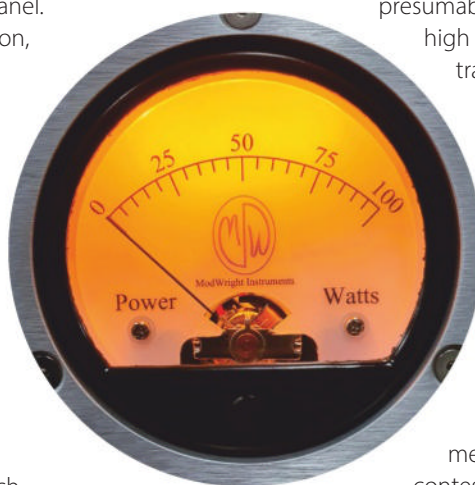
presumably because of the high bias current to the transistors. While we

didn't measure the temperature, it was hot enough that it required real willpower to keep our fingers in contact with the metal for more than 10 seconds.

Power output meters are a hotly contested subject because unless your speakers present a

constant and defined impedance (which no dynamic speaker does, though a few panel designs do, such as those made by Magnepan), the meters can never give an accurate indication of the power the amplifier is delivering to those speakers. The meters on our KWA 99 review sample were a long way off displaying power output correctly, showing a 25-watt output when the amplifier was delivering only a single watt of power into an 8-ohm load. The needles pinned at maximum when the output power was just 10 watts into an 8-ohm load.

As for the meters themselves, they





for a vintage tone aesthetic that I believe embodies the design concept”.

As you can see in the image on the previous page, which shows the meter switched on, this deliberate “vintage tone aesthetic” means that the amber illumination is far brighter at the bottom of the meter than it is at the top; the distribution of light is not uniform across the area of the meter.

This disparity remains the case no matter what brightness level you choose, being continuously variable by means of a rotary potentiometer on the rear panel (the maximum anticlockwise position of this control switches the illumination off completely, which we preferred).

are very ‘low-tech’, with a look and design reminiscent of meters from early in the last century. This was a deliberate design choice by Wright, who posted on Modwright’s website that “the amber illuminated power VU meters were chosen

Wright also went retro with the design of the rotary dial on the KWA 99’s rear panel (pictured on p27). Honestly, we can’t remember the last time we saw this type of knob on an electrical component!

Peer closely and you will see that Wright is economising on his chassis inventory by identifying the mains power socket as being 120V/60Hz rather than what it really is here in Australia, which is 230V/50Hz. Peer closer still and you can also see a typographic error in Modwright’s company name — “Instruemnts.” Oops! We can see why Wright wouldn’t want to dump a whole load of pre-screened chassis for a simple spelling mistake that would likely go unnoticed by many owners (unless they’ve read this review!), but that said, high-quality stickers are not expensive and also could have been used on models destined for 230V/50Hz markets.

You don’t have to look closely at the image of the KWA 99’s internals (to your right) to see there is an inordinate amount of point-to-point wiring, not

MODWRIGHT HISTORY

Dan Wright originally planned a future in journalism, and to that end spent a year in Australia as an exchange student. On his return to the USA, however, he decided against journalism and instead enrolled in a computer engineering course at Anchorage University in Alaska. He later switched courses and universities to graduate from Fairbanks University with an honours degree in Mechanical Engineering. Taking advantage of his qualifications, Wright began a career as a professional engineer specialising in heating and ventilation systems.

However, having long been interested in designing and building audio equipment, Wright deployed his multiple skills to develop a part-time business improving existing audio products by upgrading various components within them, such as op-amps, resistors and capacitors. He also modified and improved the power supplies inside various other products,

hence the company name, ‘Mod’Wright.

Despite this side business becoming quite large and relatively profitable, Wright was operating out of his basement. But everything changed for him when Perpetual Technologies (owned by Mark Schifter and Peter Madnick of Audio Alchemy) got wind of the modifications he was making on its P3A DAC and gave him an exclusive licence to perform mods that were not only approved by Perpetual Technologies but also did not invalidate the product warranty. It was this encouragement from Schifter and Madnick, and the boost this licensing arrangement delivered to his business, that convinced Wright he should quit his day job, make Modwright a legal entity and launch it as a full-time business, which indeed he did in 2000.

As well as modifying the P3A DAC,

he also offered a valve output stage for the Sony CDP-777ES CD player. It wasn’t until three years later, in 2003, that he released his first product, the SWL9.0SE preamplifier (as discussed in this review).

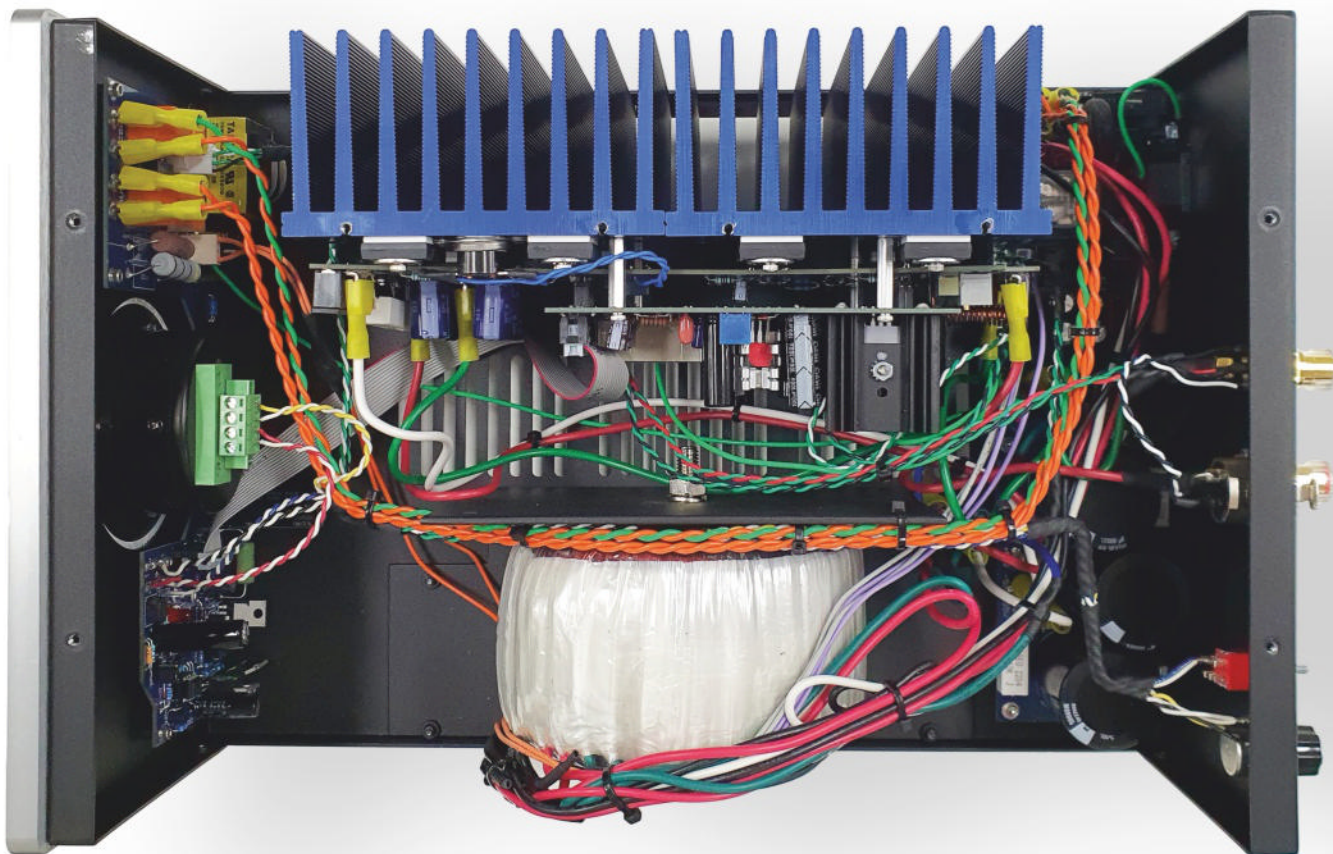
Modwright no longer offers modifications, although it does sell ‘house-brand’ capacitors, designed by Wright, that he recommends for use in power supply decoupling and the bypassing of electrolytic capacitors,

as well as for output

coupling capacitors in pre or power amplifier applications.

“The M Series Truth capacitors are made with a proprietary oil-impregnated metalized polypropylene dielectric with pure copper-tinned leads,” says Wright. “They offer body, weight and exceptional clarity without the softness or overly warm presentation of other oil or paper in oil capacitors on the market.”





least as the components used in the circuitry are distributed across several different printed circuit boards, rather than being contained on one, as is more often the case. The voltage from the large toroidal transformer is smoothed by four 12,000 μ F/63V storage capacitors, and bear in mind that this means there is a transformer (as well as four capacitors) for each channel.

The KWA 99 circuitry includes DC input and thermal overload protections, as well as short-circuit and over-current protections. Of the latter two circuits, Wright says they are “served by our unique and proprietary Total Silent Protection circuitry which resides outside of the signal path. When protection is triggered, the channel simply mutes. To reset, unplug the power cord wait thirty seconds, re-insert the power cord and power back up.” In the event of a thermal overload, meanwhile, the amp simply shuts down without visual indication.

LISTENING SESSIONS

Wright suggests that the best preamplifier pairing for the KWA 99 is his own Modwright LS 99 balanced tube model, but

as we didn’t have one to hand we used a Halcro Eclipse preamp — a review sample we were loaning; sadly we do not own one — for the great majority of our listening sessions.

At the start of any auditioning session, we usually play music at the maximum volume our domestic arrangements will allow to ensure there is sufficient amplifier power on tap to reproduce musical transients without clipping, and it was immediately apparent that the Modwright mono pair would deliver more than sufficient power for any home hi-fi set-up — even those fronted by inefficient loudspeakers like ours.

The pair proved themselves the ideal amplification to reveal the myriad sonic complexities on the debut album by Mk.gee (whose parents named him Michael Gordon), *Two Star & the Dream Police*. Listening to *How Many Miles*, we were taken by how atmospheric his vocals sounded against the full-wash background. And on *Rylee & I*, the Modwrights impressed with their ability to deliver the very deepest bass with utmost precision whilst fluidly delivering the extreme highs at the same time. The

pulsations of the multiple instruments that flavour *I Want* are perfectly pitched and timed, and here were delivered with a sonic warmth that was highly aurally satisfying. This warmth of sound also imbued album closer *Dream police* with an almost ethereal ambience, as well as demonstrating the advantage of having one dedicated amplifier for each of the channels. Indeed, the totality of the channel separation here eludes most single-chassis stereo amplifiers.

It seemed appropriate to follow up



... their ability to deliver the very deepest bass with utmost precision whilst fluidly delivering the extreme highs...



Mk.gee with an album from another artist who didn't like the name they were born with — Beatrice Laus, who is better known by her professional name, Beabadoobee. Her album *This Is How Tomorrow Moves* benefits enormously from the production by Rick Rubin, but at the same time it may well be the first album we've come across where the number of technicians involved in producing (16!) it exceeded the number of musicians playing on it (10). Intro track *Take a Bite* sets the sonic tone for the album, with a full and lush soundscape whose tonal richness was again enhanced by the warmth of the Modwright KWA 99's character. The bounce-channel sound effects on *California* again demonstrated the infinite channel separation on offer from this duo, along with a reminder of



The Modwrights are quiet in those 'spaces between the notes'; you will hear no noise from the circuitry

their impressive bass depth and precision.

The intimacy of the presentation on *Coming Home* reflects the lyric, while the accuracy of the guitar sound is astounding, not least because of the way it contrasts with Beabadoobee's breathy 'little girl' vocals — all attributes that are reprised on the following track, *Ever Seen*.

To evaluate the Modwrights' delivery of a female vocal, we span up one of our favourite albums of the past decade, Hayley Williams' *Petals for Armor*. Everything about this album is outrageously good — her voice, her lyrics, the musicianship of everyone who contributed, plus a special mention for the album's state-of-the-art production. This is one album you should most definitely purchase in its unadulterated 24-bit/96kHz FLAC livery. It will become not only a favourite for the music itself but also as a test album, to use over and over again to evaluate audio components — it's that good! And if you only know Williams from her previous work fronting pop-punk outfit Paramore, this solo debut of hers will be a revelation.

The album's opener, *Simmer*, is best known for its many obscenities, both real and implied, but it deserves to be most renowned for its beat-perfect drumming (Aaron Steele) and inventive bass lines (Joey Howard). The syncopation of *Leave It Alone* is superb, too — and superbly delivered by the Modwrights — and the sound of the unison guitar strings is as rich and detailed as a medieval tapestry,

once again satisfyingly enhanced by the lushness of the KWA 99's presentation. *Cinnamon*, which follows, will afford you the opportunity to hear that the Modwrights are quiet in those 'spaces between the notes'; you will hear no noise from the circuitry, just silence. The same is true of *Dead Horse*, where you can again hear the magnificent bass and some pretty impressive percussion. (The lyric is pretty funny too!)

Also hugely impressive are the vocal deliveries on *Roses/Lotus/Violet/Iris*, a track that adds backing vocals from Phoebe Bridgers, Julien Baker and Lucy Dacus to Williams' own multi-tracked vocals. We were so impressed by how distinctly the Modwrights distinguished between the singers' deliveries.

CONCLUSION

All in all, the new KWA 99 power amplifiers are a triumph. They deliver that classic Modwright sound in a smaller and arguably more elegant package than the company's more powerful and modern-looking KWH 225i hybrid integrated amplifier, which sells for only a few hundred dollars more. 

SPECIFICATIONS

Modwright KWA 99

Price: \$16,250/pair

Warranty: 5 years

Design: Class A/B (high Class A bias)

Power Output: 100W (8ohms); 200W (4 ohms)

Frequency Response: 10Hz–150kHz (–1dB)

Signal-to-noise ratio: 90dB (unweighted)

THD: <0.05%

Input: RCA, XLR

Input Impedance: 47kohms

Gain: 26dB

Dimensions (HWD): 15 x 25 x 38cm (inc footers, binding posts)

Weight: 13.2kg

Contact: Absolute HiEnd

T: (04) 8877 7999

E: info@absolutehiend.com

W: www.absolutehiend.com