

Appliance of

SCIENCE

David Price talks to Simon Brown, Principal of Design Build Listen – on music, hi-fi and life across the other side of the world

A world-class specialist tonearm manufacturer based in Dunedin, New Zealand. Whatever next – wine in Australia? As its name suggests, his company began very much as a niche, hobbyist operation to supply amplifier kits for DIY audio constructors. Nowadays, though, Design Build Listen is famous in the UK and beyond for The Wand tonearm (HFC 363), which is one of the most striking and impressive-sounding affordable pick-up arms of the past decade. In a sea of Regas – either the real McCoy or OEM versions – this new unipivot stands out, and shines bright.

In the beginning

Simon started his company in 2005. A mechanical engineer by training, he worked in the industry as a chief engineer and he “knew how to get things done”. Having dealt with a wide range of suppliers and with an address book full of contacts, he began to get into hi-fi as a hobby. “Being an engineer by profession, I had some idea about design. In my previous life I had to make stuff happen, and so it was not a difficult transition when I began to build amplifiers. I particularly enjoyed building up DIY amplifiers, but wasn’t good at hand making chassis so I started making my own using computerised machinery. I have the skill to design sheet metal stuff and I could

see that many others often fell over when trying to get things into a box! My first forays into manufacturing were around DIY amplifier chassis.”

Simon says he still thinks about DIY chassis manufacturing, but it’s such a lot of work in terms of the technical support needed for customers. “I’m probably too nice so I would spend my life on the phone trying to help people! Maybe I will revisit this again, but I

“I made a small run of turntables in the eighties and I always liked to sketch up tonearms”

am now busy with The Wand. About six years ago I began work on this tonearm project and started modelling it on CAD for a couple of years. It went through a long period of development before it reached market and now it is beginning to bring me OEM work with a number of small turntable manufacturers. Since the Munich High End Show this year I’m also working with several British and European turntable makers.”

Although Design Build Listen didn’t start off with the express intention of being ‘a vinyl company’, Simon confesses that he has always toyed with the format. “I made a



Design Build Listen's Simon Brown has a wealth of audio engineering experience

small run of turntables in the eighties, and I always liked to sketch up tonearms. I hadn’t really ever done anything about them, partly because vinyl began to disappear, but then five or so years ago I could see it coming back. I could see an opportunity there, but naively thought, ‘oh yeah, I can just knock out a tonearm’, and it would be easy, and

then maybe someday I’ll do a turntable too. But then everyone seemed to be doing turntables and there was a shortage of interesting arms to go with them. I looked at the existing ones and didn’t like a lot of what I saw from an engineering point of view. You take one look at them, and see ‘issues’. I had been there and done that. I knew that New Zealand is a good place to deal with carbon fibre, because we have a boat industry and the material offers some possibilities. So I thought I would do something about it.”

Hatching a plan

This didn’t initially mean a dramatic change for him or his company. “It took me quite some years of playing both in my mind, and on CAD,” he tells me. “I am an admirer of Nelson Pass, and in the same way he liked simple circuits, I like simple tonearms. I want to strip everything away as much as possible, because every part must contribute to the sound, and probably not in the way you want it to. There’s a practical reason too, because the simpler and more elegant you make it, the less you spend on tooling and parts. At the end of the day, if you’ve got a wonderful tonearm that has got 300 beautifully made components then I might be impressed, but I am not sure it helps the customer. So I started thinking, can I do a simple design in carbon fibre? I wanted a large diameter, I wanted it big, because it’s stronger. I did the maths and I was off!”

When he built the first prototype of The Wand, Simon admits that he didn’t know what it was going to sound like. “I was so relieved because actually it was rather good. I was most struck by how low the noise floor was, you could just hear more musical detail. When you reflect on it deeply, it often seems analogue shouldn’t work – you’ve got this groove, 0.1mm wide, you’ve got a diamond that you drag through it. Yet the ripples in the groove walls that constitute music go over 70dB smaller than this (remember 70dB is a one with 70 noughts on the end) so you’re basically talking about the information in it going down to molecular level. You have to do a seemingly impossible thing, you are trying to hold the cartridge



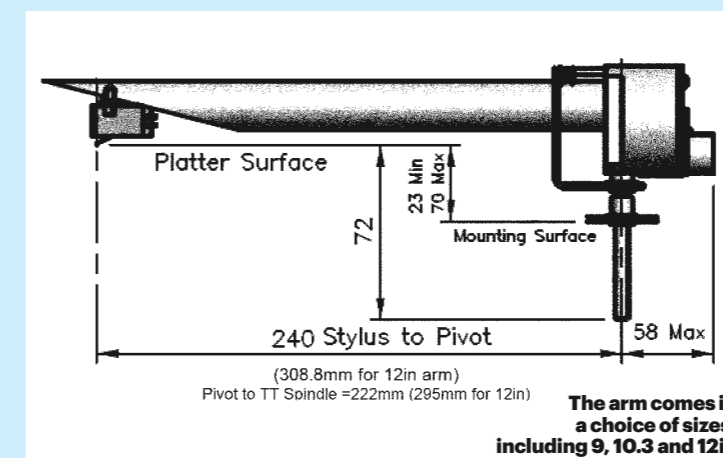
The Wand tonearm is a striking-looking unipivot design using a carbon fibre arm tube

over the record groove and it has got to be rock solid, and yet it also has to move up and down over warps, and be able to wobble sideways as it tracks and so on. It really shouldn’t work at all! Yet this shows why arms are so important, any resonance alters what the stylus picks up”

A keen collector of classic hi-fi, he has obviously thought about tonearm design from a philosophical as well as a practical viewpoint. For Simon, resonance greatly harms the sound of a tonearm so it is paramount to minimise it. “You’ll never make an arm not resonate, particularly as you have a constant random noise generator (music) pumping vibrations up it, these will excite resonances which in turn will affect what you pick up. But The Wand is very stiff, and this works like a kind of noise reduction system and drops the noise floor. The other subtle difference about that arm is that, I was effectively trying to ‘get rid of’ the counterweight, because it too is going to resonate, whether it is coupled or decoupled. I was trying to ‘disappear’ this big lump of weight and have it as small as possible, so my arm is quite conceptually different to many others.”

Simon contends that this is important. On The Wand it’s more of a variable bodyweight rather than a counterweight; it fulfils a counterweight function but is an integral part of the design itself rather than an appendage. “The Wand is still a bit heavier than I wanted with an effective mass of around 13g,” he says. “I was fighting for every point one of a gram; this isn’t cheap to do, so it encourages careful thinking. Nowadays I use a headshell made of laser sintered [3D printed] titanium and the counterweight is brass, something I am inclined to think is slightly better sounding than the steel I used earlier. I mostly run Cardas wiring, as a continuous line from the cartridge tags to the RCA phono sockets. Inside the arm, the wire is a twisted pair.” For all the technology, listening played a key role in evaluating alternatives in developing The Wand. If forced to make a choice, analogue voicing was favoured,” he adds.

On early versions of The Wand, the bearing system had a kinematic support – three balls sitting on another ball. “The idea was to have a good but economical-to-make bearing,” he tells me, “but the more I thought about it, the more I realised it was ▶



The arm comes in a choice of sizes, including 9, 10.3 and 12in



The quality of materials used belies the price of the product

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the correct way to go. It's all very well to say that you've got super, finely-toleranced ball races – and there are some really remarkable ones out there – but at the end of the day, they've got to roll and move because otherwise they jam, so there has to be some slop in there. It should be a microscopic amount, but it's got to be there. With the latest (v2) versions of the arm, I have moved to a closer variation on a more conventional unipivot, which is basically like a ball and cup system. I've got a polished chrome ball that sits on the tungsten carbide cup and it has a really well-defined point of contact. This gives a really nice tight bass quality, by unipivot standards – if I had lost this then I wouldn't have followed such an approach.”

In my view, unipivots – when done properly – give a better sound than a conventional tonearm at the same price, because the bearing assembly is cheaper to make so you can spend more on making the arm better, elsewhere – on the headshell,

“I believe vinyl works at a really fundamental level and is still likely to be vibrant for years”

armtube, whatever. Simon agrees. “With The Wand, I set out to do a really good affordable tonearm. You've got the Rega for a few hundred pounds and these embarrass a lot of arms at many times the price, then you've got the super arms at many times the price, and The Wand fits neatly between the two.

With under a dozen “significant” parts, Simon's arm has simplicity designed into it, but getting the finished product to a uniformly high standard in a production run of many hundreds is still a challenge. He tells me that he assembled the early arms himself, “which was a great way or sorting out bugs and assembly issues.” Now though, he has others make it under close supervision and quality control techniques. “Having been trained using Japanese design and manufacturing philosophies, there is a process of continuous improvement. I have been lucky in knowing an 85-year-old watchmaker who loves making the clever jigs and fixtures you need for tonearm

assembly. New Zealand has small-scale, skilled engineering companies who are happy to do the small volumes required. Perreux is based in the same city as me...”

As well as design and engineering, Simon is passionate about music. A friendly, softly spoken guy, you don't get the eyebrow-raising histrionics of some others in the specialist hi-fi industry. He's the very epitome of reasonableness, giving considered replies to every question I ask – even when I ask his opinion on the great analogue versus digital debate. “Cheap digital isn't bad. It might not quite have the musicality or the engagement of analogue, but at least you're not actually struggling to hear it, whereas a turntable that someone builds for a really cheap price is not nice. I also think that vinyl doesn't completely cover itself in glory.”

Snap, crackle and pop

One of vinyl's weaknesses is noise, he says. “It hums and pops and cracks, but the funny thing is that human beings don't mind. Just like having a conversation in a loud pub, we've got this amazing filter system that our brain needs to do. We actually manage to grab the important bits of the information. It's like a digital signal processor in your brain, but a lot more sophisticated, actually. I can see there is huge potential for high-resolution digital because we don't like unnecessary filtering before it reaches our ears. Nelson Pass is one of my gurus and he observed that everything you add seems to take away something too – so actually simple is better whenever possible. When you try to be clever about something, it doesn't actually work the way you think it does. Take the whole MP3 thing; it was sold to us as removing the music you can't hear, ‘we'll just pop it out and no one will notice’, but actually humans are really good at spotting things and just know when something is not quite right!”

Aside from sonics, the really nice thing about vinyl for Simon is that it's a different way of hearing music for the new generation. “I'd say it's the people who are now between around 18 and 28,” he tells me. “They have been brought up with the whole single track digital download thing, so they're suddenly stuck by something that you have to listen to in a 20-minute block

LISTEN IN

Simon Brown is a child of the seventies, and unsurprisingly confesses to a love of Steely Dan, Pink Floyd and Rickie Lee Jones. Yet he admires musicians who explore and experiment, so Rye Cooder and Elvis Costello are heroes for him because of their collaborations. “Strangely, despite living here [New Zealand] at the time, I didn't engage in The Dunedin Sound, but only belatedly am now discovering bits of The Clean, The Chills and The Verlaines.” He says he is “erratic” about classical music, alternating between total immersion and not listening to it. Nowadays he's really into live music, too. “I feel musicians are far more engaged when they are doing a single coherent performance. Give me real mistakes over the boredom of overdubs! This ties in with my liking for full-range loudspeakers which tend to favour simple acoustic recordings.”

Speaking of which, Simon's home system “is pretty DIY”, with only the cartridges and his Njoe Tjoeb CD player being bought – although the latter is hardly mainstream. He generally uses a heavily modified Lenco L75 turntable, which is partly because he can simultaneously mount 9.5in, 10.3in or 12in Wand tonearms. “I have also become an idler drive convert”, he confesses. This usually feeds a Pass DIY Pearl II phono stage, and his power amp is one that he designed (and published in *AudioXpress*). “It's a valve/MOSFET hybrid putting out 50W, about half this in Class A (<0.1% distortion with no global negative feedback). My speakers are very efficient full-range Fosterex 8in units mounted in ported cabinets. I have got another pair that I'm slowly working on as a fun project (rather than a commercial one), which are interestingly different.” A bit like Simon, really!
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– unless you really hate it! Suddenly vinyl gives them a coherent work that sits on one side of an LP, designed to be played in sequence like the second side of *Abbey Road*. I love the way it forces you to listen! Indeed, I remember reading about some psycho-acoustic research done that concluded that you derive more pleasure when you experience music from beginning to end.”

He points out that vinyl has been on an upward sales trend for a decade now, “and I think there are at least another 10 good years ahead”. What then? “As I believe vinyl works at a really fundamental level, it may back off a bit once the fashionistas move on to the next big thing, but it's still likely to be vibrant for years to come. It will be interesting to see if the new generation of musicians bring themselves up on vinyl, and start to add the interesting complexities and sound quality that drew so many of us into hi-fi in the seventies. If this happens, we could be just starting!” ●

