

The world according to...

# Krell Industries

This month Hi-Fi Choice talks to the main man behind high-end American muscle-amp royalty, the king of Krell himself... **Dan D'Agostino**. Interview: Malcolm Steward

**D**an D'Agostino is the co-founder and CEO of Krell, the American high-end company that's perhaps best known for building hugely powerful amplifiers. When asked about them once he quoted the Muhammad Ali catchphrase, "Float like a butterfly, sting like a bee..." When asked to explain what he meant by that, D'Agostino replied, "Ali was a very powerful boxer but he also had finesse. Anyone can build a powerful amplifier. The trick is building one that sounds good even at low levels." This ability to sound good at all levels has always been a key feature of Krell designs, right from the early days, back in the 1980s.

We caught up recently with Mr Krell when he paid a flying visit to the UK during the London Sound & Vision show.

**HFC:** How did you make your way into the high-end business?

**DD:** When I was a child – around the time of the birth of hi-fi – my father was very much into music, and companies such as Marantz and McIntosh were becoming popular in the United States. He bought some of their components and I became interested. I started reading *Wireless World* and looking at how amplifiers were put together. The subject fascinated me, and my electric shop teacher encouraged this. He taught me how components and circuits worked and encouraged me to build something. I started with a *Wireless World* circuit – a Williamson push-pull tube amplifier. I got it working and brought it home to play through my father's hand-fabricated Klipschorn loudspeakers. It sounded really

good and that encouraged me to continue.

When I finished school I started working in an audio store to learn about the equipment. Then I began repairing equipment at the store and before I knew it I was pretty heavily involved with the hi-fi industry.

I did a few jobs for some other companies, but I really had the most fun working in audio stores. I did a little work for Ira Gale way back in the 1970s – we worked on an amplifier for a long time, but he never wanted to make it a product – and then I worked for a New York company called Great White Whale for a little while, before deciding that I wanted to build a Class A amplifier, which seemed like the thing to do. I thought there was a niche in the marketplace for a really powerful Class A amplifier.

I designed one and played it to a friend who worked as a reviewer and asked him what he thought. He told me it was incredible. There were no other 100-watt Class A amplifiers around at the time and I thought I was on to something really good and ought to start a company, so I formed Krell with my then girlfriend. We started building amplifiers in September 1980 and showed our first three products in January 1981. We received enough orders at that show to scare us! We sold about 40 amplifiers and when we got home we looked at each other and said: "How are we going to build all these amplifiers?" Some of the folks in our neighbourhood came round and helped us. Somehow we turned what was a real cottage industry into a proper business.

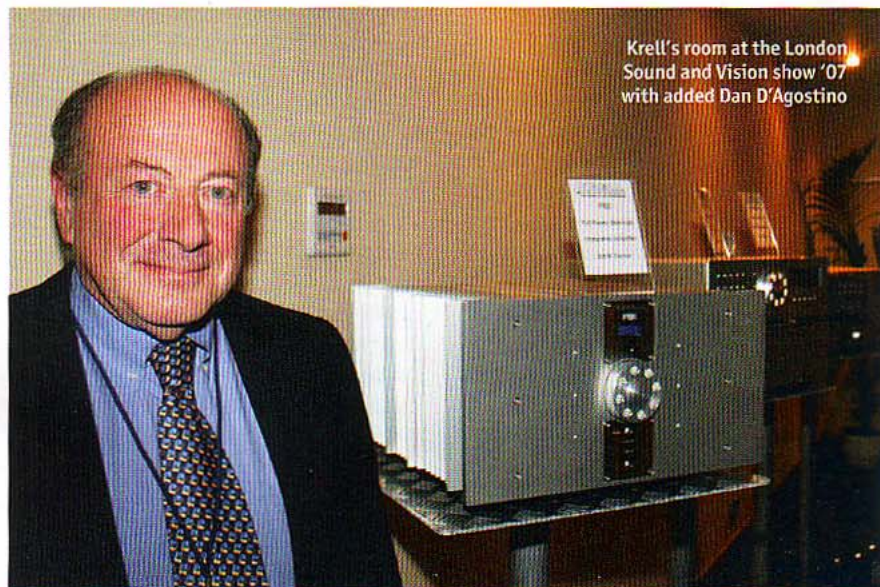
**HFC:** Where does the company name come from? It sounds like a sci-fi reference.

**DD:** It came from the 1950's sci-fi movie, *The Forbidden Planet*. The Krell were beings with unlimited power.

**HFC:** That's appropriate because your amps have always seemed overly muscular, especially in the UK where 100 watts used to be PA territory. Why do you feel the need for so much power?

**DD:** I once read an article that was written by

**"You can scale a big amplifier down but it's very much more difficult to scale a smaller amplifier up."**



Krell's room at the London Sound and Vision show '07 with added Dan D'Agostino

Julian Hirsch discussing how much power was needed to reproduce a piano, and that really influenced me. It was some extraordinary amount – 1,100 watts or thereabouts – through a pair of relatively inefficient AR speakers at listening levels, not concert levels. I began thinking that power was something that everybody was lacking and so I started building bigger and bigger power amplifiers.

I found that if I took the original KSA-100 circuit and made it bigger, it had more power but sounded worse. So, I knew that when I built a bigger amplifier it had to be something that was designed from the outset to be bigger: you can scale a big amplifier down but it's very much more difficult to scale a smaller amplifier up. The situation is something like having an oxen-drawn cart and attaching 10 more oxen to the front of it: okay, so it might pull a bigger load and it might go faster, but you'll still struggle to control it!

Once I'd got a power amplifier to sound exactly like the KSA-100 but to deliver about 600 watts, I realised that you really did need power to play music. Listening to the same music at the same levels, everything sounded more relaxed, more open and more musical through the bigger amplifier. That is why Krell pioneered trying to make really big amplifiers that sound musical.

The latest amplifiers, the Evolution series, represent 27 years of doing that. I think we've finally got to a point where we're building really big power amplifiers that are extremely musical. And they're solid-state – a lot of people wonder if they have tubes in them. We didn't aim for a tube sound because I'm not a big fan of the tube sound. I wanted something that played anything and provided all the micro detail that's possible in music today, and I think we've accomplished that aim.

**HFC:** Are your amplifiers still Class A? I doubt the environmentalists would approve if they were.

**DD:** No. Our new amplifiers are cascoded designs that use many pairs of transistors biased in individual groups such that they mimic – but aren't pure – Class A: can you imagine the heat produced by a 900-watt Class A amplifier, not to mention the power it would require? In practical terms, it's almost impossible to build a Class A amplifier producing more than 300 or 400 watts. Our current amplifiers are much more efficient than the older Class A designs.

**HFC:** When you sit down to design a new amplifier, what features on your list of priorities for it – on the list of things you want it to achieve? I ask this because



No KIDDing as Digital Dan steps up the iPod generation with Krell's take-no-prisoners dock.



**“In a typical CD player and pre/power amp system, you'll have around seven voltage gain stages. In the same Krell system we have one.”**

❑ the typical Krell sound – and the American high-end sound in general – seems to be quite different from what the British high-end sets out to deliver?

**DD:** I agree with that, although I tend to think that our latest group of products and some of the British designs I've heard recently are coming very close together.

My first check box would be sonic integrity. It would have to sound good without accenting any particular areas. Second, it would have to be reliable and consistent: a circuit that was 100 per cent repeatable so that every one I built would sound the same. Then I think the build quality and components would have to be as good as those I'm using now. I wouldn't want to change either of those aspects.

As far as circuit topology goes, I don't have anything in my brain that betters the Evolution product I just released. Although that's not to say that I won't!

**HFC:** Could you explain the CAST technology that features in your Evolution range?

**JF:** We've been working in the current domain: we believe that the fewer voltage gain stages you have in a circuit, the better off you are.

When you switch to the voltage domain you add noise, gain and distortion. It occurred to me that we have such gorgeous current transforms, where signals are very linear and go up as far as 4MHz: the circuitry is awesome and we can't repeat that in the voltage domain because when we convert we have more dirt, less bandwidth and so on. So I said to myself, "Wouldn't it be nice if we could have the output of a CD player stay in current mode then go all the way through the power amplifier and only have one voltage gain stage in the whole system?" I started to think about it and then one of my engineers and I came up with this idea for transmitting the signal through the system in current. The output impedance of the preamp is 500K and the input impedance of the amplifier is five ohms, so you can run a kilometre of wire between them with no signal loss at all.

In a typical CD player and pre/power amplifier system, you'll have around seven voltage gain stages at least. In the same Krell system we have one. And remember that every time you add a voltage gain stage you add three to six dBs of noise and distortion – even if it's really low distortion you're still adding it. We only add voltage gain in the power amplifier so that we can drive loudspeakers. So when

you listen to the system, you hear that the micro-dynamics and the low-level stuff are completely resolute. It's totally there and it comes from a black, dark area and the dynamic contrast is really extraordinary.

**HFC:** You've just introduced the KID iPod dock. Many keen hi-fi watchers wouldn't ever imagine that the iPod and Krell amplifiers could be happy bedfellows. How did the project come about?

**DD:** Well, friends with iPods used to come to my house and they always had some music on them that they wanted to hear on my big system. So one evening a friend and I went out and bought the most expensive dock we could find. It cost \$72! I plugged this thing in and the iPod sounded so-so, but at least we got to hear the music. Then I thought that I couldn't be the only guy with a big system who occasionally wanted to hear music from an iPod through it. And so I thought why not build a real component – with good build quality and technology – to do the job. At least it would let you hear the best signal that the iPod could produce.

**HFC:** What were your guiding principles when designing the KID?

**DD:** The iPod is really just a hard drive and, if you download an MP3, it has a certain sound that isn't great... but it doesn't necessarily have to be terrible. If you look at the iPod you'll find a dual differential output: we took that and ran it through a Krell current gain stage and a high-quality output stage, and we thought it sounded okay. We added tone controls – which often help with MP3s – and then we also realised that with an 80GB hard drive you can record quite a few CDs with no compression... and when you do that the thing sounds just like a CD.

**HFC:** Does your move into iPod territory indicate that we're going to see a Krell hard disk server soon?

**DD:** I'm certainly looking towards that possibility, although it would mean partnering because I don't want to get into the software side of things. If we found another company to take care of that, and we did the DACs and the output stages, then we could doubtless come up with a first-rate product.

**HFC:** You've just launched some dramatic looking loudspeakers; first the LAT-1000 and Revolution ranges, and now the Modulare. Could you tell us a little bit about the design ethos behind the Modulare?

**DD:** I wanted something that looked a little Bauhaus – industrial, simple. They probably won't be to everyone's taste, but someone who can appreciate industrial design and the fact that its function is its function. Aluminum is a wonderful material to work with because it's almost thoroughly non-resonant at frequencies you can hear. [The cabinets – two per speaker comprising a two-way and a separate woofer tower – are made from 25mm thick panels of aluminium.] There's no energy storage, so whatever sound comes out of the speakers is coming from the drivers not the cabinet. The cabinets don't vibrate with the music like so many speaker cabinets do. And if you take all those resonances out of the cabinet, all you're left with is the sound from the drive units. There's none of that field of distortion behind the music that most speakers produce.

With Dan D'Agostino's passion for the finest in audio now pushing the envelope of what the iPod can do and Krell's continued domination of the high-end market, it's clear the company is striving to create a new generation of audiophiles. On past performance, you wouldn't bet against Krell achieving this.

With that, Mr Krell poses for a photograph or two and then is gone, though not in quite the same dramatic fashion as the technologically advanced race from classic sci-fi, after which the company is named. **HFC**