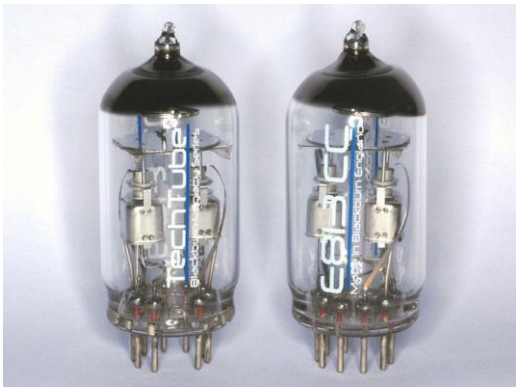
Buy, Buy Blackburn – a New Range of Valves from Blackburn MicroTech Solutions

Neville Roberts

Neville Roberts gets to play with some prototypes of a brand new valve which is about to emerge from one of the most famous valve factories in the world!



When I first got wind of the news that valve production was starting up again at one of our British institutions – the old Mullard valve factory in Blackburn - I was rather excited, to say the least!

As a definite 'valve-head', to my ears the sound produced by valve equipment is simply unbeatable. One of the reasons, I believe, that valves sound so good is that, simply put, the electrons have plenty of space to move around i.e. a low current density. On the other hand, solid-state devices squeeze all those electrons across tiny p-n junctions and the like. It's a bit like egg production where transistors would be the battery hens, while valves are definitely free-range! However, before all you semiconductor aficionados start reaching for pen and paper, I must stress that, in my opinion, solid-state has an equally important place in Hi-Fi – an all-valve no-transistor DAC would certainly generate a lot of heat!

A bit of history

The story begins in 1919 with the collapse of the Z Electric Lamp Company of Southfields run by Captain Stanley R Mullard! The following year, Captain Mullard moved on to set up the Mullard Radio Valve Company Limited.

In 1924, still wanting to expand as the demand for valves continued to grow, Captain Mullard sold half his shares in the Mullard Radio Valve Company to NV Philips Gloeilampenfabriken of Eindhoven, Netherlands. This injection of capital allowed for the construction in Blackburn of what was to become the largest valve assembly works in the world. When the doors opened in 1938, the new Mullard Radio Valve Company Limited site employed 28 staff. This grew to about 3,000 people by 1945 and by 1954 the site was capable of manufacturing 500,000 valves per day.

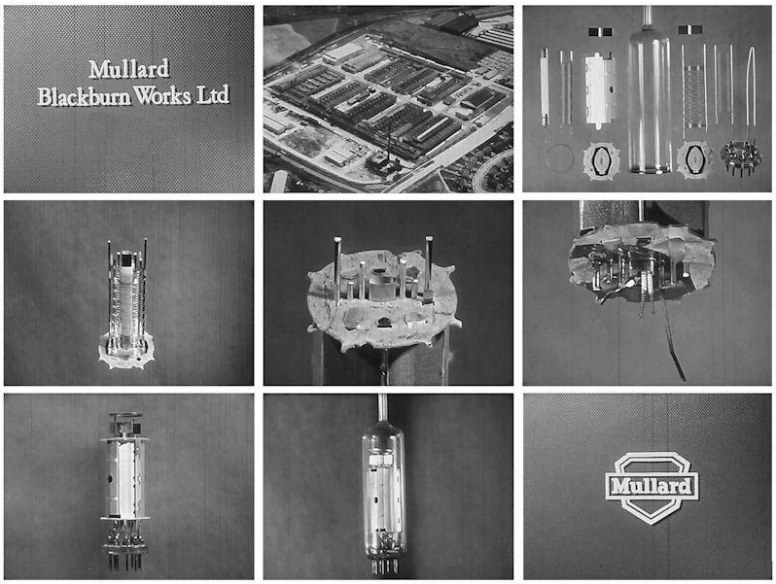
At its peak in 1961, the Mullard site generated its own gas and electricity, making it fully independent of the local town supplies. Over 6,200 people were employed both in Blackburn and the various feeder factories supplying raw materials and sub-components to the valve works. Sadly, due to the demise of the valve in favour of the transistor, by 1984 all these factories had closed or moved to other activities. The Mullard organisation changed its name to Philips Electronics Components (the main share holder) and continued to make and develop cathodes for use in cathode ray tube (CRT) applications.

Alas, even the good old CRT is now history for domestic televisions since solid-state LCD and plasma displays have taken over in recent years as display devices. This might have marked the end of an era, had it not been for those astute people at Blackburn who realised that there is now a growing demand for valves to be used with high-end audio equipment. The company's name was changed once again, this time to Blackburn MicroTech Solutions. With all the local expertise (indeed some of the engineers served apprenticeships in the original workshops!) and background knowledge of valve manufacturing and cathode development, the Blackburn factory turned its attention to audio valves with the ambition of once again being at the leading edge of valve development.

The dawn of a new era

The company is, of course, no longer able to use the 'Mullard' name as this brand is still owned by Philips Electronics in the Netherlands. However, with the launch of the TechTube brand, Blackburn MicroTech Solutions hopes that the heritage and tradition associated with the Blackburn factory will be revived. In fact, 2008 saw the launch of the first real valve development since its initial launch back in the 1920s, with the production of the E813CC double triode.

The TechTube E813CC is functionally identical to the ECC83, but the new designation gives a clue that this is not simply a 'me too' copy of an old favourite. What those clever chaps at Blackburn MicroTech Solutions have done is to channel all their expertise into electron gun technology, resulting in a radical re-think of the design of a triode valve.

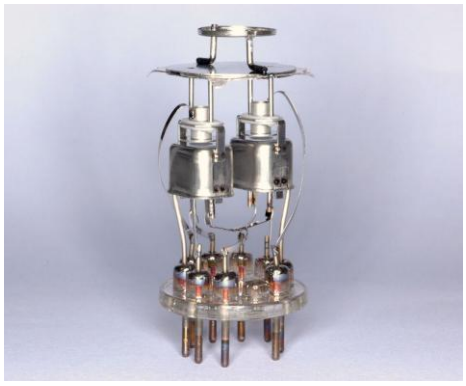


A standard indirectly-heated triode audio valve is constructed as a set of concentric cylinders. In the centre, there is a filament which is inserted into a thin metal tube to form the cathode. The cathode is electrically insulated from the filament and has a special coating to facilitate the release of electrons when heated by the filament. Around the cathode is the grid, which is a larger diameter tube made of fine mesh or a spiral of wire that the electrons pass through to reach the anode. The anode is an outer tube of metal that is the final destination of the thermionic electrons as they pass through the valve elements. This traditional electrode assembly is supported by two insulating mica washers – one at the top and one at the bottom of the cylinders. By making the anode positive with respect to the cathode, the electrons are attracted to it and their flow is controlled by a small potential applied to the grid – simple!

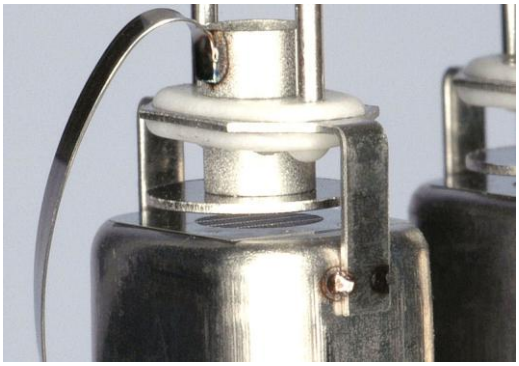
However, Blackburn MicroTech Solutions has gone back to the drawing board and developed their own structure for triode assemblies. It is a completely new way of making triodes based on micro assembly techniques previously used in the CRT industry. The result, they claim, is more accuracy and most importantly more consistency.

A new valve is born

Firstly, the valves come in a well-designed cardboard box that elegantly does the job of holding the valve securely without going 'over the top'. I am very happy that not too much of the cost of the valve is being diverted into fancy packaging. Having said that, the blue and white printing on the valve is very refined and the use of the Union Jack on the box leaves you in no doubt as to their pedigree.

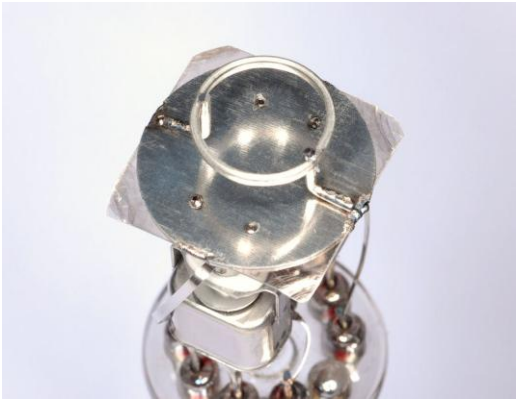


From the close-up photographs of the electrode assembly of the new valve, it is easy to see how different it looks from a conventional valve. The filament and cathode assembly, together with the grid, are located inside a metal can. Instead of being emitted radially as in a conventional valve, the electrons are directed through an aperture at the top of the can that has the grid laser welded to it. The anode that collects the electrons is situated on the other side of the grid just above the can and is in the form of a little metal 'top hat'. So the elements of the valve are of a planar construction, instead of the conventional radial design, which is strikingly similar to the design of electron guns used in CRTs. This is, perhaps, not surprising when you consider that the factory has been specialising in electron gun components for the past 40 years!



This planar valve design results in a valve with very low capacitance and minimal structural restraint. The low capacitance bodes well for a valve with excellent high frequency characteristics. The fact that there is only one mica support at the top of the valve, instead of the more usual two, should reduce the mechanical coupling of

the electrode assembly with the outer glass envelope and, therefore, reduce colouration through acoustic feedback to the valve. However, this has to be balanced against the risk of microphony caused by a reliance on the internal structures for support of the electrodes. The term 'microphony' is used to describe the injection of a metallic ringing into the audio signal and is caused by mechanically-induced vibrations being transmitted from outside the valve to the electrode assembly inside.



Although the E813CC has the same electrical characteristics as the ECC83 and also the identical B9A pin base and 6.3V heater for each triode, it is constructed to much tighter tolerances. Blackburn MicroTech Solutions claims that the valves will have extended life.

Additionally, the variability in performance between valves has been dramatically reduced. Due to the small surface area of the valve and the micron cathode and anode to grid distances, the internal capacitance is very low indeed, with a quoted grid to cathode capacitance of 0.4pF (25% of that of a traditional valve) and a grid to anode value of 0.9pF (50% of that of a standard valve). Finally, the filament of each triode consumes a mere 112mA. This is about 75% of the heater current of a standard valve, so the valves should generate a bit less heat, which is a good feature.

Of course, 'different' doesn't necessarily mean 'better', so how exactly do the TechTubes stand up against the competition?

The TechTube on trial

After some extensive listening with my top-of-the-range conventional audiophile valves (with a price tag to match!), it was time to swap the three ECC83s in my WD Phono3 with the new E813CC valves.

Straight out of the box, they certainly sounded impressive in the lower registers. The bass performance was crisp, tight, punchy and well extended. The bass drum in my well-used copy of Stravinsky's 'The Firebird Suite' (The Atlanta Symphony Orchestra - Telarc digital recording DG-10039) was truly breathtaking!

Initially, the top end was slightly muffled and the midrange was not as clear as I had been used to. Vocals were recessed in the sound stage and there was a general feeling of restraint to performances. I was expecting quite the reverse, given the low capacitance construction.

I should not have worried, however! After a few hours of running-in, the situation changed dramatically. The bass performance was unchanged, but the top-end reappeared from nowhere.

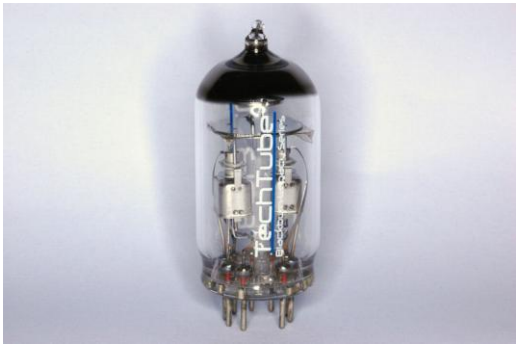
Following a full 24 hours of running, the TechTubes had clearly bedded in well. All the muffling had gone and the valves produced a sound of effortless clarity and openness. Vocal soloists took up their rightful place in front of the orchestras again and electric guitars demonstrated fantastic speed and detail in all the harmonics. This is not to say that they are at all harsh. In fact, Blackburn MicroTech Solutions seem to have achieved the wonderful valve smoothness without sacrificing clarity and detail. On jazz recordings, 'hi-hats' sound crisp, fast and sparkling. The bass notes in rhythm sections are clearly defined and well proportioned with the rest of the music.

A direct-to-disc live recording from the 1970s of 'Lincoln Mayorga and Distinguished Colleagues Volume III' (Sheffield Labs LAB-1 SL5/SL6) was scarily realistic and the TechTubes gave one of the finest reproductions of this LP that I have ever heard. Similarly, with the vocals of Thelma Houston 'I've Got the Music in Me' on Sheffield Labs LAB-2 SL7/SL8, the overall balance, presentation and realism of the sound was superb. Again, the performances were thoroughly enjoyable providing a musical and tuneful presentation that is very easy on the ears.

It was also interesting to note that these valves definitely run cooler than their conventional counterparts. Even after constant running overnight, the case of my Phono3 was barely warm and you could easily grasp a valve with your fingers to remove it.

Now, a word or two about microphony. Blackburn MicroTech Solutions do put a 'Don't flick the tube' warning in their literature! This is all about flicking the valve with the fingers and the ringing that this will inevitably cause. They go on to say that this effect is perfectly normal and is a characteristic of the design. I was using the valves in a phono stage to amplify the very tiny signals from a moving coil cartridge, so any microphonic effects would be very apparent. It was noticeable that the valves, when new, were somewhat microphonic. However, this effect diminished remarkably during the running in period, which was quite surprising. In fact, when fully run in, the valves exhibited significantly less microphony than my existing audiophile valves – most impressive!

Retailing for around £30 per valve, the TechTube E813CC is certainly a winner. In the near future, the company is also planning to introduce the E812CC and E811CC valves as replacements for the ECC82 and ECC81 respectively. Further downstream, Blackburn MicroTech Solutions intend to produce replacements for the EL34, EL84, KT66 and KT88 power valves and investigate other valves of various types to assess their suitability for the new technology.



For more information, see their website at *http://www.techtubevalves.com/*.

--ooOoo--