

A short history of the Lecson family of amplifiers

The original power amplifier was the AP1 designed by Bob Stuart. It sounded really nice and smooth but was difficult to manufacture. The input stage comprised of a balanced pair of long-tailed pairs of transistors and in order to get the distortion within the published specification both pairs had to have similar performance and this could be difficult to achieve and could involve having to change a lot of transistors.

This amplifier also proved to be rather inconsistent. If you got a good one it would last forever yet others failed in days. Particular trouble points were the driver transistors and the small tantalum bead capacitor in the feedback network. When I joined Lecson I made some changes to the AP1 circuit including changing the driver transistor type. However I no longer have any documentation and cannot remember the other changes.

The second product was the AP3 amplifier housed in a taller case and with a cooling fan at the top. This amplifier was fraught with problems and we had to stop production shortly after I joined. This could have been a financial disaster for Lecson because there were loads of parts in stock yet few amplifiers were being sold. I made a few changes to the AP3 design so that a trickle of products could leave the factory and then created a new design in a matter of weeks. This was the AP1X which could be described as a de-tuned AP3. The cooling fan was removed; a new smaller power transformer was fitted together with modified versions of the original AP3 circuit boards. The end result was a 70 watt per channel amplifier which sounded good and was very reliable.

The AP1X quickly killed off most of the AP1 sales which was good news from the factory's viewpoint. However dealers were asking about the AP3 and something had to be done. I designed a totally new circuit board which used ultra tough Motorola transistors; two pairs of MJ802; MJ4502 per channel. These transistors did not need any conventional short-circuit protection because they were good for 30 amp peaks of current.

However in order to get a high power output you need a higher power input and the existing E-core power transformer was not up to the job. I had come from Cambridge Audio which was the first company to use toroidal transformers in audio equipment. So my solution was to use an efficient toroid but a very unusual one. As the photographs of the AP3 show this transformer was tall compared to the usual flat doughnut shaped toroids of the era. The only company who could make such a transformer was Plessey; the military equipment company and the resulting transformer was very, very good and very expensive. However it made for a powerful amplifier and a typical AP3 Mk2 could deliver 140 watts.

The AP3 Mk.2 proved to be very successful in the market and as

reliable as the AP1X. The company could then stop worrying about its amplifiers and start work on a tuner.

There was one last Lecson power amplifier, the AP4. This was a massive Class A monobloc with a Class A output of 70 watts and a much higher output in Class AB. Think of it as a Krell before its time. This was a fantastic amplifier and at one time I had six of them in a tri-amped active crossover system.

Unfortunately Lecson failed just as the first batch was about to be delivered. When I bought the assets of Lecson I sold the completed amplifiers to enthusiasts then published the design in "Electronics Today" as the "System A amplifier" and sold the remaining parts as kits. Some years ago the publishers told me it was their most popular article ever and it was re-printed in different digests four or five times.

The AC1 remained unchanged most of its life. The first batch had tops made from strips of thin glass. This looked good but was hopelessly impractical and the glass was quickly replaced by a one piece acrylic top which was screen-printed. Minor changes and component variations were made but essentially it performed well apart from the rather poor headroom of the phono cartridge input. Of course the production managers (first "Pherdie" then Derek Sutton) both hated the product because it was hard to manufacture needing selection of FETs and tantalum capacitors; a lot of mechanical adjustment and with acrylic tops that marked easily so that there were too many rejects.

It was not possible to update the AC1 because somewhere along the line the original artwork for the board had been lost and boards were just re-ordered from the board maker who had a photographic plate for the design. In those days PCBs were laid by hand using black or red tape and a scalpel. I certainly didn't relish trying to relay the original double-sided board. It would be far more productive to design a new pre-amplifier and a new board.

I had begun work on a replacement which drew heavily on the Cambridge Audio Classic with its use of hybrid circuits and incorporating a phono stage with 50 dB of headroom but apart from one "chewing gum and string" prototype this one never saw the light of day and the design work ended when I left Lecson to start Mission.

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