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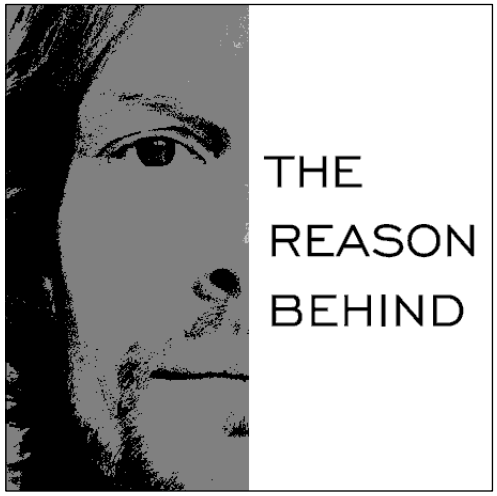

TUNDRA MONO 2

My first commercial power amplifier, **Tundra**, was released in April 2012. Two months after the introduction, I knew of at least three owners who were using *twin* Tundra's in their stereo system. They were using only one channel on each Tundra, leaving the other two channels unused. This arrangement results in a sound quality improvement over a single Tundra, due to a doubling of the power available for each channel. Using two Tundra's this way may seem like a waste of channels, and indeed it is.

Project Tundra Mono started in the summer of 2012 with a list of 14 ideas that I considered essential to evaluate. The ideas covered the areas of power supply filtering, the input, drive and output stage, the cooling, the connectors and the aluminium case. I worked them through one by one, in what I believed to be the order of importance. Redesigning and experimenting with the input stage took more than a month, but eventually it turned out that the original Tundra design was superior to all new variations. It was easy to make the sound more impressive, but at the same time it lost the harmonic flow and musicality of the original.

The drive and output stages were of particular concern in Tundra Mono. My primary goal was to improve musical performance, but if I could **also** increase power handling, it would be a nice bonus. I therefore built output stages with double and triple transistor pairs, and fine tuned each of them as optimally as I could. The multiple versions did sound more powerful, but unfortunately they also lost some of the unique speed and agility of the original. Another month had passed and I was still searching for something that could improve the original Tundra circuit.

Eventually I found it. One day I tried a five times more powerful *drive* stage together with the original single transistor pair output stage. This combination had all the speed of the original, and also added a sense of stability and effortlessness to the music. It was a marked improvement over the original Tundra and I was very happy to make this discovery. In addition, I reworked the internal cooling, which lowered thermally induced distortion.

The last experiments were focused on the connectors and the case. I tried a bunch of RCA females and speaker output connectors. To be honest, I am puzzled by the difference these details do – and how musically terrible most expensive connectors perform! Although it may appear strange, the connectors I am using on Tundra are the best sounding ones I have found so far - regardless of price. On the aluminium case, I did some mechanical tests, simply checking by ear how the circuit board should be positioned and supported. This resulted in three more screws holding the single channel board of Tundra Mono.

Tundra Mono 2 was released in February 2015. It is a completely reworked version, with the following improvements:

• The aluminium heat sink is replaced with 1.2 kg of high purity **copper**. This is the most important part of the upgrade, as it cuts the variations in temperature (caused by the music you are playing) in half in all critical areas. Less temperature variation means a more stable foundation for the music, adding weight and solidity. As if the music is bolted down firmly instead of bouncing around.

• A new Thermal Interface Material is used between electronic components and heat sink. The old material was Swedish and really good. The new one is made in Japan, very expensive and most likely the best in the world. Thermal resistance through these interfaces is now ***one fourth*** of what it used to be. When heat moves fast, the music sounds Rock Solid. The lowest bass appears as clean notes instead of indistinct punches.

• Apart from two new components and a new internal ground connection, the rear plate now has a **Status Port and trim screw.** This allows you to compensate for variations in performance due to temperature and/or ventilation where the amplifier is positioned. For instance on an open table versus in a closed cupboard. The trimming also counteracts long term drift (over years). The procedure is very simple and with each pair of Tundra Mono 2 a calibrated instrument and instructions are supplied.