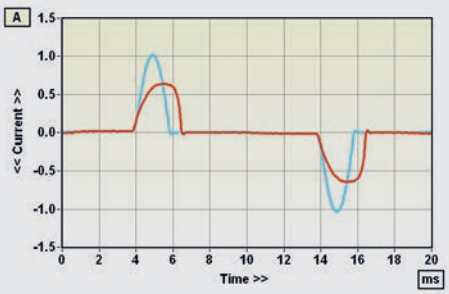
LAB REPORT

ISOTEK EVO3 GENESIS *(£12,995)*

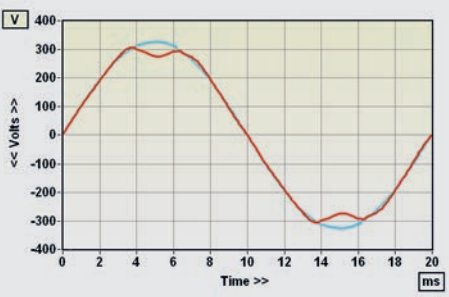
Testing mains regenerators requires some special, custom-built equipment. The first measurement, of charging current waveform, I made using an inline Hall-effect current transducer from LEM Components that can record currents of up to 80A at slew rates of greater than 60A/µs over a bandwidth exceeding 100kHz, while inserting a series resistance of only 0.18mohm. This is built into a box with flying leads terminated in a mains plug at one side and a mains socket at the other, allowing its insertion into the mains feed to any component.

Comparison of charging current waveforms from the wall socket (red trace) and from the Genesis (blue trace) is shown in below [see Graph 1]. The Genesis current pulses are textbook whereas those from the wall socket have a lower peak value and longer duration due to the distorted mains waveform. The distortion measurement itself was complicated by the output of the Genesis being floating – the secondaries of its output transformers are not connected to earth at either end, nor at a centre tap. IsoTek insists that a balanced test circuit must be used, with earth referred to the measurement computer, to achieve the best THD figures, so a balanced attenuator was built especially for the task, feeding a battery-powered INA217 low-noise, low-distortion instrumentation amplifier. Its output was recorded to hard disk as a WAV file via an M-Audio Audiophile 192 sound card for subsequent spectral analysis.

Voltage waveforms from the wall socket (red trace) and Genesis (blue trace) are also shown below [see Graph 2], while the test table lists individual amplitudes of the first four odd harmonics (each referenced to the amplitude of the 50Hz fundamental) plus a THD figure calculated from the first 20 harmonics. As the results show, overall distortion from the EVO3 Genesis is less than a twentieth of that from the mains supply and very close to IsoTek's claim of <0.3%. This, by any measure, is an excellent result. **KH**



ABOVE: Distorted mains (charging) current waveform (red) versus significantly more linear waveform delivered by the IsoTek EVO3 Genesis (blue)



ABOVE: Mains voltage waveform, from wall socket (red) versus IsoTek EVO3 Genesis (blue)

HI-FI NEWS SPECIFICATIONS

Harmonic	Mains	EVO3 Genesis
3rd	4.35%	0.12%
5th	5.05%	0.06%
7th	2.09%	0.15%
9th	0.92%	0.17%
THD (2nd-20th)	7.05%	0.32%