On an equal footing

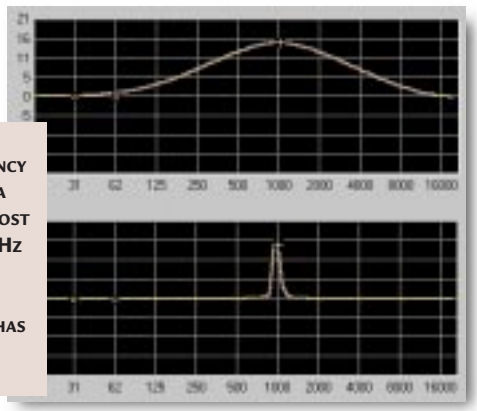
Improve your mixes no end with a touch of EQ. Steven Helstrip shows you how.

We certainly struck a chord in last month's column: feedback has been very favourable. To recap, we started to look at the processes involved in recording, mixing and mastering audio to CD. So far, we've covered how to record your MIDI instrument tracks back into your sequencer as wave files, which will enable you to make a two-track audio master. But before we reach that final stage, there's a vast range of effects that can be used to add a touch of professionalism to those home-made recordings. So, to start with we're going to look at EQ, the most commonly used effect of them all.

▲ STEINBERG'S HIGH-END QMETRIC PLUG-IN DISPLAYS A FREQUENCY CURVE IN A SEPARATE WINDOW. AS YOU CAN SEE, THERE IS A FREQUENCY BOOST AROUND 1KHZ, WHILE THE LOW AND HIGH FREQUENCIES HAVE BEEN ROLLED OFF SLIGHTLY USING LOW- AND HIGH-CUT FILTERS

EQ, or equalisation, was originally designed as a corrective effect to make up for the loss of frequencies in early recordings. What started out as basic tone controls (similar to bass and treble on a home stereo system) have developed to become precise and creative studio tools. In reality, an EQ module can do only two things: increase (boost) or reduce (cut) audio frequencies. Yet it can take a lifetime to master those few controls, especially when it comes to mixing 12 or more separate audio channels. But with just a basic grasp of EQ-ing, you can considerably improve your mixes.

EQ modules fall into two categories, graphic and parametric. A graphic EQ may have up to 30 preset frequency bands which you can modify with faders [Fig 1]. These bands will typically start from around 40Hz (sub-bass regions) and rise up through the full frequency spectrum to around 16kHz. Parametric EQs enable you to dial-in specific frequencies and they provide at least two controls, frequency and gain. The frequency control is used to select the frequency range you want to modify. The gain setting then enables you to cut or boost that range. Some EQs provide a third control, called Q, used to set the bandwidth of the frequency range [Fig 2]. The higher the number, the narrower the range.



▶ FIG 2 THE UPPER FREQUENCY CURVE SHOWS A FREQUENCY BOOST AROUND 1000HZ WITH A LOW Q SETTING. THE LOWER CURVE HAS A HIGHER Q SETTING

▶ FIG 1 TC WORKS' NATIVE PARAMETRIC EQ ENABLES YOU TO SELECT BETWEEN 7, 14 AND 28 BANDS OF EQ. TO APPLY CUT OR BOOST YOU SIMPLY DRAW A CURVE ONTO THE TOUCH-SCREEN

EQ is used to create separation in a crowded mix by using it to narrow the frequency range an instrument occupies. It may also be used to create special effects. For instance, you can make a vocal sound as though it's being sung over a telephone by limiting its frequency range (or band) to that of a telephone (around 1kHz), or you may simply need to boost the bass or treble frequencies to add weight or presence to a mix.

There are no hard rules on how to apply EQ. If a setting sounds good, then it is good. Let your ears be the judge.

Questions & answers

Q Just finished your bit in December's issue — lots of tips, cheers. I have recently upgraded my PC to a 266MHz Pentium II, which includes a Matrox Productiva graphics card. Everything works a treat, but the timing in Cubase seems to be messed up slightly. Would you know what the culprit is likely to be? Also, I'm thinking of upgrading to a 380MHz AMD K6-2 with a 100MHz bus and lots of 100MHz RAM. The big question is: does the AMD K6-2 work better or worse than a PII? One last thing (honest!) — the 512K RAM on my AWE 32 is so pitiful that I can only load drum beats and high hats into it. What sound card would you recommend I upgrade to?

WILL SHAND

***A** There are many things that can cause timing problems with Cubase, but once you've got to the bottom of it, you should have a solid system sitting in front of you. Hiding away on your Cubase CD-ROM is a troubleshooting Acrobat file (or PDF) which has a large section on MIDI timing. If it's not covered in there, check out Steinberg's Knowledge Base on the internet. With regard to which processors are best, Steinberg still recommends Intel chips due to their higher floating-point performance — crucial for audio processing. As to which sound card should you buy, well, at just £130, nothing around at the moment comes close to Creative's SoundBlaster Live. Not only does it sound great, but you can also use up to 32Mb of your PC's system RAM for sampling. You can find the Steinberg Knowledge Base at www.ca.steinberg.net/main.html.*

EQ tips and tricks

Here are some general equalisation guidelines which may help you to achieve your musical goals more quickly:

- **Before reaching** for the EQ dials, first try to hear in your head how you want the instrument to sound. Listen to commercial mixes and compare them to your own to see if you're on the right track (no pun intended).
- **If you're trying** to remove an element from a sound, such as hiss, visualise where in the frequency spectrum it lies.
- **Next, increase the gain,** say 8dB, and then sweep through the frequency spectrum until the sound you want to remove becomes as pronounced and obvious as possible.
- **Following this,** reduce the gain. The exact amount of cut should be decided by listening to the part in relation to your mix.
- **When attempting to** 'bring out', or enhance, a particular element within a sound, the natural inclination is to tune in to the sweet spot and then boost the gain. However, you can reach a point where you boost many bands; in real terms, you may as well just turn the whole track up. It's better to cut the frequencies you don't want. This will open up the sound and create 'space' for other instruments.

◄VST'S BUILT-IN EQ SECTION. HERE, IT IS SET UP TO APPLY 2.9DB GAIN AT APPROXIMATELY 6KHZ TO MAKE THE KICK-DRUM TRACK MORE CLICKY

WAVEPLANT SAMPLE CD

Reader Ben Rossborough has spent much of the past four years developing a one-off analogue synthesiser which he calls the WavePlant. It's unique in every sense and comprises, among other technical wizardry, nine sound oscillators, six LFOs, nine envelope generators and six banks of filters. Roughly translated, that's a lot of sound-creation potential, 140 examples of which have been captured on this sample CD. Listening to sample CDs is no more exciting than looking through a book of typefaces, but when something refreshing comes along, it makes the whole experience that much more enjoyable. There are three examples featured on this month's *PCW* cover-mounted disc, so do have a listen.

The WavePlant can certainly be described as different, although there are some sounds which are reminiscent of the classic VCS 3. The disc starts with a collection of bass samples including sounds that range from deep and clicky, dubby and squelchy, though to Moog-like and... well, the unusual. Then we go on to effects, organs, synth leads and a selection of altogether off-the-wall synth textures. You get most sounds in audio, wave and Sound Font format, both with and without effects (usually reverb or distortion).

If you're looking for an all-round collection of dance sounds and breaks, this isn't for you. If, however, you want to get your hands on a collection of synthesised sounds that have never been heard before, this is a great disc to add to your collection, although you don't get too many sounds for your pounds.

Price *£25 (inc VAT and delivery)*
Contact Ben Rossborough *01497 820134*

PCW CONTACTS

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