

THE ESSENTIAL GUIDE TO...



Vocoders

On the DVD
VIDEO TUTORIAL
 Enjoy a night in with our vocoder video tutorial. It's in the **Videos** folder

Mac PC Master the vocoder effect and learn how to recreate the classic talking synth with our easy to follow guide...

- JARGON BUSTER**
- ▶ **MODULATOR**
 One of the vocoder input signals. The tonal characteristics of this signal are 'imprinted' on the carrier
 - ▶ **CARRIER**
 The other vocoder input signal, which is modified to take on the tonal characteristics of the modulator signal
 - ▶ **BAND**
 A range of frequencies used in analysing the modulator signal. Vocoder typically have between four and 128 bands

Having already covered some of the most popular effects here in this series, we now turn to look at one of the more obscure creative options lurking at the back of your crowded plug-in folder. Although vocoders formed an integral part of certain artists from the 1970s' sound (Kraftwerk and Pink Floyd are two prominent examples), their use is not nearly as widespread today. While most people don't consider the disappearance of 'singing robots' from mainstream music to be a major loss, it would be a shame to abandon it

altogether and lose out on the untold number of creative opportunities it provides in the process.

Although it probably isn't a good idea to use a vocoder on every single track you produce, it's OK to really go all-out when it is deployed. Caveats

aside, we'll launch straight into the usual *Essential Guide* routine, explaining what vocoders are in more detail and how they can be used. Finally, we'll get practical by unpacking basic vocoder use, and round things off with a brief tutorial to cement it all together. **cm**

MOST PEOPLE DON'T CONSIDER THE DISAPPEARANCE OF 'SINGING ROBOTS' TO BE A MAJOR LOSS

THE ANATOMY OF A VOCODER

FREQUENCY RANGE
 The Min and Max controls set the range of frequencies over which the vocoder works

FORMANT
 Try raising the Formant setting to get the classic 'chipmunk' effect

BANDS
 Click here to set the number of bands for the vocoder to work with; you can choose from 4, 8, 16, 32 or 64 bands

BAND ENVELOPE
 The Attack and Release controls change the fade in and fade out times of each frequency band

MIX SLIDERS
 These controls determine whether the vocoded signal is mixed with the original signal and/or carrier at the output of the vocoder

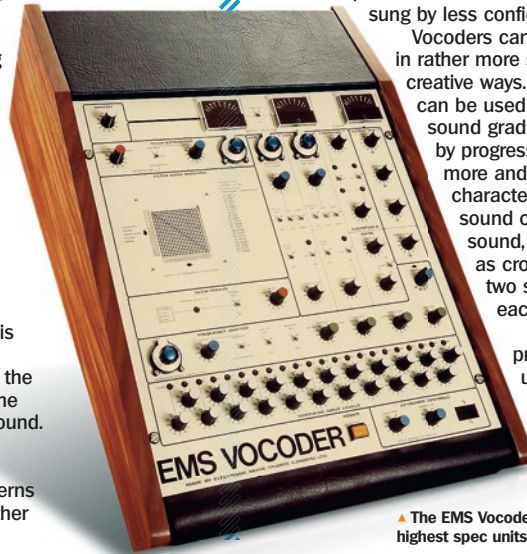
BAND LEVELS
 The current level of each vocoder band is shown here; selecting fewer bands will reduce the number of them shown in this part of the display

WHAT IS IT?

Have you ever stopped to consider who came up with the idea of making a synth speak or a robot sing? It may come as a surprise, none the less, to find that the vocoder arrived on the electronic music scene as a spin-off from the telecommunications industry.

The vocoder, or VOice CODER, can be traced right back to the 1930s, when engineers were investigating ways of transmitting speech using less bandwidth, allowing more phone conversations to be carried over long distance cables. Vocoder works by breaking up the audible frequency spectrum of a signal into a number of bands and calculating the average signal level within each band – a bit like the spectrum analysers found on cheap hi-fi systems. The level of each band is then applied to a completely separate signal, transferring over the spectral fingerprint (ie, some of the sonic character) of the original sound.

If this process is repeated continuously, it can be used to transfer recognisable sound patterns (like human speech) over to another sound source (like a synth).



▲ The EMS Vocoder 5000 was one of the highest spec units ever produced

WHAT'S IT USED FOR?

By far the most obvious use of a vocoder is for robotising vocals or making synth parts speak and sing (as described in *What is it?*). While this technique certainly has strong retro connotations, it's also popular amongst less vocally talented artists, and is used to disguise bad vocal performances or to beef up vocals sung by less confident singers.

Vocoders can also be deployed in rather more subtle and creative ways. For example, they can be used to morph one sound gradually into another by progressively transferring more and more of the character of the final sound over to the initial sound, at the same time as cross-fading the two sounds into each other.

Vocoder principles, are also used behind the scenes in some Cher-esque, Auto-Tune style effects.

HOW DO I USE IT?

A basic vocoder normally has two input signals – a modulator and a carrier. The harmonic characteristics of the modulator are applied to the carrier – so for the speaking synth example, the modulator would be a speech sample, while the carrier would be a tone generated by a synth.

Generally speaking, a harmonically rich waveform should be used for the carrier, so that the vocoder has plenty of harmonic material to work with. For this reason, sawtooth carriers are definitely preferable to pure sine waves. One simple but effective way of adding extra harmonics to an existing signal is to run it through your favourite distortion plug-in.

As mentioned before, vocoders work with a fixed number of bands. A high number will sound less artificial but will use up more CPU. Conversely, a low number of bands will give a very robotic sound but use far less in the way of system resources.

More advanced vocoders offer a plethora of filter related controls too numerous to cover in detail here. As ever, the best thing to do is to start with the factory default preset and experiment from there.

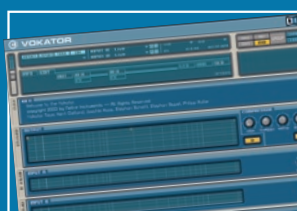
Naturally, vocoders can be used in conjunction with other effects. Vocoder parts can sound a little thin and benefit from being post processed with a short reverb or some delay. Try to avoid excessive post processing however, or the vocoded signal will drop back in the mix.

FIVE TO TRY...

mda Vocoder
www.mda-vst.com



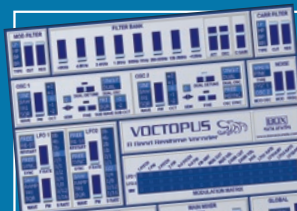
Native Instruments Vokator
www.native-instruments.com



Prosoniq Orange Vocoder
www.prosoniq.com



Boxsounds Voctopus
www.boxsounds.com



SKNote TolcBocs
www.sknote.it



STEP BY STEP Using CM Vocoder in FL Studio



1 Add a 3xOsc to the step sequencer and set the waveform to sawtooth or squarewave. Set the output channel to 1 and pan the synth hard right. In the mixer window, select channel 1 and route its output to channel 3 using the black selector box at the bottom right. »



2 Select Channels » Add One » Speech Synthesizer and type in some text. Select the **Child** personality and set the speech style to **Sing**. Dismiss the dialog, route the resulting Fruity Slicer to channel 2 and pan it hard left. As before, route mixer channel 2 to mixer channel 3. »



3 Select mixer channel 3 and load CM Vocoder (in the **CM Studio** folder on the **cm** DVD) into the first effect slot. Select eight bands and choose **Filter Type 3**. Make sure the 3xOsc channel is selected, start playback and play some notes to hear the vocoder in action.