CRANE SONG STC-8 Discrete Class A Stereo Compressor/Peak Limiter

by Barry Cleveland

Having walked around the recent AES convention in Los Angeles, I know that the retro audio craze is still going strong. Outboard processors with huge knobs, dials and meters--often attached to brightly colored cases--were everywhere. At times, I wondered if I hadn't taken a wrong turn someplace and stumbled onto the set of a '50s sci-fi movie.

The Digital Age brought us nostalgia for the "good ol' days" of tube distortion and analog tape saturation, and plenty of folks have created products catering to that craving. Most of these devices employ either tubes or ICs combined with some sort of special tube or optical emulation circuitry, and many of them are designed to sound like specific "vintage" processors. But there is at least one new company that has taken a different approach, and the result is an exceptional compressor/peak limiter that doesn't really sound like anything else. However, if you just have to add a little distortion to warm up your cool digital tracks, it has a switch for that, too.

The Crane Song STC-8 Discrete Class A Stereo Compressor/Peak Limiter is the flagship release from Crane Song Limited, a new company founded by David Hill, formerly of Summit Audio. As its name implies, the STC-8 uses discrete Class A circuitry rather than tubes or ICs. This makes for a much cleaner audio path, because there are no VCA or optical gain control elements.

The STC-8 operates in true stereo, or as discrete independent mono processors. The sidechain allows both compression and limiting simultaneously, using the same proprietary gain-control circuit. The STC-8 also has a special circuit that changes the induced distortion created by high compression ratios and fast release times into a more "musical" form. Its KI mode (which was named by a yoga teacher who operates out of the same building as Crane Song) converts the unmusical third order harmonics into second order harmonics, which are more pleasing to the ear. The manual states that the STC-8 is the only compressor on the market with this capability, but I know of at least one other that makes the same claim (see the Empirical Labs EL-8 Distressor Field Test in December 1996 Mix).

Although the STC-8 sports an abundance of little green knobs, it is otherwise very contemporary in its appearance. The unit has a brushed aluminum face with two slim LED meters, five small black toggle switches and 16 knobs. It measures two rackspaces high and a little over 12 inches deep. There are transformerless, balanced XLR connections for I/O, and a DB-15 connector for access to the compressor side chain.

On the front panel (and at various points in the manual), the two sides are referred to as Left and Right, while on the rear (and at other places in the manual) they are referred to as 1 and 2. This anomaly presents no real practical difficulty, but it should be noted. In addition to the usual Attack, Release, Threshold and Gain controls, there is a control called Shape, which changes the gain curve. When it is set to zero, the slope and curve are gentle, and as you approach ten the curve becomes more aggressive and the slope becomes higher. There is also a Peak Threshold control, which determines the point at which the limiter engages. The Bypass switch takes the compressor completely out of the audio path, which is quite useful for A/B comparisons, but like almost every other compressor bypass switch I've en- countered, it makes a very nasty pop when engaged.

The learning curve for this device does not have a particularly soft knee. Although there are "presets" for some more common applications, in reality they are only slightly less complex than the non-preset options. The primary reason for this is the tremendous amount of flexibility that the interaction of the various controls provides, and the fact that there are few fixed values and parameters for those controls.

For example, the Attack, Release, Threshold, Shape and Gain controls are all simply numbered zero through ten. The actual attack/release times, compression ratios, knee curves, etc. depend on numerous variables, including whether or not special automation circuits such as Program Dependent Release are engaged. In order to know what the release time for a particular preset is, you have to memorize the range of values given in the manual and then calculate the approximate time based on the settings of several other controls.

The arrangement of the various controls, and even the way they are designated, can also be confusing, at least at first. On the other hand, I found that once I had familiarized myself with all of the settings, the very complexity that initially had been so foreboding became the flexibility that allowed me to find creative solutions to a wide variety of problems.

AT THE CONTROLS

At the heart of the STC-8 is the Preset switch, which has 16 different settings. These settings allow for all of the possible combinations of three basic presets (A, B and C), a variable setting (V) and two types of special automation circuitry (Program Dependent Release and Dynamic Attack Modification). In other words, there are four subgroups, each of which contains an A, B, C and V setting. The four subgroups are 1) Program Dependent Release with Attack Modification; 2) Program Dependent Release without Attack Modification; 3) Regular Release with Dynamic Attack Modification; 4) Regular Release without Dynamic Attack Modification.

The three types of presets are for vocals (A), bass (B) and program averaging/volume control (C). When any of these presets is engaged, the Attack, Release and Shape controls on the front panel are not operational; when the variable setting (V) is engaged, they are.

The STC-8 has three special circuits that give it its distinct personality: Program Dependent Release (PDR), Dynamic Attack Modification and the KI mode. Program Dependent Release may be thought of as auto-release: It continuously adjusts the release time of the compressor in order to compensate for changes in the program material. It was designed for use in applications where it is desirable to level the volume without bringing up background noise, such as recording voice-overs and vocals, where headphone bleed and room noise can create problems. It also helps to suppress things like acoustic guitar finger noises, woodwind valve and pad sounds, etc. Dynamic Attack Modification, or A-Mod, allows the peak limiter to dynamically adjust the attack time of the compressor. This is useful when a longer attack time is selected, but there are transient peaks that trigger the limiter and you want to maintain overload protection. It also allows for quick control of audio after a period of silence. The KI mode adds warmth and color by modifying the audio path and the sidechain. Its effect is modified by the Attack, Release and Shape controls. A switch toggles between the KI mode and the HARA (also named by the yoga teacher), or clean mode.

PERFORMANCE

The STC-8 was designed to provide overload protection for digital recording and broadcast transmitters, and transparent gain control for program material and individual instruments, as well as emulating vintage equipment and facilitating the creation of distinctive new sounds.

In general, I found the STC-8 to be amazingly quiet--not surprising, given its -88dBm noise floor (measured 20 to 20k Hz) and its 5 to 20k Hz frequency response--and smooth in its operation. It was nearly impossible to choke it, or make it pump or breathe, even while processing bass and other low-frequency sounds, using very fast release times and high compression ratios. It provides transparent gain reduction and peak limiting in all but the most extreme settings, and even then the coloration of the sound was often useful.

The voice and bass presets were usually at least in the ballpark, though in many cases I preferred to try my luck with the Variable settings instead. While using the presets, I often found the difference between the PDR and the regular release settings so subtle as to be hardly noticeable. The PDR was more evident while using the Variable setting, particularly on woodwinds, acoustic guitars and some percussion instruments. It was also quite useful on program material that had a wide dynamic range and/or lots of stops and starts. The KI mode was also often difficult to detect, though ironically, it seemed more apparent on distorted sounds like overdriven guitars and basses, and to a lesser extent on percussion instruments with sharp attacks, such as talking drums and claves. The Dynamic Attack Modification did exactly what it was supposed to do, and the transition from the peak limiter back to the compressor was nearly undetectable.

Processors that use Class A circuitry do not come cheap, but in the case of the STC-8's $3,250 retail, you definitely get what you pay for. It does not sound like any tube or solid-state compressor/limiter that I have ever heard. In fact, it is what it doesn't sound like that makes it special. If you are looking for a nasty-sounding monster-masher that will make electric guitars shred walls at 50 paces, then this is probably not the unit for you. But if you are looking for an extremely quiet and transparent dynamics processor that is versatile enough to squash most signals cleanly and musically, and also provide master- quality leveling and overload protection, you should give the Crane Song STC-8 a serious listen.

Crane Song Ltd., 2117 E. 5th St., Superior, WI 54880; 715/398-3627; fax 715/398-3279. Barry Cleveland is a San Francisco-based engineer/producer and composer.