

Sonifex On Surround Sound Processing

Creating a 5.1 Surround Sound Mix at Sporting Events Using DaySequerra Products - UpMixing, DownMixing & Stereo to Mono Conversion by Marcus Brooke, Managing Director, Sonifex Ltd

The DaySequerra product range can be split largely into two product groups - loudness meters and controllers (covered in January's Regional Film & Video 184) and surround sound decoders and encoders. Using the superb DTS® Neural algorithms, the DaySequerra surround sound processors offer the most realistic sounding solutions to generate 5.1 surround sound mixes from mono and stereo content. The DTS Neural algorithms very cleverly mimic the tonal characteristics of the human ear producing a 'near discrete' 5.1 surround sound experience.

Now distributed in the UK by Sonifex Ltd, these products are used extensively at sporting events and allow you to produce ultra realistic surround sound audio beds using mono mics placed at the sports ground, or by taking stereo archived audio and replaying it in surround. Loudness control can also be added to provide real time loudness compliance.

The DaySequerra UpMix transforms any stereo signal into a surround sound experience. Stereo content can be translated into width and depth information, creating a pleasing and enveloping surround image - often indistinguishable when compared to the original surround sound mix content. The DTS Neural Surround UpMix algorithm spectrally separates individual audio elements and places each in its intended location within the surround environment resulting in unparalleled image placement and stability.

Additionally, using UpMix you can decode matrix-encoded Dolby® LtRt & SRS LtRt as well as DTS Neural LtRt to 5.1 surround sound - they are all compatible.

In practise, the DaySequerra UpMix is used extensively at sports events. For example, the World Cup in 2010 was transmitted in 41 different languages in DTS Neural Surround Sound using DaySequerra UpMix. It is used on OB trucks that create 5.1 content, by upmixing archived material and commercials that need to be inserted by the truck at a sports event, e.g. for replays.

Audio that was encoded using the DaySequerra DownMix algorithm can be restored with the correct information in each of the 5.1 surround channels, providing an end-to-end surround delivery system over stereo watermarked AES/EBU. The DaySequerra DownMix encodes 5.1 surround sound to a stereo mix that accurately represents the 5.1 original. Unlike standard summing methods, the DTS Neural Surround™ DownMix algorithm creates stereo that contains surround steering information and which can be stored, mixed, transported and monitored just like any other (Lt/Rt or Lo/Ro) stereo mix. DownMix can also be used to archive 5.1 content as LtRt for later broadcast, reducing storage requirements.

One of the most intriguing DaySequerra products is the Mono2Stereo. Sounding like a pretty simple device, once you start to use it you realise it's power and potential for creating surround sound output. The quad stereo output Mono2Stereo, is, as its name suggests, a mono to stereo converter. Its beauty though lies in the quality of the stereo conversion algorithm which allows you to create full surround output from mono sources, such as microphones at sporting events.

Dealing with mono content in today's live sports surround sound environment presents a number of problems for engineers who are working to deliver the highest quality mixes. Simple mono sound sources just don't always cut it. Using only one Mono2Stereo and a mixer, you can create an entire in-depth surround sound experience for viewers and listeners using only a couple of mono shotgun mics.

For example, this is how a Surround Sound Mix was created for the World Cup, French Open and British Open events using a single DaySequerra Mono2Stereo (M2S): In a nutshell, you take one shotgun mic and point it at the crowd in the stands and use M2S input ONE to spread the mono gently into the Ls/Rs

channels, making an instant rear surround bed. You then take a second shotgun and point it at the field, taking the input into M2S input TWO and spread it a bit more than the surrounds and there is your instant front L & R surround bed. The Centre position created by the M2S is where you cleanly drop in your announcers, or you can also feed the announcer through input THREE and give a little spread to L & R to make them sound more like they're on the field of play. Getting even more creative, you can use the GPI to toggle between two presets in channels ONE and TWO when the on-field camera perspective changes, e.g. a shot from the other end of the field. You can also drop parabola feeds from the field e.g. kicks, hits, etc, into L and R after the M2S, right into your mixer for more realistic game sounds. Remember that the M2S has four inputs, to create four separate stereo mixes, so one box can create the whole mix.

The Mono2Stereo is used extensively at sports events: At the Winter Olympics 2010 in Vancouver, for NASCAR on SPEED and Major League Baseball to name a few, Mono2Stereo units were used to create the surround bed and there are weekly TV broadcasts by ABC, HBO and Turner totalling over 3,600 sporting events broadcast per annum which use the DaySequerra Mono2Stereo hardware.

If you need to create surround sound content at live sporting events, why don't you give the DaySequerra products a trial?

For more information on these products go to the website at: www.sonifex.co.uk/daysequerra/index.shtml and for a demo contact Sonifex on 01933 650 700 or email sales@sonifex.co.uk.

