



(Above): The studio set-up
(Left): Kim Bang outside the TC Electronic headquarters

The DNA of TC

Once the king of reverb, TC Electronic is now a campaigner for loudness control, but it hasn't forgotten its roots, as **Barney Jameson** learns

'IT'S ALWAYS THERE, IN EVERYTHING we do,' says Kim Bang, PR and marketing manager for broadcast and production at TC Group. 'It's in our DNA now,' he adds. Mr Bang is speaking to *Pro Audio Asia* at the headquarters of TC Electronic,

But Mr Bang could just as easily be discussing digital reverb – that other technology for which TC has long been known. What loudness is to the company today, reverb was in the past. 'We go way back in terms of digital reverb – we were frontrunners

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The Studio has been set-up to experiment with surround sound formats

located in Aarhus, Denmark, and the topic of conversation is loudness. The subject has dominated conversation within broadcasting circles in recent years, while for TC Electronic itself it has become a core part of how the company thinks and acts. After all, TC was there right at the beginning, when the first studies into perceived loudness were conducted at Canada's McGill University.

back in the 1980s,' Mr Bang agrees. Yet as easy as it might be to assume that the company has moved on from one technology to another, the truth is different. When TC Electronic commits to an idea, it really commits, and its devotion to perfecting digital reverb is as vital today as it was 30 years ago. It proved as much this year when it released Reverb 8, a new hardware-

based platform promising infinite channel reverb and specifically addressing multi-channel applications such as Barco Auro, Dolby Atmos and NHK's 22.2 Super Hi-Vision standard. Crucially, the product (available exclusively through the System 6000 platform) ties together the manufacturer's twin obsessions – offering a new way of approaching reverb within postproduction and broadcast environments, whilst addressing the loudness question at its most basic level.

'Reverb 8 is the only real high-end reverb on a hardware platform available today, and we want to let people know that we are still in the reverb business,' explains Mr Bang.

To prove the point, he and TC product development engineer Christian Frandsen invite *Pro Audio Asia* to attend a Reverb 8 demonstration within The Studio – a purpose-built room that acts, Mr Frandsen explains, as 'a mixture of mixing studio, mastering studio and laboratory'.

Based on a Pro Tools platform, the room's complement of equipment includes System 6000, DB4 Mk II and DB8 Mk II processors, a DB6, a BMC-2 monitor controller, a Lab.gruppen PLM 20000Q amplifier, and, notably, a newly constructed surround sound system for experimenting with emerging formats. At the moment, it comprises two Dynaudio M3 main monitors and 22 BM5 satellites, representing three layers to create the 22.2 environment of Super Hi-Vision.

'You're not mixing to specific

speakers any more, you're mixing to an audio role,' explains Mr Frandsen. 'Reverb 8 takes into account that you want to mix to Barco, or Atmos or 22.2 or whatever it might be.'

The algorithm also incorporates a feature named Power Correction which, in practice, delivers spectacular results. Effectively an automated process for protecting the direct sound to reverb balance, it allows users to experiment with decay times and multiple reverb layers in real time without muddying the results. 'If you are sitting in post with a director and they ask for something then you can quickly get that result,' explains Mr Frandsen, 'rather than having to start again, then get the director back a week later'.

When combined with multi-channel surround formats, it also opens up new possibilities in sound design. 'If you have signals that are correlated, that are kind of similar, and you play them next to each other, then you get phase issues and dips,' says Mr Frandsen. 'With Reverb 8, every output is uncorrelated to the next – they are very independent. So therefore they play well when combined.'

It's an impressive demonstration, but where does loudness come into the equation? The answer is, of course, at the beginning. 'Loudness is always there when we do things in the pro and broadcast departments, whether that's conversion between channel formats with something like UpCon, or whether that's about reverb,' explains Mr Bang. 'The power correction feature is a good example.

You can add a sense of space without building up to something really muddy, and of course if you allowed it to build up like that then it would increase the loudness. But with power correction you get that extra space, that decay tail, without the sense of space going wrong. If you measure that in terms of loudness then it doesn't alter the value of the track. So even when we're developing a new reverb algorithm, loudness is constantly in the back of our minds.' The same is true when Mr Frandsen demonstrates the UpCon up-conversion technology via a DB8 Mk II processor, upmixing a stereo signal to 5.1, then downmixing it back to stereo, with no loudness ramifications.



TC Electronic TCO Thomas Lund

Speaking specifically of China, Mr Bang says: 'There's huge potential. We did the big install at CCTV, but it's such a huge country and there are so many small stations'. The answer, as always, is education, with TC's CTO Thomas Lund taking to the road to visit broadcasters, present papers at industry gatherings, and speak at special events. 'He goes out to spread the message and influence the right people to understand that loudness is important,' Mr Bang continues. 'Loudness has been a buzzword for years now, and most people are aware that there is an issue. Perhaps most of the big stations have something set-up to handle it. But there are a lot of local

stations and production studios delivering content for broadcast who may not be aware.' To that end, TC continues to host events around the world. 'Loudness events are a key priority for us,' Mr Bang confirms.

Indeed, anyone with lingering doubt regarding the company's dedication to the issue need only consider its actions to date – including giving away patentable technology. 'The Loudness Range parameter – that was a TC algorithm, and True Peak is also TC technology,' Mr Bang asserts. 'We could have patented that if we'd wanted to but we decided to make it part of the first ITU open standard. It was that important to us.'

Since those early days back at McGill University, loudness has been the focus of so much R&D that you could be forgiven for believing that much of the work has now been done, at least from the technology point of view. But as it has proved with reverb, TC isn't the kind of company to walk away from a topic it feels passionately about.

'It's never over,' declares Mr Bang. 'There will be new technology coming soon – quite spectacular stuff. The loudness question, over the past 10 years, has been coded into our DNA in the same way that reverb was back in the 1980s. It's constantly there.'

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When it comes to marketing a technology such as Reverb 8, TC is in an enviable position. System 6000 can be found in almost every studio around the world in one form or another, and the growth of new surround formats means Reverb 8 is getting a warm welcome. The manufacturer has enjoyed similar success with its loudness processors – that much was proven when China's CCTV recently installed 100 DB8 Mk II processors into its Beijing headquarters. Yet as much as the loudness conversation has been big news over the last five years, there is still work to be done.



TC Electronic's product development engineer Christian Frandsen

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