

REPLICATOR – REPEATING SALES SUCCESS

By Judy Sharp / «Produção Áudio» - February 2003

When the Sintefex team of Mike Kemp and Mike Eden launched their first Replicator machine at AES in Munich in 1999, audio industry professionals were very polite. “Interesting,” they said, “very interesting.” But away from the show, few fully appreciated what the Replicator was capable of, and many did not believe its claim that it could sample the warmth of analogue processing and replicate the sound without leaving the digital domain.

This year’s AES in Los Angeles was a very different affair. After three years of setting up stands in shows, doing demos in studios and talking technical to engineers, an increasing number of industry professionals are convinced - Replicator has finally arrived !



THE MEN BEHIND THE MACHINE

A machine like Replicator can only be the creation of someone who has practical working experience both of computers and of the music industry. Mike Kemp graduated from Cambridge University in England with an MA in mathematics and computer science.

innovative Digital Audio Workstation which is still an industry standard today. On the practical side, he knows only too well what engineers and producers need and want – and demand – from studio machinery. He himself worked with such artists as Gary

Commercial Director of Sintefex is Mike Eden, whose background is in Sales, service and corporate management. He is responsible for handling all initial enquiries, dealing with the growing network of



Turning down a research post at the University, he started his own studio business and ever since he has combined his love and understanding of sound and audio engineering with his capacity for harnessing computer power to achieve his objectives.

It was Mike, for instance, who devised Matisse, the first commonly affordable video graphics system for television. It was Mike who conceived of SADiE, the

Numan (Tubeway Army album); The Soft Boys (albums A Can of Bees and Invisible Hits); The Stranglers (albums Dreamtime and In the Dark) and Stiff Little Fingers (album Inflammable Material), and in locations such as BBC Radio Theatre, Royal Albert Hall and Royal Festival Hall. He has worked in too many studios to mention, and has mastered in studios such as Abbey Road, The Master Room, Porky’s and Utopia.

international distributors and agents, arrangements for trade shows, and all matters to do with marketing and press relations.

Director of UK Research, Simon Widdowson, is based in Cambridge, England, from where he heads and coordinates the UK research and development programme for Sintefex. Simon first worked with Mike almost 20 years ago, starting as test engineer, rising to design engineer and moving on

with Mike to Studio Audio & Video where he masterminded the hardware development of the SADiE, Octavia and 24 96 products.

MADE IN PORTUGAL

Sintefex is based in the small Algarve village of São Marcos da Serra, about an hour's drive from Faro International Airport, about 2 hours from Lisbon. Here, in the depths of the peaceful countryside where tractors and donkey carts are still the most common form of transport, one of the music industry's most advanced pieces of kit is conceived and planned, assembled and packed. It is still a highly personal process, with hours of testing before a machine is sent off – be it to Mosfilm – Moscow's answer to Hollywood and just as technical – or to Trondheim in Norway, where the Skansen Lydstudio recently became the most northerly Replicator to date!

Mike Eden is proud to explain that the company is, in every sense, Portuguese, but laments the bureaucracy that had to be overcome before they could start operating efficiently. "little things like getting a dirt track surfaced, getting our mail delivered efficiently, getting an ISDN line installed – they drove us crazy in the early days," he recalls, and tells tales of vital – and delicate – machine parts sitting for weeks in the local cafeteria because nobody had bothered to tell them the package had arrived. Nor could they find anywhere in Portugal to make up the metal front panels for the machines. "It seems extraordinary in a country with a history of metalwork," says Eden, "but it seems nobody could meet our requirements for precision, delivery dates and quality, so we have them made in England and shipped out here. What a waste!"



The company is small, and intends to stay that way, at least for the time being. "We know our machines, we

know our customers, and we can have a dialogue with them, and that is important to us," says Mike Kemp, "if an engineer in a studio somewhere has a problem, or wants to achieve something with his Replicator, we are always happy to talk technical".

REPLICATOR UNCOVERED

So what exactly is Replicator? What is so special about this box of tricks – apart from its smart white fascia – that is attracting so much attention?

While digital audio recording has



brought many benefits such as ease of use, perfect repeatability and freedom from unwanted noise, the end result is often cold, and while technically perfect, is not as pleasing to the ear as one which includes some warm analogue influence. Replicator contains a unique sampling system that includes many of the benefits of analogue signal processing while preserving the repeatability and precision of digital working.

Why does an analogue recording chain attract the ear so much? One reason is that each channel of an analogue desk contains equalisers (EQ) and often compressors that have been carefully designed to sound good, and recording engineers habitually augment these with "outboard" processors that have unique characteristics that the engineer can choose from to exactly suit the musical component on a recording channel. With the advent of digital recording the essential elements of equalisation and

compression have been implemented in the digital processor, often a Digital Audio Workshop (DAW) to give as

many channels as possible on a single Digital Signal Processor (DSP) chip, so squeezing as many tracks of audio as possible onto a hardware platform. Often the final result may give all the right readings on the computer, but does not measure up to the human ear, because it lacks the warmth and colour of analogue.

Replicator allows various sounds and effects from analogue processing devices such as valve equalisers, compressors, amplifiers and even tape recorders to be captured (sampled) and stored for future use with full digital

quality. But it is not just the original sound that is captured: Replicator can then reproduce the way in which that sound alters under changing signal conditions, and allows engineers to enhance and add further effects to these warm analogue sounds.

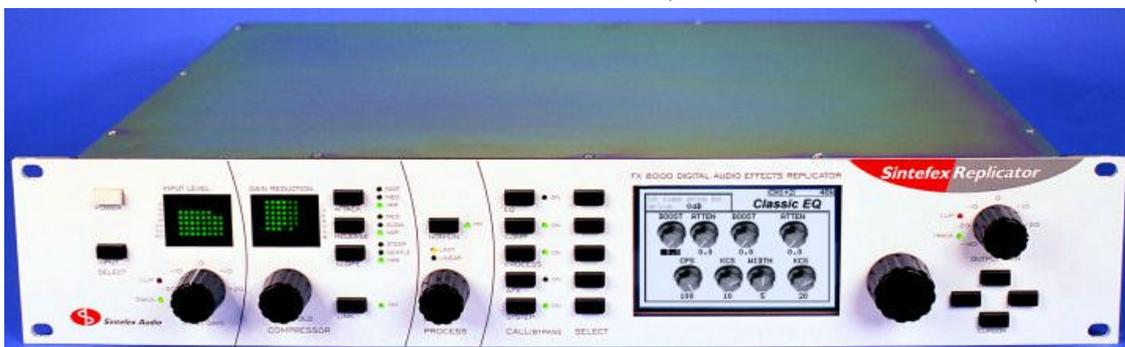
The heart of the Sintefex FX8000 Replicator is a new processing system which Sintefex call Dynamic Convolution. This takes into account not just the way things respond to sound at one sound level, as with ordinary convolution, but how they respond at a whole set of levels. Sintefex has sampled thousands of analogue effects and these are stored on an internal hard disk in Replicator. Updates are

available on-line by downloading from their website www.sintefex.com where a host of other useful information can also be found. Engineers can also sample and store their own analogue effects for future use. When you drive a Replicator effect harder, it sounds different, just like an original piece of analogue equipment. The control panel on the Replicator lets any engineer feel at home straight away. The controls of a number of analogue processors are reproduced, along with their characteristic sounds, so that when an engineer "turns a knob" of the processor selected, Replicator gives the sound of that processor as it would be according to the instructions.

Replicator samples the characteristics of an analogue device by passing a sequence of pulses (impulses) through a piece of analogue gear and recording what comes out. What makes the FX

installed in the famous Abbey Road Studios in London, for surround sound mixing including work on the second Lord of the Rings film, The Two Towers. Peter Cobbin, Senior

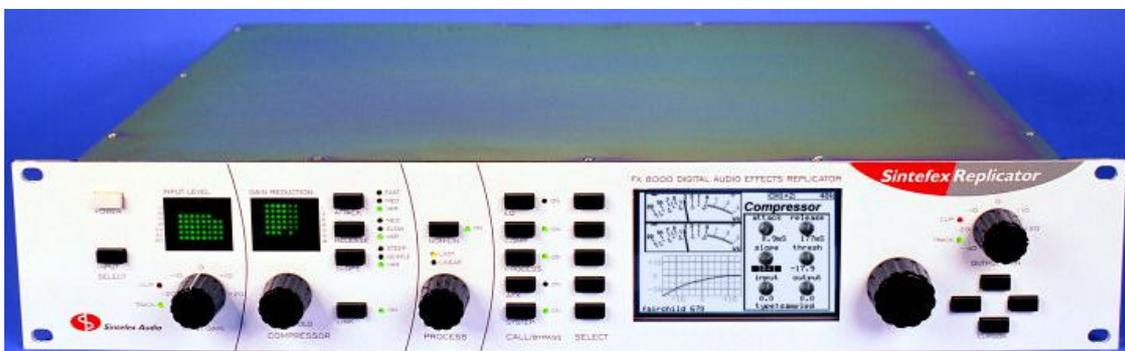
bass-pass sidechain in addition to similar settings to those used previously with other gear, and cue over-excited client who can't believe the difference in the two masters (and neither can I)".



8000 Replicator unique is that it does this for quiet impulses which do not stress the analogue device and also for loud impulses: in this way, a profile is built up of the way the analogue device responds to progressively loud signals. Once an effect is stored – be it from the hard disk or one that an engineer has sampled himself – there are various ways in which it can be modified, taking it beyond the capabilities of the original analogue equipment. The FX8000 Replicator also supplies variable EQ and compression facilities as well as after effects such as reverbs,

Recording Engineer at Abbey Road, says, “no other device on the market uses convolution to replicate analogue outboard equipment – plus it comes with its own sampling software, which enables us to sample our own classic valve equipment such as Fairchild compressors and Pultec equalisers”. Once a customer has got used to a Replicator, its full potential soon becomes evident. Another satisfied customer, producer and engineer Tom Laune, of Nashville Tennessee, owes much to his FX8000. He says, “Replicator saved the session the other

Replicator is also making a name for itself on the other side of the Atlantic. Respected mastering house Lacquer Channel in Toronto has become the first facility in the Canadian city to install a Replicator FX 2000. Noah Mintz of Grandmasters who chose the unit commented, “I used it for about an hour before I knew there was no way I could send it back. I love it!” And not only in Canada – Replicator is currently on trial at Universal Studios in Hollywood, with a view to it being used on the next Star Wars movie – science fiction meets science fact!



choruses and delays to extend the capability of the original sample.

SURROUND SOUND CAPABILITY – SATISFIED CUSTOMERS!

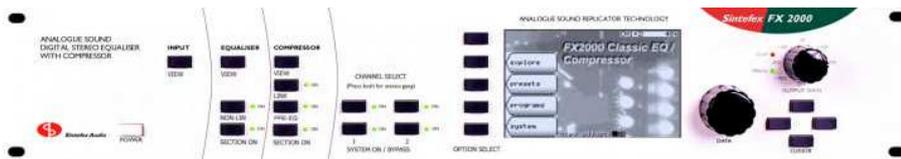
The Sintefex FX8000 Replicator is available as a stereo unit, or with multiple pairs of channels fitted as options up to eight in total. This allows the Replicator effects to be applied to 4-channel surround (with a 4-channel model) and to 5.1 and 7.1 surround (with 6 and 8 channel models). It is a 6-channel option that has recently been

day; when one of my Neve EQs went out, I replicated a 1073 and I was on my way.”

The stereo offspring of the FX 8000 is the FX 2000, and this is also proving very popular in studios around the world. Nigel Palmer of Lowland Masters, London, has had two very satisfied customers within the past few months thanks to his Replicator FX 2000. “We are very excited about the overall quality of the CD . . . it definitely sounds clearer and brighter and more balanced than before” reported one. Another client was not hearing what he wanted. “Cue (Replicator-sampled) Fairchild plus

TALKING TECHNICAL

With its smart white fascia, Replicator stands out in any effects rack. But what's inside the box makes it stand out too, in technical terms. Ten SHARC® floating-point digital signal processors provide up to 800 Mflops per channel. A 3 gigabyte disk stores samples and programs used for the dynamic convolution process. A power linear mode which can reproduce analogue equalisation with linear phase response is also included.



All channels support sampling rates up to 96kHz (24-bit) and are fully balanced on both analogue and digital connections (pin 2 hot). Four main sample rates are selectable for internal clock: 44.1; 48; 88.2 and 96; external reference locks from 30kHz to 96kHz. The unit comes with digital I/O as standard (single cable AES for all sampling rates). The analogue interface with 24-bit conversion is an option but not field upgradeable.

A digital hi-pass DC removal filter on the analogue input provides 3dB attenuation at 1 Hz and 0.1dB at 6.5Hz at 48kHz sampling rate. At 96Hz the attenuation is 3dB at 2Hz and 0.1dB at 1.3Hz. This filter may be switched off in software.

Word clock reference in is via 75ohm BNC TTL level word clock input. MIDI I/O is included for serial remote control of major parameters from sequencer or keyboard, as well as uploading or downloading effect data. A USB port permits a PC-compatible computer to communicate with the FX2000 using remote control software downloadable from Sintefex's website, www.sintefex.com.

DRIVING A REPLICATOR

Although Replicator can seem a little daunting at first, once the logic of the controls is understood, the full flexibility of the machine becomes much clearer. There are four main control areas: input, classic EQ, compressor/expander/gate, and output. In addition there is a "system" area where parameters including viewing angle, grey scale display and power-up options may be edited. Input and output gain can be set at unity or at fixed levels: it is also possible to select whether or not output gain control is active.

Replicator used programs, effects and samples to create its miracles. In Sintefex talk, samples are process samples. They are samples of the way an audio processor affects the signal

passing through it and they are used by the Dynamic Convolution process to recreate the audio effect of the original unit digitally, including any level-dependent effects. Effects contain information about how to sound like an EQ or compressor. It is also used as a general term for Classic EQ and Classic Compressor effects which are stored on the Replicator. Many Classic EQs have been sampled, including the Pultec EQP-1A3, Massive Passive, Neve 1073, Decca two-band EQ and GML 8200.



Most screens have 4 bands of EQ, with adjustable frequency, bandwidth (Q) and boost, cut, or both. Wherever possible, original labelling is used – for instance, on a Pultec-type equaliser, frequencies are labelled as CPS and KCS rather than the more modern Hz and kHz.

Replicator provides compression by using its own built-in compressor as a digital compressor or by loading a sampled analogue compressor. Sampled units include Teletronix LA-2A, Tubetech CL1B, Neve VR channel strip compressor, Alesis 3630 and Manley Variable MU. Because Replicator recreates both the sound of the sampled compressor and the way it changes with gain reduction and the curve of the

compressor, soft knee effects can be accurately recreated. The professionals all agree – the harder you drive a Replicator, the more impressive its performance!

BACK TO THE FUTURE

What does the future hold for Sintefex and its revolutionary Replicator? From the peace and quiet of their headquarters in São Marcos da Serra, Mike Kemp and Mike Eden were not going to be drawn. "We are working on a few things," ventured Mike Kemp, "but it's too early to say anything yet. We are always working on updates, trying to improve the original – you

know how it is . . ."

The irony of the situation is not lost of the technical wizard or the sales and marketing man: a tiny little village in the depths of the Algarve – virtually in the Alentejo – is home to one of the most advanced pieces of kit in the professional audio industry today. "We are committed to making digital audio sound even better," said Mike Eden, "and this is a lovely place in which to do it. Why should we move to some big smoky city when we have a beautiful environment in which to work and all the challenges of the past have been overcome?"

As the professionals would no doubt say, "Interesting, very interesting".