

# SINTEFEX REPLICATOR

*From the original review in Swedish by Mikael Thieme which appeared in "MONITOR" magazine, January 2000. Used by permission.*



Every now and then at rather long intervals devices appear which make the users as well as the reviewers raise their eyebrows. A product that shows that somebody, somewhere, has dared to think a little beyond the usual way. I claim that the Sintefex Replicator FX 8000 is exactly such a device or what else would you say about being able to carry with you the entire effects outfit of the studio - plus all the boxes in your neighbour's studio, along with all those esoteric filters which none of you have a budget for and all this in one box.



The idea with the Sintefex Replicator FX 8000 (its full name) is easy to summarise. Many technicians wish to have access to the most comprehensive set-up of good analogue filters, compressors and other specific hardware boxes as possible. But few people have space enough or can afford to acquire all that they would like to have. Sintefex's solution to this problem was to construct an apparatus which can unite or replicate (hence the name) a large number of other pieces of apparatus by learning and memorising their respective characteristics. The person who has a Replicator only has to borrow the desired equipment, compressor or whatever device for a short while and couple the apparatus, push the button, wait a few minutes and - pop - the borrowed goods have been "cloned". Further the equipment contains a separate compressor, parametric EQ and reverb/delay plus much more.

Does it sound to good to be true ? This is what I also believed at first.

## How

The technique behind the replication is that a test signal is sent through DUT (device under test)-the original box that you wish to replicate, and the resulting signal is analysed. The Replicator thereafter uses DSP to achieve the same result as the DUT originally performed. The characteristics from every DUT are then stored on a hard-disk within the Replicator and can be called back in a few seconds.

This in itself is not a revolutionary innovation. Sonic Foundry was on the same track with ACOUSTIC MIRROR. The difference is partly that Acoustic Mirror is a software product, while the Replicator is an independent hardware product, but more important is that the Acoustic Mirror uses a single linear response. Replicator's innovation is done by letting the Replicator send out not a single signal, but a whole sequence of impulses at different levels to analyze the responses. During replication the user can later adjust the level of non-linearity {or how hard the emulated effect will work}.

Replicator can work with sampling frequencies from 30 to 96 kHz, however with somewhat reduced resources in the 96 kHz- level. The resolution is 24 bites as well as digital in- and output as for D/A and A/D converters.

## Who

Mike Kemp has worked as a sound technician and producer and was one of the creators of SADiE. He settled in the beginning of the early nineties in Portugal, where he after some time created Sintefex together with his colleague Mike Eden. Today Sintefex has business

addresses both in Portugal and Cambridge in England.

## ***The Box***

Replicator gives a spontaneous impression of solidity both visually and literally. Literally through its weight, which to a great extent stems from the rack format, which is dimensioned to handle a fully stacked Replicator, visually through a front-panel where both buttons and displays radiate quality. Transparent lacquer covers the text on the mother-of-pearl coloured front, the text and the 5 rotary controls that feel right in the operation of this great box.

In its basic model Replicator handles two channels: one stereo or two separate effects. It can be stacked up to a total of 8 channels or 4 stereo for surround sound. On each card are located 10 SHARC-circuits for the DSP-handling. Two unbalanced inlets and outlets are found on each card in RCA-form. Balanced analogue inlets and outlets and AES/EBU inlets and outlets are accessible through a break-out-cable from a D-type connector.

There is also located on the Replicator the special outlet which sends the test impulses to the DUT, on jack or XLR, and the connections for S/PDIF or ADAT. Also found here is an instrument input meant for example for an electric guitar or live performance. The connections do not cause any problem, but the cable marking on the break-out –cable could be clearer; on our test sample we had to use the trial-method.

The Replicator is fan-cooled which probably is necessary considering the processing power and the corresponding number of channels. The sound from the fan is not particularly high-frequency, but the level is however, just below the limit of what you would hear from the shelf in a control-room. Next to the cable-inlet on the rear-panel is located a power-breaker - the normal hardware model, while a software variant is located on the far left of the back panel. Start-up is done directly when the front-panel button is pushed in, while the shut-down requires that the button is kept in for a few seconds. There is also a button for choice of input between digital and analogue inputs of different formats. The next control adjusts the input-gain that can vary between – 40 and + 20 dB. The maximum signal level on the balanced input & outputs are + 18dBu for 0 dBFS. Above the gain control there is an indication shown by an LED-matrix of 10 by 4 LEDS, The lowest

indicated level is – 60dB and the highest before cut-off is –3dB. This matrix behaves differently depending on how the machine is configured. In the second line the matrix shows the respective input signal vertically with a width of 3 LEDS where the middle line has a slow release time for the indication of the peak value.

In the 8-channel model only 1 line per channel of LEDS are used to indicate the levels. An extra LED on each side of the screen shows the approximate operating level. On the stereo test sample I experienced the LED-matrix to be not very sensitive and it was difficult to get a direct and easily readable indication.

Next section- separated by a marking on the panel deals with the operating of the compressor. A rotary control adjusts the threshold levels, once more an LED matrix shows gain-reduction and with 3 buttons you can choose between some fixed values for attack, release and slope. These values can be adjusted exactly in the respective menus and the buttons are available to choose quickly a usable approximate value. With a further button you can couple the stereo link of the compressor in/out.

One knob maybe the most interesting on the whole device - it is named “drive” and it governs how hard the memorised non-linear process { the replication} will work. You can also make the process linear by pressing the non-lin button.

The right hand side of the Replicator front panel contains the cursor buttons for the other functions and a big matrix display. In the menus you navigate with 4 buttons on the right hand side of the panel and the parameter-value is fixed with a large knob next to the display window. The menu-system is easy to work with and the graphic presentation leaves nothing to be desired, both resolution and lay-out are above expectation. Further a great deal of important information/text is shown directly in the display which reduces the use of the manual.

Directly to the left of the display are found software-related buttons for different choices.

To the left of these are found the buttons for direct choices which leads the user to the main menu for the respective functions: EQ, compressor, replication process, AFX (After effects, delay etc) and the system menu. These direct-choice-buttons can function as by-pass controls for the respective functions - a good idea which, however, does not function as well as it is intended. If you work within the

compressors parameter and listen to how the whole thing sounds without delay then you press the AFX-button the AFX delay is switched off but you also wind up directly in the AFX menu. To return to the compressors menu you press its direct-choice-button which inevitably has the result that the compressor goes in bypass and consequently requires an additional push on the button. This can possibly be solved in later versions, e.g. by keeping the respective button pushed down for 1 second for the bypass function without getting to the respective menu.

To be just it must be mentioned, that it is possible to do it the other way round: To call a menu without going into bypass.

The system menu button functions as master-bypass for the whole device and consequently also leads to its own menu. In the menus you operate with the 4 buttons on the right side of the panel and the parameter value is found with a big rotary control outside the display. To the right of the panel is also found a knob for adjusting the output-level from the machine graded from -40 to +20 dB.

### *Under The Surface.*

It is the intention that users of the Replicator shall be able to download up-dates together with new presets from the manufacturers homepage and in the test sample such presets had been installed. It was a Pultec-EQ where all parameters are shown with pictures of the display.

As there did not in the test-case exist any corresponding EQ available for A/B-test I am not able to determine how well that replication functions, but critical listening did not show any apparent weaknesses.

Sintefex promise a broad selection of factory presets and the hope is to be able to download other users' own presets via the internet to enlarge the bank.

### *Internal Components*

The built-in compressor offers a familiar interface which does what it is supposed to do in a nice way. The start and release time can be chosen freely within reasonable limits and the slope can be varied from 1:1 to 20:1 with possibility for various varieties of "soft knee".

The EQ is easy to work with in so far that you can directly see a graphic on the display together

with all the parameters. 4 bands exist which all-together span over the whole range 20Hz-20kHz. The Q-value is variable between 1 and 10 and the amplification/damping is plus/minus 20 dB. The only thing I miss here is a software button for zero-positioning:

Under the section AFX, after effects, it is the intention that effects like delay and reverb will be found. All relevant parameters are adjustable and there exists a graphic display of levels from the various delay-blocks. The maximum delay-time is up to 32 seconds in stereo at 48 kHz sampling frequency. Obviously this has to be added to the always present process delay which from digital input to output amounts to 19 samples. At 48 kHz this corresponds to approximately 0.4ms which must be considered a reasonable value in this conjunction.

### *Replication*

When I was trying to let the replicator memorize other equipment I ran right into a software bug, which briefly meant, that the Replicator did not replicate. But this was solved by talking with the importer and the manufacturer. A new software version was already at hand and was E-mailed to me within a few minutes.

The updating of Replicator is done in an unorthodox and practical way. The software is provided with WAV-header and is distributed and handled exactly like any usual 16-bytes WAV-file. The file, which is approximately 1megabyte and is e-mailed or picked up from the Sintefex web site, is sent from the soundcard in a PC/Mac, from a DAW, from a CD-R or a DAT directly into the Replicator's S/PDIF-input. The easiest software I have ever experienced.

For the sampling you couple the Replicator's test output to the input on the compressor, EQ etc. that you want to replicate. After that you close the circle by coupling the test object's output to an input of your choice on the Replicator. The menu for the memorising does, amongst other things, contain adjustment for the signal level: The preset value is -18 dBFS, but everything between -70 and 0 dBFS (+18 dBu) is allowed. The level is set either with impulses or sine wave signals, After that it is just a matter of pressing a button to make the process start. The impulse with the highest level is started first then follow the remaining 127 impulses with descending levels towards zero at preset intervals

For a filter which has little time constant of energy storage a relatively high pulse repetition rate can be used. The minimum pause that can be used is 3000 samples. A compressor, a reverb or other units with more time of energy storage can require considerably longer pauses between the impulses. Reverb is not really the Replicator's strongest side, but it is fully possible to memorise such units .

After some minutes depending on the repetition frequency, the memorising is finished and can be saved as a sample . After some tests you will find that the learning is not so evident and simple , as you might have hoped for. The right gain is very important and of course sufficient low repetition frequency .

Only after a day's session in the studio with the Replicator FX8000, a Urei LA-4, an eventide H3500 and various analogue filters did I start to have usable results. The most interesting question is naturally how the A/B-tests came out . With the LA-4 and a filter I came very close to the real thing , with the H3500 it was felt that with more time with the equipment it should lead to considerably better results because everything depends on how well the learning procedure proper is carried out .

### ***Bits and Pieces***

Sintefex FX8000 Replicator can work totally independent or as a slave to some digital master-clocks . It is possible to lock it to an incoming AES/EBU-signal or to word-clock on BNC . The various cards in the equipment must, however, be locked to the same signal.

Connections exist for MIDI in and out . These are provided to save loading program files, but it is also possible to send and receive program change or SysEx and to use certain MIDI controllers . e.g. you can let after-touch govern the drive of the Replication process, that is how the process works. Via MIDI or a USB-PORT you can use Replimat, PC-software which handles saved files and updating of the operating system. Support for the USB-PORT is, however,

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missing in the present software , because Sintefex is waiting for a reasonable standard machine control in this connection .

### ***In Summary.***

I like the Replicator. It is a fresh wind in the traditionally conservative pro Audio world - a box full of possibilities . Here you can use the expression "only the fantasy limits you" better than any other connection that I can think of. The equipment has in spite of its complexity a seldom seen or found, easily navigable area of applicability and is expandable up to 8 channels.

Sintefex Replicator FX 8000 is a very special product which will hardly be left unnoticed. You either love the concept or you hate it - in the latter case probably more for an ideological than a practical reason . With a bit of training and care it is fully possible to memorise and learn the various stages that will lead you to your own "fantasy" . The tested software version is not impeccable, but when you read this text a production version will be ready . Why do you let loose a premature software version for the test ? That is a frequent phenomenon that Sintefex is not the only one to use and that all of us, without liking it, more or less have to accept today .

But of cause there are one or two "buts". First of all the price for a Replicator with 2 channels is definitely beyond the limit for an impulse purchase , but considering the in-built possibilities the cost is not that high. Somebody might however feel that they are missing their original devices but with time and a little learning you can overcome this. Which leads to my last and may be only valid remark: The lack of a Sintefex Replicator in your studio with all it has to offer along with all that space you will save from the original equipment has to be worth a second look at the very least.

Sintefex Replicator is, if not revolutionary, then at least the most interesting sound news product to come from the 20<sup>th</sup> century's last year.