

New expert level simulator for Sinapse's 20th birthday

A new heatset printing simulator generation is being launched by Sinapse Print Simulators to coincide with the 20th anniversary of launching the world's first printing simulator. The new Heatset Expert generation not only incorporates more advanced technologies but is also the result of nearly five years of work by a Focus Expert Group, and two years of research led by UPM with the VTT technology institute. The result is a tool that will take both trainers and trainees to new dimensions.

"Before we could use the simulator to train people well, but with this new version we can take them to expert level," says *Bernard Rebout*, one of **UPM's** technical trainers.

The world's first printing simulator was the SIR heatset model released by Sinapse in 1991, and the launch of the new Expert series underscores the continuity and experience of Sinapse in this domain. The **WebSim-Heatset Expert** is the first of a new generation of simulators that not only integrate advanced process modelling and functions, but also incorporates a range of new ICT (Information Communication Technologies), along with a number of developments from the Newspaper simulator such as the multi-level diagnostic help system. Users also have choice between a manroland-type console with **MEGTEC** dryer interface or a new **Goss Omnicon** interface.

Developed by experts

The **Focus Expert Group (FEG)** began working together five years ago to take the heatset simulator to a more advanced user level. Its members include **Goss, MEGTEC, Sun Chemical, Trelleborg, UPM, HUT (Helsinki Institute of Technology), VTT** and **Sinapse**. The group met several times a year to identify process parameters and review their simulated behaviour.

The FEG defined which new process aspects to implement, and to identify scenarios and consequences when a parameter changes. The data relationships and best practice settings from FEG members were validated by press testing at the VTT research laboratory under the supervision of UPM. Sinapse then structured and programmed the simulator to reproduce this behaviour, followed by validation with FEG members. There were usually 2-3 development – validation cycles because of the complexity of process relationships.

Two of the Expert Group members, Sun Chemical and UPM, brought an additional level of expertise to the project because both are users of Sinapse simulators in their European training centres.



Members of the FEG

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The Sun Chemical simulator is installed in a fully functioning manroland Pecom press console at the Eurolab at Karlstein (near Frankfurt). They have been running Print Simulation Customer Workshops for five years with several hundred people passing through its courses. Gerry Schmidt, Sun Chemical's European Technical Marketing Manager comments that "Simulation is ideal for all levels of expertise. Inexperienced printers get the opportunity to learn techniques to solve everyday problems, while more experienced printers can try different ways to solve complex and potentially damaging problems.

"Previously it was difficult to visualise some heatset print faults and we therefore appreciate the huge improvement in both the realism and range of press fault scenarios.

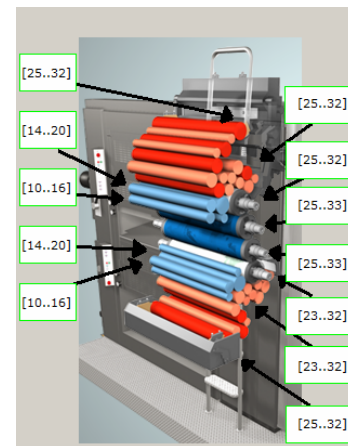
"As experienced simulator users, we really see the huge difference that the new HeatsetExpert programme brings in terms of hands-on press reactions and fault go to gather data on correct operating settings of press components under good running conditions. The Technical Audit sheet is now built into the simulator along with a simulated Infra Red temperature measurement gun and other tools. This allows advance trouble shooting, for example, to see the cause and effect of a localised hot spot in comparison to target temperatures."

Third party validation

The UPM Training Center in Augsburg, Germany, has been using their simulator for two years. It is installed in a specifically designed Honeywell console to allow training for heatset, coldset, and sheetfed printing. "There has been an enthusiastic response to our courses where trainees get an excellent opportunity to deepen their knowledge of different printing techniques and the role of paper in the printing process. The opportunity to learn more about trouble-shooting from the hands-on printing simulator training is particularly appreciated by our customers," comments Gerd Carl, responsible for the training services. "At UPM we saw that we could help improve the simulation process by both bringing our expertise to the process and by working with the VTT technical institute to validate this input."

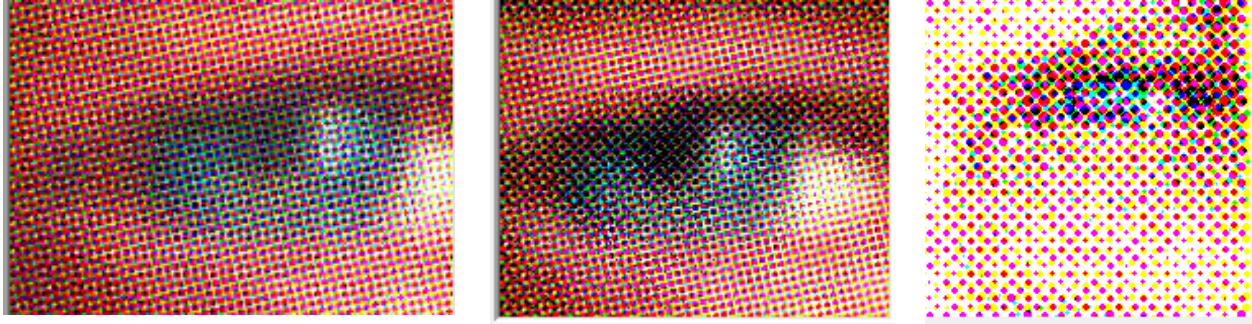
During the two-year programme, VTT physically tested a range of UPM coated and uncoated papers to identify their printing related parameters for detailed simulation modelling. This included defining more realistic ink-water curves that were tested at VTT for different paper grades for specific water absorption and ink penetration. Sinapse then designed specific performance curves based on behavioural evidence. These were then validated by the FEG group and UPM's support team — who are all ex printers — to fine tune curves to their experience of field behaviour in multiple printing plants.

"The result is high fidelity print simulation that now enables us to reproduce on the simulator a wide range and combination of printing conditions. We can see, for example, what happens when you change paper from LWC to SC without changing the plates, inks, and dryer settings accordingly. This is especially important to understand for an efficient press set up when changing jobs with different papers. It brings a virtual reality to simulator use that will satisfy even the most demanding expert." adds Gerd Carl.



Press Unit with Temperature Checks

Examples of magnifier on LWC (150 line), SC (120 line) and prior simulator (undefined)



New Features & Functions

The new simulator will initially be released with two paper grades — SC and LWC — each with their specific screen rulings, ink and water settings and dryer profile. Any incorrect setting is clearly visible so that printers can now see how different types of paper react to changes in parameters to better control process and operator training. Another new feature is a blanket washing frequency for each paper type.

WebSim Heatset Expert has 18 additional faults linked to the different paper characteristics. Each has a realistic visualisation display for blistering, fluting, fiber puff and cracking, coating cracking, dusting, print through, mechanical ghosting, positive and negative piling, scuffing, linting, smearing, dot gain (TVI), density, silicon marks, dry scumming, fan out, tension adjustment, and static electricity. If the press is started with the wrong input or consumable e.g. incorrect ink, it is now visible.

Density and dot gain (TVI) is now based on real measurements of ink and water variations. The operational window of density and dot gain tolerances are defined by the trainer. Dot gain variation is visible on the PrintCopy & Magnifier (along with dry scumming) and the correct variation is shown below the initial reference value. There are separate ink-water settings different for each colour.

It is now possible to visualise plates without ink and set all ink slides to “zero”. This allows an excellent exercise of setting ink slide positions from the image on the plates (exactly the sort of training you get from the press manufacturer). Alternatively, auto plate pre-setting is also possible and these curves can then be fine tuned to match the proof.

The new Expert version incorporates a fully simulated MEGTEC dryer with its controls integrated into the press console — this includes temperature profiles for different paper grades.

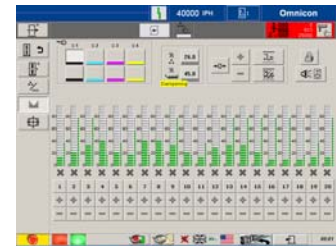
More advanced blanket behaviour is modelled including tensioning, the use of new tools like a torque wrench, and pin gauge. Other features include an anti ghosting device, and more realistic modelling of fan-out.

Future developments will include more paper grades, increased 3D fold visualisation, and additional types of folds



GOSS interface now available

A GOSS M600 Expert version has been developed with a dedicated Omnicon interface that includes splicer and dryer controls. This fully reproduces all the console icons and press interaction of the real production environment.



Goss M600 Inking

Goss M600 Pressroom

“The original web offset simulator was developed between our company and Sinapse 20 years ago and we are delighted to have participated in the new generation,” says Jacques Navarre, senior vice president for Goss International. “Our expectations have been doubly met from the advanced modeling of the simulator, and by it being available for our M-600 presses and specific Omnicon control system interface.”

New Technologies

In the previous version, subtle print problems were not always clearly easy to identify. A large part of the FEG’s work was on improving the visual display for each type of print fault. These are much more realistic from the improved higher resolution image quality. This allows the differences in screen rulings to be seen when using the magnifier tool. There is also a double page view available. The functions of ‘check’ and ‘action’ are separated and each action has a time and a cost.

It is now much easier to modify press condition malfunctions and related diagnostic scenarios. Each function has a pull down menu with 10 or more associated problems.

The image quality has been improved to give better color and image display. Visualisation has been enhanced for double-page, Folds and Cuts and a more realistic zoom.

An interesting function is the ability to simultaneously run two languages — one for speech and the other for on-screen written messages. This can be a useful feature for users who have multi-lingual staff (e.g. Spanish/English), or those wishing to acquire a printing vocabulary in a new language (e.g. Chinese/German).



The software – version 5.0- works in a Windows 7 environment and can be used on different production sites with centralized supervision. This uses the Sinapse Educational Server module to easily compare and analyse student training sessions in from different production sites.

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For a more complete description of the new Heatset simulator, see <http://www.sinapseprint.com/-Latest-versions->