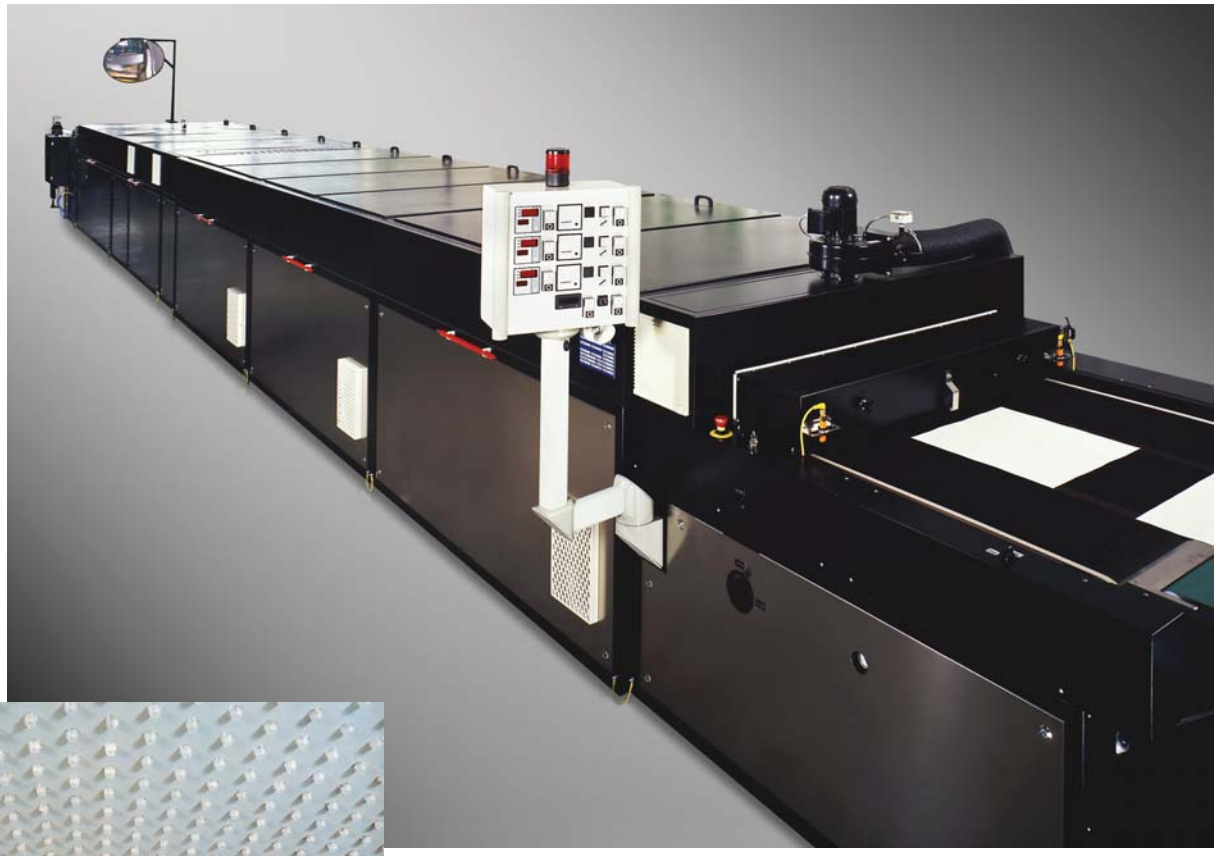
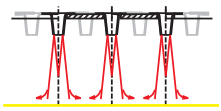
SPS®
TechnoScreen

SPS® TURBOSTAR

Modular High Speed Jet Drying and UV Curing Technology





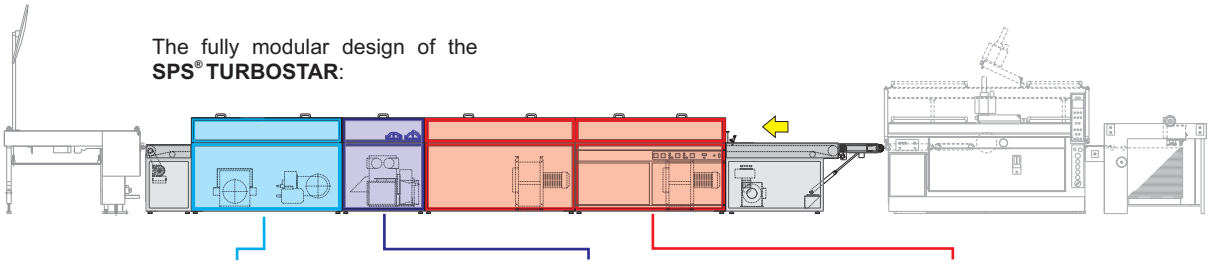
Energy to combine in the **SPS® TURBOSTAR**:

heat on demand, UV light to cure, and powerful air.

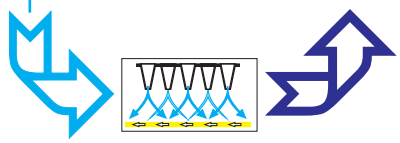
The highly modular design of the **SPS® TURBOSTAR** dryer series matches with the requirements of the most demanding graphic and industrial screen printing jobs. Hot-air jet sections for physical drying of solvent based inks and radiation modules to cure UV media perfectly cope with the capacity of the fastest SPS® cylinder presses.

This way, customized line combinations can be configured to cover the full range of possible screen printing applications.

The fully modular design of the **SPS® TURBOSTAR**:

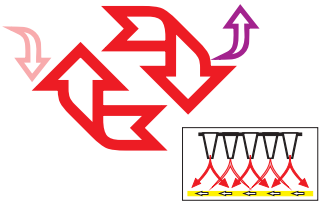


The ***cooling*** section(s):
For optimum drying efficiency chilled air, fed through the optional **SPS® FRIGOPACK S** water / air heat exchanger, reduces the sheet temperature and ensures safe piling up in the stacker.



The ***transit*** section:
In the physical drying mode of a multi-functional dryer line, used for solvent-based inks and varnishes, the intermediate cooling provided by the transition module is used to smoothly lower the substrate surface temperature and tension as well as to thermally separate the heating and active cooling zones. This way, thermal stress on the substrate is avoided - and loss of energy is minimized.
For usage in the UV curing operating mode, the transit section is equipped with two integrated UV lamps for engagement on demand. In this operating state, the nozzle cooling reduces the temperature build-up under the UV modules.

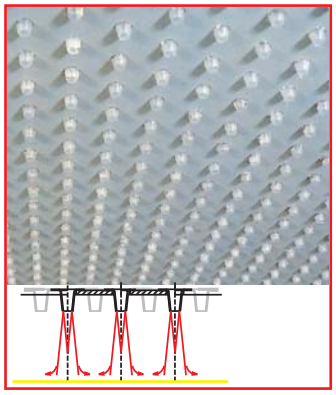
The ***heating*** sections:
A high re-circulated air volume, exactly temperature-controlled, provides the energy for solvent evaporation. Air extraction and fresh air supply are perfectly balanced and monitored.



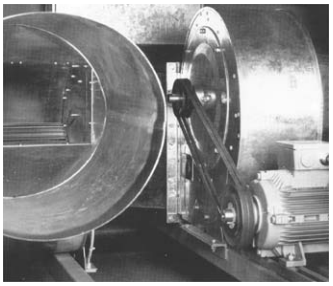
When the combination version of the dryer is run in the UV curing mode for varnishing jobs, the sheet pass through the now disengaged heating zone is used to achive an optium varnish flow-out before the UV elements are reached, resulting in an even and glossy surface.

Pneumatic hood lift is a standard feature:
easy access to the conveyor belt guaranteed.

The powerful ***real jet*** system of the **SPS® TURBOSTAR**: All section hoods are equipped with nozzles in exactly calculated shape and position. The passing air flow is accelerated and focused over the substrate surface. This way, an optimum energy transmission at a low operating temperature level is achieved.



In each section of the heating zone, the set temperature is electronically monitored and regulated. The controllers used keep the value within close tolerances and thus maintain constant thermal conditions around the substrate during the printing job. The results are maximum dimensional sheet stability and a tight fit.



To enhance the thermal energy effectivity, heavy-duty blowers move high air volumes with maximum turbo pressure.

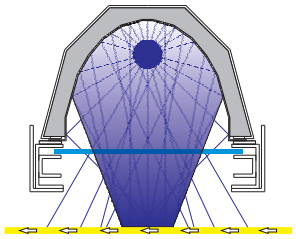
Perfect sheet hold-down over the complete coveyor belt length is achieved by providing adjustable vacuum in the infeed module and maintaining a balanced negative pressure difference in the sections.

Large and small sheets, heavy and light-weight substrates are safely guided to the stacker end.

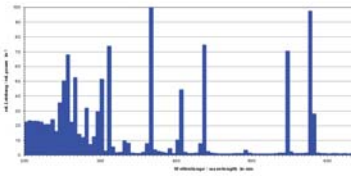
In the ***UV / transit*** section, vacuum plates under the UV lamps provide additional sheet hold-down on the transport belt.

In the air hood of the dryer ***transit*** section two **SPS® UVi** radiator modules with spectrally optimized linear power output can be integrated. The close arrangement of UV reflectors and jet cooling segments warrants a low substrate temperature build-up.
Enhanced conveyor vacuum under the reflectors ensures perfect sheet hold-down. Press controlled UV power variation (pre-set output / stand-by) is a feature within the SPS® ***synchroline*** option.

The extended conveyor infeed can be equipped with an additional on-demand UV module for instant curing of high ink deposits or with a medium-wave IR radiation unit to improve the flow-out of UV varnishes.

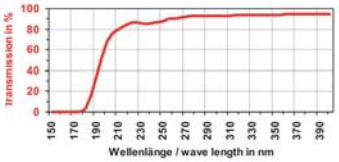


UV radiator / reflector assembly with quartz filter ...



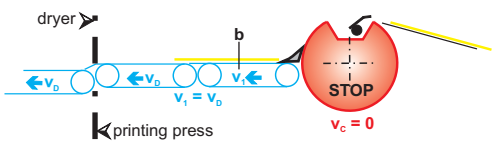
... and spectrum of the ***Hg*** UV bulb (doped versions on request).

Air cooled quartz glass filters under the UV reflector casings reduce the unwanted IR portion within the spectral emission. Due to optimized physical filter properties, the UV radiation passes through. The filter also protects the UV source from dust and contact with the substrate.

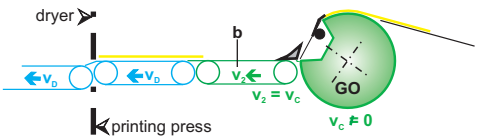


The mobile SPS® UV DISC measures the realtive UV energy dose [mJ/cm²] to ensure consistent quality.

SPS® *synchroline* with synchronized sheet transfer



SPS® press, dryer, and stacker are interlinked to a one-stop configuration by the SPS® ***synchroline*** soft- and hardware functions.
The synchronized sheet infeed with automatic belt speed adjustment is one feature out of many.



During the stationary phase in the print cycle, the delivery belt (**b**) of the press follws the pre-set speed of the dryer conveyor ($v_1 = v_D$). As soon as the printing phase starts, belt (**b**) is coupled to the cylinder rotation ($v_2 = v_C$): **flutter-free sheet transfer guaranteed**.

SPS® TURBOSTAR

EQUIPMENT	TS M1	TS M2	TS M3
Standard conveyor belt width [mm] [in.]	**900 35**	**1200 47**	**1800 71**
modular configuration: ***heating***, ***transit***, ***cooling***, ***IR***, ***UV***	■	■	■
real jet system in all sections: nozzles for guided air acceleration	■	■	■
infeed segment with adjustable hold-down vacuum	■	■	■
fold-down belt to open passage between dryer infeed and press delivery	○	○	○
SPS® ***synchroline:*** link-up with press controls and master belt speed synchronization	○	○	○
medium wave IR module on the extended infeed: SPS® **IR TOP**	○	○	○
additional UV module on infeed: SPS® **UV TOP**; 120 W/cm - **EPC** balance	○	○	○
configuration with 1 to 4 ***heating*** sections, 2000 mm / 6' 7" each; room air infeed	■	■	■
electric heating in the re-circulating air volume: max. 80°C / 175°F	■	■	■
high temperature version with belt separation: max. 150°C / 300°F	○	○	∅
integration of medium-wave IR radiators in the heating section(s): SPS® **IRi**	○	○	○
electronic temperature control, separate for each heating section	■	■	■
air volume regulation in the heating sections (volume profiles)	○	○	○
steam humidifier unit(s) in the heating zone: SPS® **HYGROPACK**	○	○	∅
configuration with 1 UV/***transit*** section between the zones, 1100 mm / 3' 6"	■	■	■
UV units SPS® **UVi** - **2***120 W/cm - integrated in the UV/transit section; **EPC** balance	○	○	○
enhanced UV power on SPS® **UVi**: 2 * 160 W/cm	○	○	○
configuration with 1 or 2 ***cooling*** sections, 2000 mm / 6' 7" each; dedicated air infeed	■	■	■
self-contained water / air cooling unit SPS® **FRIGOPACK S**	○	○	○
pneumatic hood lift on all sections	■	■	■
conveyor outlet with frequency controlled belt drive	■	■	■
PTFE conveyor belt with guided traction, balanced air pressure	■	■	■
thermal insulation and sound protection in all sections	■	■	■
stainless steel side paneling on all sections	■	■	■
air tube connections on right-hand side (A side)	■	■	■
SPS® ***serismart*** ™ P: auto-store & auto-set for process parameters	○	○	○
microprocessor controller (PLC) with text display and key panel console	■	■	■
integrated modem for on-line service data transfer	■	■	■
operator panel with all main functions in central B side position, with text display	■	■	■

■ Standard ○ Option ∅ Not available

All specifications given in this brochure are subject to possible alteration.
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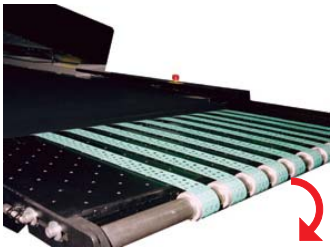
Examples of available **OPTIONS**

SPS® *synchroline*

When operating in line with SPS® STOP cylinder press and sheet stacker, the dryer becomes an integral part of a fully synchronized configuration:

- electronic speed control from dryer conveyor to press delivery belt (harmonized sheet transfer)
- UV power management by the sheet run: stand-by, pre-set level
- print ***autostop*** when dryer and stacker detect malfunction
- opto-electronic sheet pass detection between infeed and outlet.

fold-down infeed belt



For make-ready and inspection of the press, the transfer belt between printing machine and dryer can be lowered, opening free passage between the line modules.

SPS® *serismart*™ P

For job-related quality control and ease of drying / curing parameter adjustment, up to 24 pre-defined set-ups can be stored in the line controller and recalled on demand. During the run, the system data are then automatically kept within given tolerances, i.e. depending on the individual equipment:

- conveyor speed
- heating air temperature profile
- heating air volume profile
- relative humidity level
- UV power state
- IR power state
- cooling air temperature

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