SIASPRINT MULTIFORMULA

TECHNICAL SPECIFICATIONS & BENEFITS

A. Streamline chassis = less floor space. All electrical components integrated into the machine. No Electrical Cabinets separately lined up outside the machine's floor plan to take up valuable production work areas. Extremely sturdy/durable welded (solid and tube) steel structures.

B. Unique shuttle feed system automatically controls registration accuracy. The substrate is positioned manually or in an automatic feeding mode (feeder optional) at the leading edge front register stops which is detected by fiber optic sensors to control the precise alignment at 3-points. Depending on the substrate size, two fiber optic sensors are selected from the Touch Panel Display. Once the front edge is detected by the fiber optic sensors, a pneumatic device locks the entire front edge of the substrate on the shuttle feed system which transports the substrate into the waiting gripper of the press. Simultaneously, during the forward operation of the shuttle feed system, the substrate is automatically moved into the third register point (selectable left or right) fiber optic sensor and this movement is motorized. The position of the L/R side fiber optic sensor is adjustable according to the material size. No dead time or adjustments necessary when changing from minimum to maximum thicknesses or light to heavy substrate. Due to the innovative design of the shuttle feed system, the gripper cover plates are comprised of a flat surface extending the life of the screen mesh and squeegee rubber. No risk of squeegee and screen mesh damage! (Please note: Other important benefits within attached – "Shuttle Feeding System" document.) Newly engineered support bar is reinforced and specifically design for lightweight or heavy substrates; includes relocation of the laystops and fiber optic system achieving extremely accurate registration tolerances.

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C. The printing head is a four post design with heavy duty steel linear bearing lifting columns and a direct drive system. Faster high lift and lowering position for easy screen cleaning, access and inspection. No chains and the new direct drive system provides greater overall control and accuracy of the peel-off system (See M. for more details.) Accessible housing for all motors, gearboxes, peeloff apparatus and other mechanical components without any interference during setup.

D. For quicker set up and change-over, vacuum zones are sectioned to your substrate size. At the Touch Panel Display you can select the fiber optic position according to substrate size and the correct vacuum zone(s) will be automatically set. All parameters can be stored and recalled. Both vacuum and blowback are fully adjustable for the duration and air volume.

E. Rotating squeegee and floodbar assembly from an angled vertical print/flood position to a horizontal position allows one person to single-handedly insert and remove the squeegee and floodbar. There is no need for a second person to be involved in this operation. Simply insert one end of the squeegee and floodbar in the holder and push it into position. One button on the Touch Panel Display locks it into place. Additionally, the squeegee and floodbar can rotate to the opposite side and move into a high “park” position over a stationary drip tray, which is useful for easy cleaning without removal.
This is beneficial if the same color sequence is used for the next job enabling a faster set up and changeover. All parameters for the squeegee and floodbar assembly are servomotor controlled such as; height, angle, pneumatic pressure equalization, transport, stroke length and neutral position without touching the fabric. All parameters are controlled from the Touch Panel Display allowing the operator to make quick and easy adjustments. The squeegee and floodbar are driven by a toothed belt on a linear bearing system for less adjustment delivering a much smoother and quieter operation.
All values and settings are programmable and can be recalled for repetitive jobs.

F. Squeegee and floodcoater travel in the short stroke direction. Faster speed and less chance for mesh stretch, while easier to control printing variables compared to long stroke direction.

G. Screen(s) can be loaded and removed while the squeegee and floodbar are positioned in the high “park” mode for easy and rapid screen changing capability. With the push of one button on each print station, the print head will rise slightly, the squeegee and floodbar will move into a high “park” position over the stationary drip trays, and then the frame locks are released allowing the operator to remove the screen.

H. Job completion sequence. On the Touch Panel Display there will be a “Tear Down” button. This function will allow the operator to select all print heads or selected print heads to be positioned and unlocked for rapid change-over or tear down after the job has been completed. Screen registration, off-contact, peel-off, vacuum/blowback, special cycle, squeegee/floodbar speed, pressure, angle, UV scanning speed and UV lamp(s) power setting will automatically be reset to a ZERO position, prepared for next set-up. All printing parameters are programmable and can be store and recalled.

I. Servo driven belt (no chains) gripper transport system offers quiet, smooth and accurate cycle designed for large format substrates and thicknesses up to .39” (10 mm), optional .47” (12 mm). A single gripper takes the substrate at the infeed then carries it all the way to the delivery conveyor.
The gripper itself is registered and locked at each printing station to provide precise image to substrate register. Gripper plates are sectioned to avoid nip or damaged points at the end of the substrate. The new servo driven belt system includes a slave drive to maintain proper balance tension to insure long belt life, no stretch or jump during gripper transport. No chains as the servo driven belt gripper transport system has a proven long life without any record of replacement.
The gripper support bar combined with a pneumatic system operate and turn the grippers to open or close them evenly and securely along the entire length

of the gripper system. Less weight, low mass = less inertia forces.
NOTE: No maintenance and/or lubrication system required.

J. Motorized screen registration system carried out by micro adjustments that can be operated at each individual print head from the Touch Panel Display including at the Stacker location for quick and accurate settings. Automatic screen axis adjustment in the X, Y and Z (skew) directions.

K. Blowback: A powerful air cushion via the reversal of vacuum action in the printing table, aids in the fast removal of difficult to handle printed substrates.

L. Preprogrammed rear frame holding rail system automatically moves into final position. At the Touch Panel the screen size is entered and then loaded into 3 point stop. Eliminates the need to have a second operator on the opposite side and less final registration time during setup.

M. Sincroprint peel-off is reengineered with a new direct drive system. This allows greater accuracy to precisely control rate, height and starting point of peel-off. Fully adjustable across the squeegee stroke length incrementally from the Touch Panel located at each individual print station.

N. ECO PLUS UV Curing System – Less direct and indirect energy costs:

- UV scanning with rotating reflectors at 180°. The system includes one lamp housing where two reflectors are integrated with two lamps, variable stepless output 0 – 120 w/cm (300 w/inch), and optional 160 w/cm (400 w/inch).
- The life of all UV lamps are continuously monitored. It is composed of a UV-ray reading system that alerts the operator when a lamp becomes old and UV output decreases below the security level. The PLC then indicates on the Touch Screen the lamp status and need for lamp replacement. A light integrator measures the actual millijoule output which is feedback to Touch Panel from the PLC. This monitoring system avoids UV curing by guessing and ensures that the specifications of the ink supplier

can be accurately met at all times. A useful tool designed to control and verify quality standards and/or achieve ISO Certification.

- The reflectors at the end of the given curing length stroke both rotate 180°. The lamps are now facing the upper part of the housing. The Exhaust motor and fan are located on the top of the lamp housing. The cooling system assures proper lamp temperature and minimizes any heat transfer to the printed substrate. When the reflector is rotated in upper position, the lamp automatically goes into Standby mode (10 % of power setting). The PLC automatically sends a signal to the Exhaust motor to adjust the blower speed lower proportionate to 10% Standby mode. This function creates further energy savings with less make up air consumed. Lower and Adjustable Exhaust Air for each UV Section minimizes energy resources in a climate controlled facility. Energy cost are a continual ongoing expense directly related to operating cost and this savings combined with lower BTU's for heating and a/c tonnage for cooling offers a cumulative energy cost reduction.
- When the next sheet arrives in the curing position, the lamp resumes selected power, the reflector rotates and the scanning cure starts.
- The operator inputs the numeric value on the Touch Panel for the curing stroke length according to the material size. More flexibility of the polymerization cycle, no need for the lamp to reach the two fixed rest position (located outside the max sheet size right and left) independent from the material size. Therefore, it is possible to have a lower scanning speed with less lamp power with the same printing cycle time or using the normal UV power to obtain a faster cycle.
- A quartz filter positioned under the lamps allows the guarantee of cutting off a large percentage of the IR output which is a component of UV light emission. Less heat transferred and no shrinkage on the material. The quartz filters do not allow any

substrate to come in direct contact with the lamps. No need for quick access doors to remove sheets required for fire extinguishing.

- Telescopic lamp and reflector housing for easy accessibility to change lamps.
- Louvered reflector housing design to maintain cool lamps, reflectors, quartz filters and all electrical connection to lamps. Cool to the touch even when running the line multiple shifts.
- The all new UV Eco Plus system saves up to 50% or more energy cost compared to other UV curing systems on the market.
- The Electronically Controlled UV System allows longer UV lamp life and instant/soft start without electrical (current) peaks. (This drastically reduces demand charges and reduces reoccurring energy costs.)
- Energy consumption is associated with environmental impact with growing concerns about “green initiatives” and conserving energy, printing companies are looking for ways to reduce their carbon footprint and save money at the same time.

O. The new Multiformula is even more user friendly than its predecessor. All adjustments are capable from the Touch Panel Display. These adjustments are programmable and include but are not limited to;

- Your choice of three vacuum zones, additional zones are possible.
- Amount of vacuum and blowback including special cycle. (Described in detail on Q.)
- Fiber optics for sheet registration.
- Gripper speed.
- Off-contact adjustment.
- Sincroprint adjustable peel-off.
- Screen registration and adjustment in the X, Y and Z axis.
- Squeegee and floodbar height adjustment.
- Squeegee and floodbar angle adjustment.

- Squeegee and floodbar stroke length adjustment.
- Squeegee and floodbar speed adjustment.
- High park position of squeegee and floodbar including neutral position without touching the fabric.
- Scanning UV speed
- Scanning UV stroke length adjustment (start and stop position according to print area)
- Stepless UV output 0 – 160 w/cm (400 w/inch)
- Continuous automatic reading of the UV output quantity supplied from each UV lamp. Preprogrammed UV – ray reading system to monitor all lamp output. This system assures that the specifications of the ink supplier are correct at all times to better maintain ISO Quality Standards and Certification.
- Longer UV lamp life and soft start without electrical (current) peaks.

P. Screen frame holding assembly is equipped with fiber optics and programmable motors to "ZERO" position in the X, Y and Z axis (skew) before inserting a new frame. This function ensures that the frame assembly is centered and square when a new screen frame is loaded into the machine without limiting the fine tuning micro register adjustments.
The best setup is at "Zero" position.

Q. Special Cycle: From the Touch Panel Display you can select the print head lift and descending print table timing/delay independently and sequentially;

- Before the print cycle begins the gripper delivers the material on the printing table, then the print head lowering can be delayed. This enables the material to be firmly secured on the print table as the vacuum is engaged allowing no chance of the material to be lifted up by the static charges from the screen mesh.
- After the print cycle, the print head will rise completely to the full upright secondary position before the gripper cycle starts. At this point, the material remains on the vacuum table until the screen mesh has reached the set position.
- The print head lift height is variable allowing the operator to pre-select

the incremental distance between the screen mesh and the printed material. This ensures a safe distance between the printed material and the screen mesh to enable dissipation of a static charge. The benefit with this feature is that spoilage and printing problems are minimized. Furthermore, the operator has optimum control and flexibility over even the most difficult materials to print.

R. Squeegee and floodcoater assembly is constructed of an extremely robust and heavy duty beam structure. Pneumatic actuators are arrayed along the length of the squeegee to insure that pressure is evenly balanced and vibration-free. Each pneumatic actuator is programmable from the Touch Panel and controlled independently with center point balance to provide consistent and precise dot control while maintaining an even ink film layer.

S. No scratch, marring or scuffing substrate. All metal plate sections are covered by a Teflon material at feed position, panels located between printing tables and UV section. The UV vacuum table is also covered with a Teflon coated fiberglass mesh.

T. A “self diagnostic” system is programmed into the software whereby, on the Touch Panel the operator can clearly see the type of fault including where to check for it.

U. Job Storing and Recalled: All values are programmable. Job files can be stored and recalled for repetitive jobs.

V. Modem: Enables remote monitoring and adjustment of all PLC controlled functions by engineering.

W. Printing table constructed of a special honeycomb that guarantees long life, lightness, planarity and stability.

X. Advanced PLC technology replaces the need for many mechanical parts. Simplifies periodic maintenance and reduces downtime.

Y. Optional Stacker: This line can be supplied with an automatic sheet stacker. The infeed to the stacker incorporates a pre-conveyor belt with fully adjustable speeds and air cushion for sheet floatation onto the previous one. Front stops and pneumatically operating side joggers which are fully adjustable to accommodate any sheet size. Automatic self lowering of the pallet is controlled by a photocell incorporated at the front stop.

Z. Optional Feeder: Front, rear, removable or combination single and stream feeders are available for most sizes. Removable feeders are designed with a rail/wheel system so that the feeder can used for fully automatic operation while the feeder is attached. Hand feeding is possible when the feeder is disconnected for more difficult substrates. Reattachment is facilitated quickly and easy with the electrical disconnect and reconnection.
Contact SIASPRINT for more information.

Technical Data	Model	165x215	165x265	165x300	165x325	180x366
Max Print Area	mm	1650x2150	1650x2650	1650x3000	1650x3250	1800x3660
Max Stock/Vac Area	mm	1700x2200	1700x2700	1700x3050	1700x3300	1850x3700
Max Frame OD	mm	2400x2550	2400x3350	2400x3700	2400x3840	2550x4260
Max Frame Thickness	mm	50	60	60	60	60
Substrate Thickness	mm	.10 mm – 10 mm (12 mm optional)				
Substrate Weight	mm	120 – 3000 grams/square meter				
Gripper Margin	mm	Adjustable 3 – 12 mm				
Screen fine tuning X-Y-Z	mm	+/- 10 mm				
Speed*	Cycles/hr	750	700	680	650	550
UV-Power Output	Stepless 0–100% Std 0-120 w/cm Optional 160 w/cm					
UV-Standby mode	Standby 10% of output setting					
Control	PLC/Programmable Touch Screen					
Colors	Fully modular 1-6 or more					
Electrical Conn.	400V, 415V, 460V, 600V					
Compressed Air	6 bar (84 PSI)					
Exhaust air UV	Adjustable 3000 cm/h					

NOTE: Exhaust Air motor(s) linked to PLC, automatically reduce proportionately to accommodate 10% Standby mode. Less exhaust necessary for 10% Standby, conserves make up air and energy resources are absolutely minimized.

All Technical information is not binding and subject to change.
* Mechanical machine speed w/o feeding operation.
+Max frame OD can be sized larger in the width dimension, consult with SIASPRINT.

Experience = nearly 300 Multiformulas in production worldwide.
More multicolor inline machines built by SIASPRINT than all the competitors combined.

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