Technical Specification

Flexo Coater FC105 S

Supplier

Company : Proteck International BV
Voltaweg 2b
6101 XK Echt
The Netherlands
Tel. +31 (0) 475 - 390 550
Fax +31 (0) 475 - 468 292
www.proteck.co.in
info@proteck-international.com

Doc. Nr. : 'FC105 S - 20080618 version 1.2'
Doc. creation date : June 30th, 2008
Doc. Update : July, 2008

Number of pages : 12

View from feeder side

View from operating side

Table of Content

1 General Description

Principle: The FC105S is a sheet –fed flexographic printing machine. It is capable of handling stock in the form of sheets of paper, board and plastic substrates.

1.1 Feeder:

The feeder consists of the pile handling and the sheet separator system.

Pile handling system consists of two pile lift mechanisms for non-stop stock feeding requirements. The pile lifting mechanism is driven by two servo-motor driven gear trains for continuous drive and smooth pile lift. Non-stop device arrangement by means of steel rods is provided. A fine adjustment arrangement is also provided for precise alignment of the pile.

The sheet separator system consists of the separator head and the feed board devices. The separator may be configured to use up to four forwarding suckers and four pick-up suckers. Devices for effective sheet separation including air blow and de-leafing strips are also provided. The feed board consisting of the vacuum suction belts and feeder board device is arranged to keep the stock stream in even pitch and aligned.

1.2 In-feed: The in-feed section consists of the side guide (side lay), the front guide and the over-run prevention device. The side guide and the front guide are equipped with sensors to detect register errors and provide feed back to the system control. In-feed belts also provide stable handling of thin stocks. Double sheet detection devices, mechanical and ultra-sonic, are also equipped to ensure that multiple sheets do not enter the printing station.

1.3 Coating station: The coating station consists of the impression cylinder with twin gripper bars, the paper pressure adjustment system , the plate/blanket cylinder and the Anilox roller – chamber coating system. Registration pins are provided in the plate cylinder to speed up the make ready process and ensure accurate register. The Anilox roller system consisting of the chamber –doctor blade system and the anilox roller transfers the ink/coating to the plate cylinder where it is received either by a blanket (for full coating) or a polymer plate (for spot coating / pattern printing). This arrangement ensures that coating consistency is maintained over the long run. A dial located on the delivery side of the operator side of the coating station indicates / permits the selection of the correct paper thickness.

1.4 Infra-red / Hot air Drying system : An infra-red dryer and hot air arrangement for drying of aqueous inks and coatings is provided. These are high efficiency dryers with minimum energy utilization and waste heat reduction.

1.5 UV curing system: Consisting of the UV light heads, the cooling system and the power electronics, the UV curing system is built to be highly efficient, consuming much less power than equivalent systems. The temperature and the power levels are continuously monitored and maintained by a close loop control system. Further, the UV power level is continuously variable in a 30 – 100 % range and is linked to the speed of the machine. The optimum power level for complete curing of the ink/coating is selected in the control system, after which the systems maintains this level.

1.6 Delivery section: The long delivery section, provides for sufficient dwell time between the application of the coating and the curing action, to ensure high levels of coating performance (gloss, rub resistance etc.,). The section is elaborately designed to ensure that sheet stacking quality and pile consistency is maintained. Designed for thin and thick sheet handling, the system is equipped with a vacuum slow down wheel -spirally arranged suction holes to provide a smoothening effect on thin sheets. An array of fans with adjustable speed assists in good stacking of thin sheets. A pile lowering mechanism with a non-stop device is also provided to enable un-interrupted running of the machine.

1.7 Ink / Varnish circulator: The circulating device for ink/varnish is provided with two pumps of the peristaltic type and a heat exchanger system. The tubing pumps ensure that there is no liquid contact with pump parts other than the tubing itself, making maintenance and clean up easy. The heat exchanger is equipped with a water heating system and a provision for attachment of a chilling system. This ensures that the coating/ink temperature is kept constant through out the print run and consistency of the finished product is achieved.

1.8 Power & Control: The power and control section, housed in the machine, is built to high standards of safety and performance. It houses the main drives, the UV system and the control PLC system. Together with the operator panel on the feeder and the various control elements around the machine, it enables easy and safe operation of the machine.

2. Scope of supply (standard machine)

2.1 Feeder

1. Non Stop Feeder with servo pile lift.
2. Steel plate for pile loading
3. Mechanical Double Sheet Detector
4. Suction Type Feeder board
5. Feeder Board Device Simultaneous Positioning
6. High Speed Separator
7. Feeder pump (Rietschle / Becker / Orion)

2.2 Register

1. Front-lay Detector
2. Over-run Detector
3. Ultrasonic Type Double Sheet Detector
4. Side-lay Detector

2.3 Printing unit

1. Double Diameter Impression Cylinder
2. Precision Tapered Bearings on all Cylinders
3. Stainless steel Metalized Plate / Blanket Cylinder
4. Chrome Plated Impression Cylinder
5. One Action Plate Clamping & Tensioning System
6. One Action Blanket Clamping System
7. No Adjustment Required Gripper Height on all Paper Thickness Range (0.08mm to 0.8mm)

2.4 Coating functions

1. Harris & Bruno chamber system
2. Anilox roller – One unit
3. Chamber for Anilox coater
4. Overflow pan.
5. Hydro-Pneumatic engagement of Chamber to Anilox chamber
6. Continuous Anilox drive with main drive over-ride

2.5 Varnish circulator

1. Twin pumps – tubing type with differential flow adjustment
2. Automatic wash cycle.
3. Full PLC control of Circulator
4. Water bath with heating, provision for cooling and temperature control
5. UV varnish temperature control

2.6 Delivery

1. Delivery Drum less Cylinder for Marking Prevention
2. Delivery aero-chamber
3. Fans for Smooth Sheet Stacking
4. Fully Integrated Vacuum Slow down Wheel
5. Shadow less Chain Gripper
6. Automatic Lubrication for Chain Guide
7. Non Stop Delivery with Wooden Stack
8. Delivery Pile Automatic Lowering

9. Stack Aligner at Delivery
10. Manual Adjustment of Chain Gripper Release Point
11. Expandable Side Joggers

2.7 Curing & drying

1. Infra-red dryer: short wave – 18 kW
2. Hot air dryer – 22 kW
3. UV curing station 3 X 11 kW
4. Exhaust and ventilation hood

2.8 Operation & control

1. Sequential Start Up
2. Emergency Impression Off at Feeder
3. Emergency Impression Off at Delivery
4. Digital Speed Meter
5. Presetting Counter
6. Multi-Monitor for Operation Condition
7. Electronic ballast power unit for UV,
8. Control and power for IR and hot-air systems
9. Main Motor drive system

2.9 Other

1. Platform
2. Drawing for Oil Pan
3. Proteck Standard Painting
4. Standard Accessories & Spare Parts kit

3. Optional equipment

3.1 Feeder section

1. Basic Electro-Static Eliminator at feeder for normal use with occasional use of plastic substrates such as PVC and polypropylene
2. Advanced electrostatic system: for continuous use of plastic sheets. Built with system Kirsten or equivalent.

3.2 Coating station

1. Additional chamber
2. Additional Anilox roll (as per customer's selection from standard types available)

LASER ENGRAVED ANILOX ROLL VOLUME CHART

LINE	BCM VOLUME		CELL		MAX	METRIC		Ink or Var. Transfer to Substrate	
Screen in LPI	Min bcm	Max bcm	avg Depth in µ	avg Opening in µ	Max Particulate size	Screen in L/cm	avg Volume in cm3/m2	Micron	Gsm
350	3	6,5	15	75	63	140	8,7	2,5	2,175
300	3,5	7,2	22	84	68	120	9,2	2,7692308	2,3
280	4,4	7,5	23	91	72	110	11,6	2,8846154	2,9
250	5	9,5	26	101	81	100	10,0	3,6538462	2,5
220	5,5	10,0	31	115	93	90	11,0	3,8461538	2,75
200	5,9	12,0	35	129	103	80	19,0	4,6153846	4,75
200	5,9	9,0	35	129	103	80	14,0	3,4615385	3,5
180	7.5	13,0	38	140	113	70	20,0	5	5
165	8.8	16,0	42	154	124	65	24,8	6,1538462	6,2
150	9	17,0	44	165	134	60	26,3	6,5384615	6,575
140	9	18,0	46	180	145	56	27,8	6,9230769	6,95
120	10	20,0	60	210	170	48	31,0	7,6923077	7,75
100	12	22,0	70	254	204	40	34,0	8,4615385	8,5

Disclaimer: Actual layer thickness and gsm reached is subject to many circumstances such as water evaporation, varnish temperature and viscosity, solid content and particle size, substrate porosity etc.

3. Chilling system for ink/varnish circulator.

3.3 Delivery & drying section

4. Water cooled UV lamps for heat sensitive substrates (plastics)
5. Basic Electro-Static Eliminator at delivery
6. Advanced Electrostatic eliminator – system Kirsten or equivalent.

3.4 Power & control

1. Operating voltage other than standard voltage (380 – 415 VAC 50 / 60 Hz)
2. Customer specified components of different brand than standard.

3.5 General

1. Non-standard paint colors.
2. Special packing requirements (Materials, break-up of packing units)

4. Technical data

1.	Maximum Sheet Size:	1,050 mm x 740 mm
2.	Minimum Sheet Size:	540mm x 360mm
3.	Maximum Printing Size:	1,040mm x 710 mm
4.	Maximum Press Speed:	12,000 sheet/hour (sph)
	*Actual printing speed will be dependent upon size, thickness, and quality of stock being run as well as on the accuracy of register required and other operation, maintenance conditions.	
5.	Sheet thickness:	0.08mm to 1 mm
6.	Printing Plate Size:	
	Length x Width	1,050mm x 795mm
	Cylinder Undercut (Plate + Packing)	2.3 mm
7.	Distance between Plate Edge and Front Edge of Printing Image:	Minimum 40mm
8.	Blanket Size: (with Aluminum Bar)	
	Length x Width	1,050mm x 770mm
	Thickness	1.90mm
9.	Paper Pile Height & weight:	
	Feeder	1,100 mm
	Maximum pile weight (main pile)	950 kgs
	Maximum pile weight (auxiliary pile)	250 kgs
	Delivery	1,300 mm
	Maximum pile weight	1100 kgs
10.	Machine Size: (L x W x H)	8300 x 3000 x 2750 mm
11.	Machine Weight: (approx.)	11 Tons
12.	Total Power Requirement: (Standard Specifications)	
	Power supply	3 phase 380 – 415 V 50/60 Hz
	Main motor FC105 S	11 kW
	Auxiliary equipment (total)	4 kW
	IR + Hot air dryer	18 + 22 kW
	UV curing system	3 X 11 kW
	Varnish circulator	4 kW
	Chiller for varnish circulator*	2 kW (Optional equipment)
	*For use with inks and coatings required to be used at 12 – 20 degrees Centigrade.	

5. Documentation & Safety

5.1 Documentation:

CE Documentation (to be supplied with the machine)
(All documentation will be supplied in hard copy and electronic form)

Mechanical	1 set of layout drawings.
Electrical	1 set of electrical wiring diagram and part list.
Pneumatic	1 set of pneumatic diagram.
Parts Manual	1 parts manual in English language.
Operating Manual	1 operating manual in the English language.
Maintenance Manual	1 maintenance manual including preventive maintenance schedule in English language.
Operating Manual	1 operating manual in local language for CE compliance.
Maintenance Manual	1 maintenance manual including preventive maintenance schedule in local language for CE compliance.

5.2 Safety:

The FC105S complies to the CE standard with respect to:

EN 12100-1	Basics
EN 12100-2	Basics
EN 294	Safety distance upper body.
EN 418	Emergency stop
EN 574	Two-hand safety
EN 953	Covering
EN 954	Safe operating system
EN 1037	Unintended start
EN 1050	Risk analysis
EN 1088	Door switches/safety
EN 60204-1	E-security
EN 60642	Transformers
EN 60947-5-1	Electrical

6. Warranty

The standard warranty period expires at the end of 425 calendar days from the date of shipment from Proteck manufacturing facility or Proteck warehouse or at the end of 365 days from the date of start of installation at customer premises, whichever is earlier.

During the warranty period of 12 months, starting from the day of installation, all cost that results from the normal use of the product (except for wear-out parts) will be covered by Proteck.
This warranty includes material cost as well as labour cost of engineers.
Excluded from the warranty are travelling cost, travelling hours and travelling expenses of engineers.

In the following cases this warranty loses validity:

- In case the machine is moved to another location without involvement of Proteck.
- In case parts are replaced by parts not of equal brand and specification.
- If modifications of any sort are made to the machine without written consent of Proteck.

7. Installation, training and commissioning

The customer is responsible for unloading the machine parts from the truck or container and for all internal transportation of the machine to the installation location. Also the customer will make sure that there is adequate space available for installing the machine .

A total of 5 working days with 2 engineers are budgeted for taking care of the installation, commissioning and training. These days are approximately divided over:

Installation:	2 working days
Putting into operation and testing:	1 working day
Training:	2 working days

The customer is also responsible for connecting the machine to electricity and air supply.

For the training it is important that the person responsible for preventive maintenance and for reactive maintenance is available during the entire period of installation. This person (or these persons) will also receive the extended maintenance and service training. Training can be extended upon customers' request.

8. Acceptance procedure

The initial acceptance test of the machine will take place at the Proteck manufacturing facility or the Proteck warehouse located in The Netherlands. The customer is welcome to attend this test. If the customer wishes to use it's own acceptance criteria these have to be discussed prior to placing the PO and be made part of this specification. Also if the customer wishes to perform an acceptance test after installation this has to be specified prior to placing the PO and be made part of this specification.