# PRIN ECH

### Printech Technology Corpn Leading Manufacturer of Converting Machines



### **Dry (Solvent-Base) Lamination Machine**

### **Machine Layout**



## **Machine Specifications**

The Dry (Solvent Base) Lamination machine consists of a coating unit and a laminating unit joined together by a drying tunnel. The machine is equipped with a digital A.C drive and an A.C vector-grade motor to laminate two different substrates.

1020 / 1320 MM	
500 / 700 MM	
200 MPM	
nder A	
800 / 1000 MM	
76/152 MM	
Two Direction Unwinding	
nder B	
800 / 1000 MM	
76/152 MM	
Two Direction Unwinding	
inder	
1000 MM	
152 MM	
_	

Unwinder A	4 - 30 KG
Unwinder B	4 - 30 KG
Rewinder	4 - 30 KG
Coater	4 - 30 KG

# **Machine Specification**

### Adjustable taper tension can be regulated from a Minimum of 0% to a Maximum of 30% of the set value for rewinding tension.

Web Guiding	Pneumo-Hydraulic edge guide
Roller Heating	Through Water Heating Systems (1 No.)
Hand of Line	Left to Right
Maximum noise level at ground	84 dBA at 1 meter level around machine
Electric Supply Voltage	415 V AC ± 10%, 50 Hz ± 2%, 3ph+N+E
Control Voltage	24 V DC

#### AC Induction Motor with Digital Drives

Coating Unit	01 No.
Laminator Motor	01 No.
Rewinder Motor	01 No.
Unwinder A (Pneumatic Brake)	01 No.
Unwinder B (Pneumatic Brake)	01 No.

Air

Air pressure at machine	Minimum 6 kg/cm <sup>2</sup>
Water Content	0.01%
Air Consumption	20 CMH (Ink pump air consumption extra)

	Water	1
Pressure at Machine	2	-3 kg/cm <sup>2</sup>
Water temperature	2	20 - 25 °C

## **Typical Substrate Range**

### Unwinder A

Polyester	10 - 12 micron
OPP/BOPP	15 - 25 micron
Metallized Polyester	12 - 25 micron
LDPE, HDPE, LLDPE	40 - 60 micron
PETP	10 - 30 micron
OPA	12 - 18 micron
Nylon Cast	30 - 80 micron
PP Cast	60 - 150 micron
Calendared Paper	40 - 80 GSM

#### Unwinder B

Polyester	10 - 20 micron
OPP/BOPP	12 - 80 micron
LDPE, LLDPE	20 - 200 micron
PETP	8 - 30 micron
OPA	12 - 18 micron
Nylon Cast	20 - 80 micron
PP Cast	20 - 150 micron
Calendared Paper	40 - 80 GSM
Different Coextruded Materials	25 - 200 micron
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Every material listed above can be processed subject to the fact that the material characteristics fall within the tension range specified earlier and the speed of the machine will depend on it

### Foundation

The machine can be fixed on the floor in line with the lamination and coating columns. Steel plates fixed on each side of the two columns can be levelled by lifting bolts which are provided with the machine.

#### **Shaftless Unwinders & Rewinders**

The machine is equipped with two unwinders and a rewinder for rolls having diameters up to 1000 mm. Unwinder A is mounted behind the coating unit on the coating column whereas Unwinder B and Rewinder are mounted on opposite sides of the lamination column. Both unwinders are equipped with forced cool pneumatic brakes. The rewinder is equipped with an AC Induction motor controlled by an AC digital drive that rotates the roll to maintain the required tension.

The load cell controls the brake tension at the unwinder and rewind tension at the rewinder. One pair of load cells mounted on the coater top controls bridge tension on the laminator.

The lay-on roller provided on the rewinder is kept in contact with the winding substrate (reel) with two pneumatic cylinders. A set of precision regulators and display gauges has been provided for balancing pressure, to neutralize the dead weight of rider roller. In addition to compacting the web, the lay-on roller prevents air accumulation between layers of substrate and helps to discharge the static electricity of winding material.

#### **Coating Sub-Assembly**

The coating unit is provided with a shafted coating cylinder and also has a coating tray lifting arrangement and splash guards. The steel-coated roller has to be chromium-plated after engraving. An adjustable height SS steel tray connected to an adhesive tank fitted with a Pneumatic / Flameproof electrically operated pump for continuous adhesive circulation.

The doctor blade assembly has adjustments for lifting, lowering tilting, and forward and backward movement of the doctor blade to get excellent wiping results for accurate coating.

**Impression Roller Assembly -** The impression mechanism operates through two pneumatic cylinders each having its air pressure control. The impression roller arms are pivoted type and therefore the parallelism on either side can be easily achieved by adjusting the relative pressure on both sides.

**Doctor Blade Assembly -** The doctor blade incorporated in the coating station has a wide scope for adjustment to completely cover all coating requirements. The doctor blade adjustments include:

- Vertical The blade holder and supporting assembly can be raised and lowered to the centre height of the coating cylinder. This adjustment is made by rotating a hand wheel.
- Horizontal The blade holder can be adjusted through the horizontal plane either parallel or skewed to the vertical centre line of the coating cylinder. The air pressure is displayed on a gauge mounted on the station control panel.
- Angular The angular movement of the blade is carried out by rotating a hand wheel incorporated into the pneumatic cylinder, which applies the final loading of the blade onto the coating cylinder. The air pressure is displayed on a gauge mounted on the station control panel.
- Oscillation The doctor blade oscillation mechanism is driven from the gearbox and is actuated through a worm and worm wheel ensuring smooth operation. The blade holder itself is of a unique design where no tools are required to clamp de clamp the doctor's blade. The length of the blade oscillation stroke is readily adjustable in the range of 0 – 20mm

#### Lamination Unit

The lamination unit supports the secondary unwind, laminating unit, and rewinder. The laminating cylinder is a steel double-wall cylinder heated by a multiple spiral water passage to keep the temperature constant all along the cylinder. The rubber-coated laminating roller has a small diameter to reduce the contact area with the laminating cylinder to achieve the best quality.

### **Drying Tunnel**

The drying tunnel linking the machine columns on the upper side evaporates the solvent inside the adhesive coated on the web (solvent-based jobs) or dries the excessive water (water-based jobs). The drying process is fed by airflow extracted from the environment and heated to the temperature set by the operator, which is blown on the web. The flow of air is controlled manually through dampers for the hot air coming from the hot air generators.

#### **Electrical and Control Panel**

The electrical control panel is accommodated on the floor near the center of Unwind A & Rewind. A 10.1" touch panel is placed on the laminator column of the machine (front / operator side). This HMI has an inbuilt Wi-Fi option, which enables remote diagnostic in the machine. The electrical panel has AC Digital Drives, pneumatic controls, and a programmable logic control system to control the machine functions.

Electric Components Details	
Item	Capacity
Unwind A	Pneumatic Brake 48 kgm, with force cooling fan
Unwind B	Pneumatic Brake 32 kgm, with force cooling fan
Coating Cylinder Drive	3.7 KW AC motor
Laminating Unit	3.7 KW AC motor
Rewind	7.5 KW AC motor
Adhesive Circulation Pump (Optional)	Pneumatic double diaphragm
Heat Blower	3.7 KW blower with thermic fluid heat exchanger (Fabrication of thermic fluid line is in customer scope. In case of Hot Air generator not required)
Transfer Blower	3.7 KW AC motor
Exhaust Air Blower	5.5 KW AC motor
Water Heating System	6.50 KW
Edge guide on Unwind - A & B	0.55 KW Pneumo-Hydraulic system E + L make

### **Corona Treater (OPTIONAL)**

To enhance the surface treatment (dyne label) of the film, an optional Corona Treater assembly can be provided with the machine.

#### Other items attached with the machine

Item	Quantity
Water heating system for Coating Unit	1 No.
Water heating system for Lamination Unit	1 No.
Web Guiding Pneumo-Hydraulic Sensor	2 No.
Foot Switch for Cleaning Coating Cylinder	1 No.
Unwind tension control device (Load cell pair)	2 No.
Rewind tension control device (Load cell pair)	1 No.
Machine Lighting set	1 No.
Bridge tension (Load Cell pair) at coater front	1 pair

Air Volume

Item	Detail
Input Blower	5200 CMH
Transfer Blower	6500 CMH
Exhaust Blower	10000 CMH

### Spare & Tool Kit

Item	Quantity
Teflon Dam	4 Nos. (2 Set)
Static Mixer	4 Nos.
Tool Kit	1 Set

#### Make of Main Components

Item	Make	Origin
Pneumatic Fittings, Tubing and Controlling	Pneumax	Japan / Italy
Load Cells	RE- Italia	Italy
Unw. A & B, Pneumatic Brake	RE- Italia	Italy
AC Induction Motor	ABB / Rotomotive	India
Water Heating System	Nu-Vu, Con Air	India
Digital AC Drive	Siemens	USA/Germany
Touch Screen (HMI)	Weintech	Taiwan
Edge Guide	E+L	Germany
Exhaust Blowers	Ventilayer	India
Adhesive Pump	Ingersoll-Rand	USA
Gear Boxes	Bonfiglioli	Italy
Rotary Union	Kwag	Taiwan

The Dry (Solvent Base) lamination machine is made to handle many types of webs which have different mechanical and chemical characteristics with sensitivity to heat or solvents. It can also process rolls already finished by other machines with printing. The machine is designed for rolls that may have high solvent content. Thus, each machine function (such as Speed, Web Tension, Adhesive Temperature, Material Temperature, Heated Calendars, Pneumatic Pressure, Aligners, and Mechanical Functions) can be adjusted to requirements within the given range.

The optimum lamination results & speed will depend on the operator's experience and capability to adjust the parameters and choose among the different possible combinations.



Planning to expand your horizons and business, a Printech-made machine is the answer to your converting needs.

# PRIN/ECH



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