

**HOW TO CONVERT A DRY BOND COATER TO A GRAVURE HOT MELT COATER  
ELIMINATING WATER AND SOLVENT BASED DRYING OVENS**

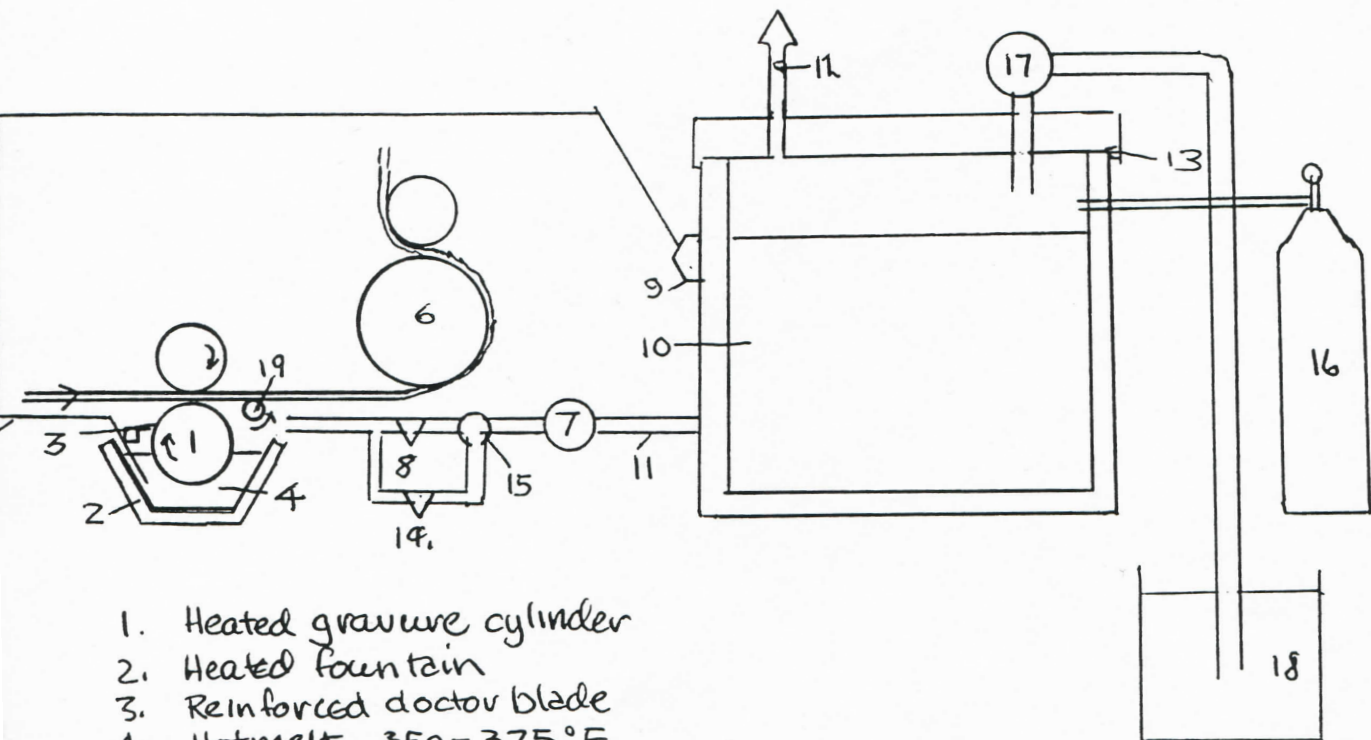
**Gravure Hot Melt Equipment**

**WHAT IS NEEDED TO SUCCEED**

	<b>LEAST COSTLY APPROACH</b>	<b>IDEAL APPROACH</b>
<b>Doctor Blade</b>	Reinforce trailing doctor blade with 2"x 2" bar. Add a stiffer backer blade on blue steel. This will eliminate hydroplaning with high viscosity hot melts.	Reverse angle doctor blade but may limit line speed re hot melt cell release.
<b>Gravure Cylinder 65 QUAD</b>	Must be oil heated and hardened steel to withstand doctor blade. Run 10-15°F higher in temperature than fountain. (Southern Gravure)	Same
<b>Smoothing Bar</b>	Must be heated electrically (calrod) and 1½ - 2" in diameter. Ideal temperature to get most impressions on roll and smooth pattern is 50°F higher than fountain temperature.	Same

Smooth Bar Drive	Should be air motor driven with speed and direction variation. Best is reverse direction faster than web speed.	Same
Hot Melt Delivery	Dead end feed hot melt at 375°F to fountain controlling thermostat in tank by sensing temperature in fountain. Temperature and pump is controlled by thermostat. Hoses are heat traced. Lid is sealed and exhaust pipe is installed to reduce odour. Thermostat sensors should be RTD type not web bulb type to get $\pm 1-2^\circ\text{F}$ control so as viscosity will not vary.	Recirculate hot melt from fountain back to tank. Seal lid and bleed $\text{N}_2$ or $\text{CO}_2$ or air space to reduce oxidation of hot melt.
Filters	Hot melt from bulk tank must be filtered to reduced chance of char or gels getting in fountain causing streaking 6-12 thou in line Nordson screens could be used with a bypass hose in place to enable quick change over.	Same
Run temperature and anchorage to foil	The higher run temperature enables better foil wet out without the use of primer.	Same
Primers	Vinyl type at 5 lb/r will enable Same peel strengths to be achieved at lower hot melt coat weights. 6-7 lb/r vs. 10-12 /r.	
Primers	EVA type primer will enable consistent bond values using dirty foil and lower application temperatures. Add water chiller so as a 40-42°F roll	Same
Chill Roll	temperature can be maintained to minimize wax bloom. Summer temperatures will cause more problems re offset of wax.	Same
Cylinder Idling	There must be a capability of idling gravure cylinder when the rest of the line is stopped. This prevents cell plug up and coat weight loss or variation when running	Same

Gravure  
Hot Melt System Changes.



1. Heated gravure cylinder
2. Heated fountain
3. Reinforced doctor blade
4. Hotmelt 350-375°F
5. Thermostat sensor.
6. Chill Roll 40-42°F
7. Hot melt supply motor.
8. 6-12 Thou filters
9. RTD Type thermostat ±1-2°F
10. Hot melt 350-375°F
11. Heat traced delivery 350-375°F
12. Exhaust
13. Lid seal
14. Bypass Filter line
15. By pass valve
16. CO<sub>2</sub> or N<sub>2</sub> Gas bleed (optional)
17. Pellet form Hot melt vacuum fed.
18. Pellet form hot melt 1000 lb geylord.
19. Smoothing bar Air Motor driven Heated to 400°F

## BENEFITS

## WHAT IT MEANS TO YOU

LINE SPEED IMPROVEMENT

-EXTRUSION GRADES OF HM 800 FT/MIN +  
++  
-GRAVURE GRADES OF HM  
350-450 FT/MIN

HM CAN BE UTILIZED WITH A VARIETY OF EQUIPMENT

-LOW VISC GRADES IN A WAXER  
-GRAVURE GRADES WITH FOUNTAIN  
MODIFICATIONS ON GRAVURE PRESS  
AND OUT BOARD STATION ON FLEXO  
PRESS

CAN PROVIDE "HAND" OR "BODY" TO A WEB

CUSTOMER  
APPEAL  
-HIGHER COAT WEIGHTS 15-25LBS PER  
REAM MAY ELIMINATE A PASS OR A  
POLY LAYER

CAN FUNCTION AT LOW COAT WEIGHTS TO

-COST SAVING VS. LACQUER  
-GRAVURE/EXTRUSION GRADES AS LOW  
AS 5 LBS/REAM

SEALS AT VERY LOW RAIL PRESSURE

-END SEAL LABELS, BAR SOAP WRAPPERS  
CAN BE SEALED WITHOUT OVERPRINT  
VARNISH STUFF FROM SEAL RAILS.

HOT MELT BENEFITS OVER FORTIFIED WAXES  
-WAX BLENDS IN HOT MELT TO  
MINIMIZE PARAFFIN BLOOM  
-EFFECTIVE ANTIOXIDANTS

-CAN ADDRESS OVERWRAP MARKET  
COUGH DROPS, SOAP  
-CAN GO AFTER WAX STRIKE THRU  
MARKET

SYSTEMS TO MAINTAIN DIRECT FDA 175.300

CAN RUN HIGHER LINE SPEEDS USING  
AN EXTRUDER

-TACKIFIER BLENDS TO GAIN SPECIFIC  
ADHESION TO OPV'S UV VARNISHES,  
FOIL, MET FILMS, HIPS, PP, PE, PET  
PVC

-EVA/POLYMER BLENDS TO GIVE HOT  
TACK AND FILM COHESIVENESS.



## HOT MELT TECHNOLOGY vs SOLVENT LACQUER TECHNOLOGY

### BENEFIT

### WHAT IT MEANS TO YOU

100% SOLIDS

-NO SOLVENT RETENTION WORRIES

NO DRYING OVENS

-NO NEED TO MAKE UP  
EXHAUST AIR IN WINTER

LOWER ACTIVATING TEMPS

-FASTER LINE SPEED SEAL-  
ING AT CUSTOMERS  
-SEALS HEAT SENSITIVES  
SUBSTRATES

HIGHER COAT WEIGHT AT  
BOND LINE

-FEWER LEAKERS AT HIGH  
SPEED  
-FEWER LEAKERS AT LOW  
SEAL PRESSURES  
-SHORTER DWELL TIMES TO  
MAKE BOND  
-PROVIDES DEADFOLD PROPERTIES  
-PROVIDES BETTER GAS, MVTR  
PROPERTIES  
-PROVIDES PROTECTION TO FOIL  
FROM LACTIC ACID

APPLIED DRY WEIGHT COST

-EQUIVALENT OR BETTER

SPECIALTY PATTERN  
POTENTIAL

-HEAT SEAL CAN BE APPLIED  
ON PAPER LEAVING 50% OF  
WEB OPEN FOR GAS (ETO)  
STERILIZATION

PEEL STRENGTH RANGE  
CONTROL

-CAN TARGET RANGE  
BUTTER EASY PEEL  
CREAMER MEDIUM PEEL  
AIRLINE  
CREAMER HIGH PEEL

PRODUCT RESISTANCE

-USED FOR BUTTER, DAIRY  
WHITENERS, JAMS, SYRUPS  
CREAMERS, JUICES

WHAT IS NEEDED TO SUCCEED

- judicious selection of substrates to maximize hot melt adhesion ( "A" wettable foil)
- use of corona treatment whenever possible
- use of primers, wash coats solvent or waterbase
- use of application techniques that ensure hot melt wet out of substrate eg. wrap angle on pre-warm roll
- bulk feeding systems to minimize hot melt oxidation or heat history
- hot melt fountain "set ups" to provide good cell release, smoothing bar pattern control and chill roll cooling to eliminate wax bloom

PRICE RANGE OF HOT MELT COATINGS

\$1.75 TO \$4.50 /LB

COST OF CONVERSION FOR A GRAVURE STATION 2005

HEATING SYSTEM	\$7854.00
GRAVURE ROLL AND MISC. ACCESSORIES	\$10601.80
FOUNTAIN & COVER - INSULATED AND CLAD (OPTIONAL)	\$9211.40
SMOOTHING BAR ASSEMBLY (OPTIONAL)	\$21811.90
CHILLED OIL LUBRICATION SYSTEM	\$3220.80
BACKING ROLL RECOVERING	<u>\$1615.00</u>
<u>TOTAL DONE IN HOUSE</u>	<u>\$54315.40</u>
USING OUTSIDE ENGINEERING AT 45.00/HR 300 HOURS	\$13500.00
ASSEMBLY HOURS 40 AT \$45.00/HR	<u>\$1800.00</u>
<u>TOTAL</u>	<u>\$69615.40</u>