New Era Tri-Laminator

For Sale

Laminator Characteristics

- Built in 2001
- 2 & 3-ply laminate configurations
- 60" to 108" web width
- 1,000 feet per minute line speed

This high speed laminator has the capability to run 2 & 3-ply products using paper-film or paper-film-paper substrates combined with water-based adhesives

Major Components

- Shaftless turreted paper unwinds (2)
- Shaftless turreted film unwind
- Corona treaters
- Direct gravure coaters (2)
- Laminating sections (2)
- Sinusoidal flotation gas dryers (2 sections)
- Cooling section w/chiller
- Remoisturizer
- Turreted winder

Paper unwinds (2)

- 10-99 lb/ream paper weight
- 54" max roll OD / 7,500 lb max roll weight
- 3" - 4" - 6" cores

Film unwind

- 1-2 mil BOPP / 48g-2mil PET
- 30" max roll OD / 4,000 lb max roll weight
- 3" - 6" cores

Coating / Laminating sections

- Direct gravure (pan fed)
- water-based proprietary adhesive
- 5 lb / ream wet coating 9 #/ 3000 ft
- 50 - 55% solids 25% 50
- 340 - 450 cps viscosity

H2O = 1

IVEX

Sinusoidal flotation dryers

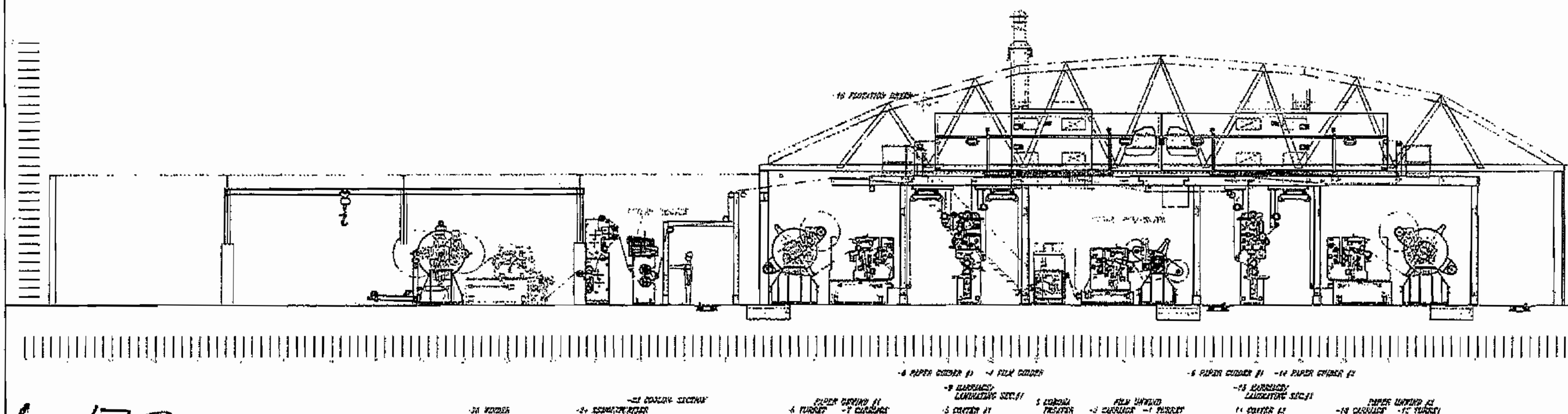
- 50 feet long in 2 zones, using natural gas
- 350°F operating temperature
- 6,000 fpm nozzle discharge velocity

Laminate winder

- 65" max roll OD / 10,000 lb max roll weight
- 50 – 500 lb tension
- Shafted using 6" cardboard cores

WEB WIDTH - 60" - 108"
ROLL FACE - 112" MINIMUM
LINE SPEED 1000 FPM GEAR-IN SPEED
FILM UNWIND.
WEB MATERIALS - 1-2 MIL BOPP. 48 GAUGE - 2 MIL PET
ROLL DIAMETER - 30"
ROLL WEIGHT - 4000 LBS.
TENSION - 10 - 120 LBS.
CORES - 3" & 6" I.D. CARDBOARD
CHUCKING - SHAFTLESS
PAPER UNWINDS:
WEB MATERIALS - 10-99 LB/REAM PAPER
ROLL DIAMETERS - 54"
ROLL WEIGHT - 7500 LBS.
TENSION - 10 - 120 LBS.
CORES - 3", 4" & 6" I.D. CARDBOARD
CHUCKING SHAFTLESS
PRODUCT WINDER:
WEB MATERIALS FILM/PAPER OR PAPER/FILM LAMINATES
ROLL DIAMETER - 65"
ROLL WEIGHT - 10,000 LBS.
TENSION - 50-500 LBS
CORES - 6" I.D. CARDBOARD
CHUCKING - SHAFTED

COATING PARAMETERS.
METHOD - DIRECT GRAVURE (PAN FED)
COATING - WATER-BASED ADHESIVE
WET LAY-DOWN RATE - 5 LBS. /REAM (PER SIDE OF FILM)
PERCENT SOLIDS - 50 - 55%
VISCOSITY - 340 - 450 CPS
DRYER PARAMETERS
TYPE - SINUSOIDAL FLOTATION
LENGTH - 50 FEET
NUMBER OF ZONES - TWO
OPERATING TEMPERATURE - 350° F
NOZZLE DISCHARGE VEL - 6000 FPM
HEAT SOURCE - NATURAL GAS AT 5 PSIG
IDLER ROLLS:
CONSTRUCTION DEAD SHAFT ALUMINUM CONSTRUCTION, 6" (MINIMUM) DIAMETER FOR WRAPS OF 45 DEGREES OR LESS. 8" (MINIMUM) DIAMETER FOR WRAPS GREATER THAN 45 DEGREES
SURFACE FINISH - HARD COAT ANODIZED WIHT 50Ra SURFACE. ROLLS FROM FILM UNWIND TO LAMINATOR #1 TO BE MICROGROOVED
MOUNTING - SPLIT CAP HOUSINGS
DEFLECTION - 0.017" AT 120 # TENSION AND 90 DEGREE WRAP
BALANCE - 150 G&S AT 1500 FPM
TRAM (+/-) 0.0005" PER FOOT (0.003" TOTAL MAXIMUM)
UTILITIES.
ELECTRICAL - 480 V / 3 PH / 60 HZ POWER
COMPRESSED AIR - EQUIPMENT DESIGNATED FOR 80 PSIG
WATER - 55° F
NATURAL GAS - 5 PSIG
ENVIRONMENT - GENERAL PURPOSE

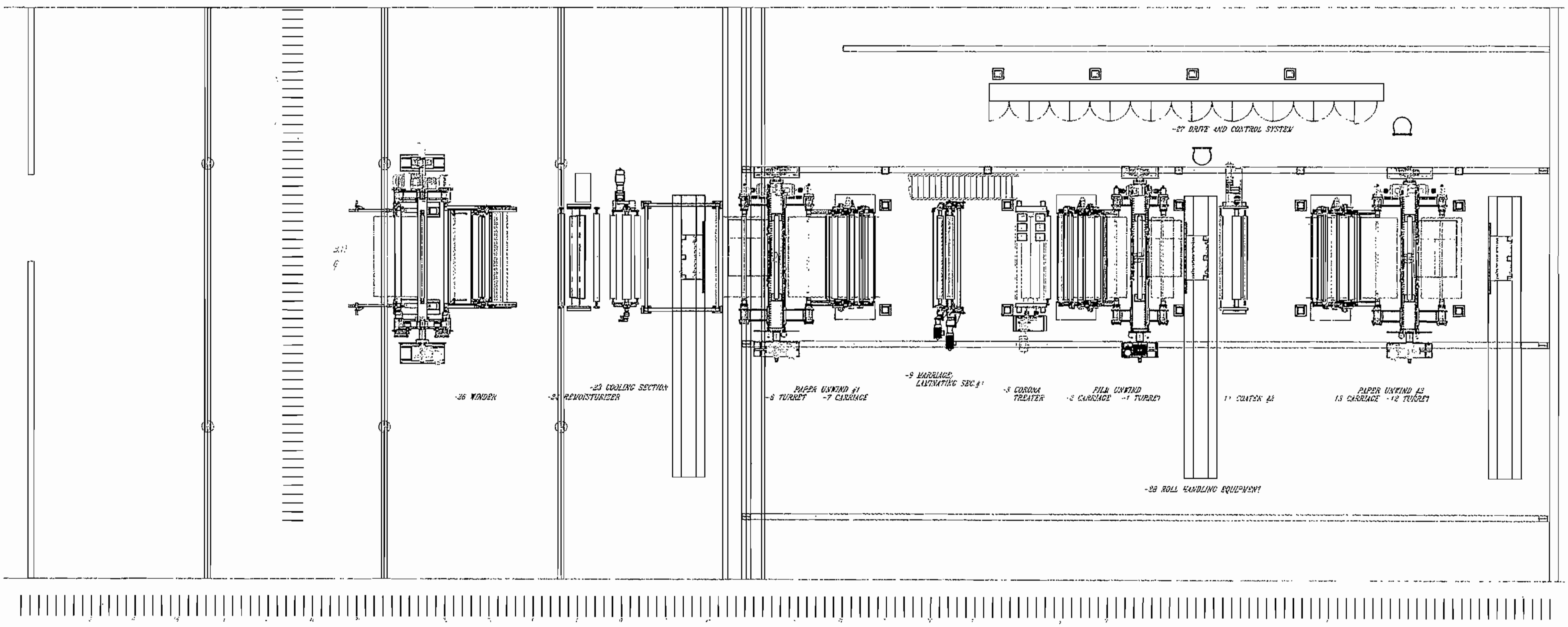


L=172
H=23

NOTES
1) - DIMENSIONS ON SECTIONS NOT APPROVED ARE APPROXIMATE
2) - FINAL LAYOUT OF THE REMOISTURIZER TO BE PROVIDED BY CMS
3) - DRIVE SIDE OF ALL SECTIONS IS FAR SIDE OF PRINT, EXCEPT FOR MARRIAGE/LAM. SECTION #1
4) - MARRAIAGE/LAM. SECTION #1 DRIVE SIDE IS NEAR SIDE OF PRINT TO ACCOMODATE ACCESS STAIRS
5) - SEE E9-90150 SHEET 2 OF 3 FOR PLAN VIEW OF FLOOR MOUNTED EQUIPMENT
6) - SEE E9-90150 SHEET 3 OF 3 FOR PLAN VIEW OF OVERHEAD MOUNTED EQUIPMENT

PART NAME OR DESCRIPTION	REVISION	BY	DATE

CUSTOMER:
JOB NO.
CHECKED BY: DATE:
NEW ERA
E9-90150



NOTES
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2) - SEE E9-90150 SHEET 1 OF 3 FOR SIDE ELEVATION OF EQUIPMENT
3) - SEE E9-90150 SHEET 3 OF 3 FOR PLAN VIEW OF OVERHEAD MOUNTED EQUIPMENT

ITEM NO.	QTY.	PART NAME OR DESCRIPTION	REV. NO.	REVISION	BY	DATE
			D	WINDER UPDATED		
			B	ADDED TRENCHES, PITS, LIFTS AND CARTS		'01
				GENERAL UPDATE		'01

CUSTOMER:
JOB NO.
CHECKED BY: DATE:

THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.

NEW ERA CONVERTING MACHINERY, INC.

TITLE: LINE LAYOUT (FLOOR MOUNTED EQUIPMENT)

DRAWING NUMBER: E9-90150

SHEET 2 OF 3

WEB WIDTH — 60" - 108"
ROLL FACE — - 112" MINIMUM
LINE SPEED — 1000 FPM GEAR-IN SPEED
FILM UNWIND
- WEB MATERIALS — 1-2 MIL BOPP, 48 GAUGE - 2 MIL PET
- ROLL DIAMETER — - 30"
- ROLL WEIGHT — - 4000 LBS.
- TENSION — - 10 - 120 LBS.
- CORES — - 3" & 6" I.D CARDBOARD
- CHUCKING — - SHAFTLESS

PAPAER UNWINDS.
- WEB MATERIALS — 10-99 LB./REAM PAPER
- ROLL DIAMETERS — - 54"
- ROLL WEIGHT — 7500 LBS.
- TENSION — 10 - 120 LBS.
- CORES — - 3", 4" & 6" I.D CARDBOARD
- CHUCKING — SHAFTLESS

PRODUCT WINDER.
- WEB MATERIALS — FILM/PAPER OR PAPER/FILM LAMINATES
- ROLL DIAMETER — 65"
- ROLL WEIGHT — 10,000 LBS.
- TENSION — - 50-500 LBS
- CORES — 6" I.D. CARDBOARD
- CHUCKING — SHAFTED

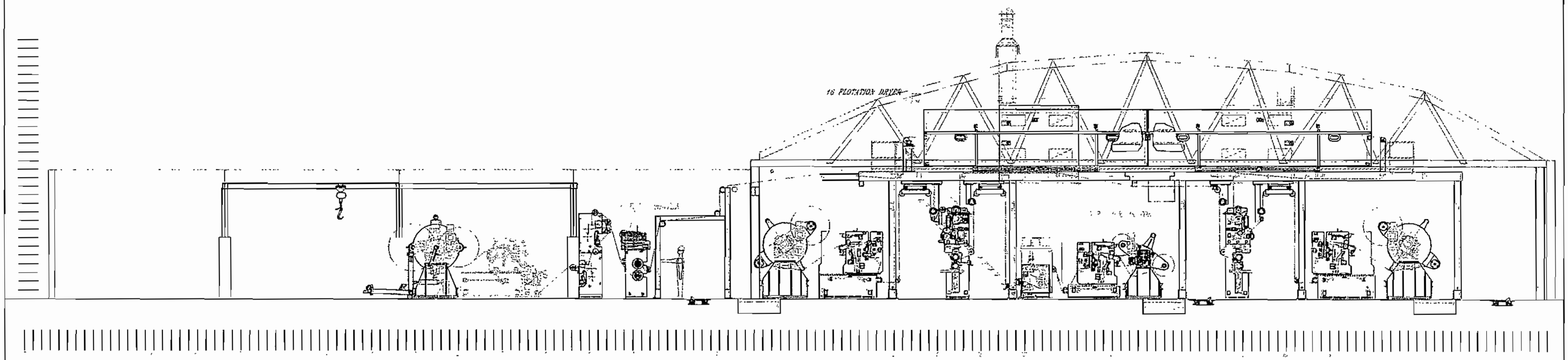
COATING PARAMETERS.
- METHOD — DIRECT GRAVURE (PAN FED)
- COATING — - WATER-BASED ADHESIVE
- WET LAY-DOWN RATE — - 5 LBS. /REAM (PER SIDE OF FILM)
- PERCENT SOLIDS — - 50 - 55%
- VISCOSITY — 340 - 450 CPS

DRYER PARAMETERS
- TYPE — SINUSOIDAL FLOTATION
- LENGTH — - 50 FEET
- NUMBER OF ZONES — - TWO
- OPERATING TEMPERATURE — 350° F
- NOZZLE DISCHARGE VEL — - 6000 FPM
- HEAT SOURCE — NATURAL GAS AT 5 PSIG

IDLER ROLLS:
- CONSTRUCTION — DEAD SHAFT ALUMINUM CONSTRUCTION, 6"(MINIMUM) DIAMETER FOR WRAPS OF 45 DEGREES OR LESS; 8"(MINIMUM) DIAMETER FOR WRAPS GREATER THAN 45 DEGREES
- SURFACE FINISH — HARD COAT ANODIZED WIHT 30Ra SURFACE. ROLLS FROM FILM UNWIND TO LAMINATOR #1 TO BE MICROGROOVED
- MOUNTING — - SPLIT CAP HOUSINGS
- DEFLECTION — - 0.017" AT 120 # TENSION AND 90 DEGREE WRAP
- BALANCE — - ISO G6.3 AT 1500 FPM
- TRAM — (+/-) 0.0005" PER FOOT (0.003" TOTAL MAXIMUM)

UTILITIES
- ELECTRICAL — 480 V / 3 PH / 60 HZ POWER
- COMPRESSED AIR — - EQUIPMENT DESIGNATED FOR 80 PSIG
- WATER — - 55° F
- NATURAL GAS — - 5 PSIG

ENVIORNMENT — - GENERAL PURPOSE



L = 172
H = 23

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5) - SEE E9-90150 SHEET 2 OF 3 FOR PLAN VIEW OF FLOOR MOUNTED EQUIPMENT
6) - SEE E9-90150 SHEET 3 OF 3 FOR PLAN VIEW OF OVERHEAD MOUNTED EQUIPMENT

ITEM NO.	QTY	PART NAME OR DESCRIPTION	REV. NO.	REVISION	BY	DATE
			D	WINDER UPDATED	[illegible]	7-24-03
			B	ADDED TRENCHES, PITS, LIFTS, AND CARTS	[illegible]	7-18-01
			A	GENERAL UPDATE	[illegible]	[illegible]

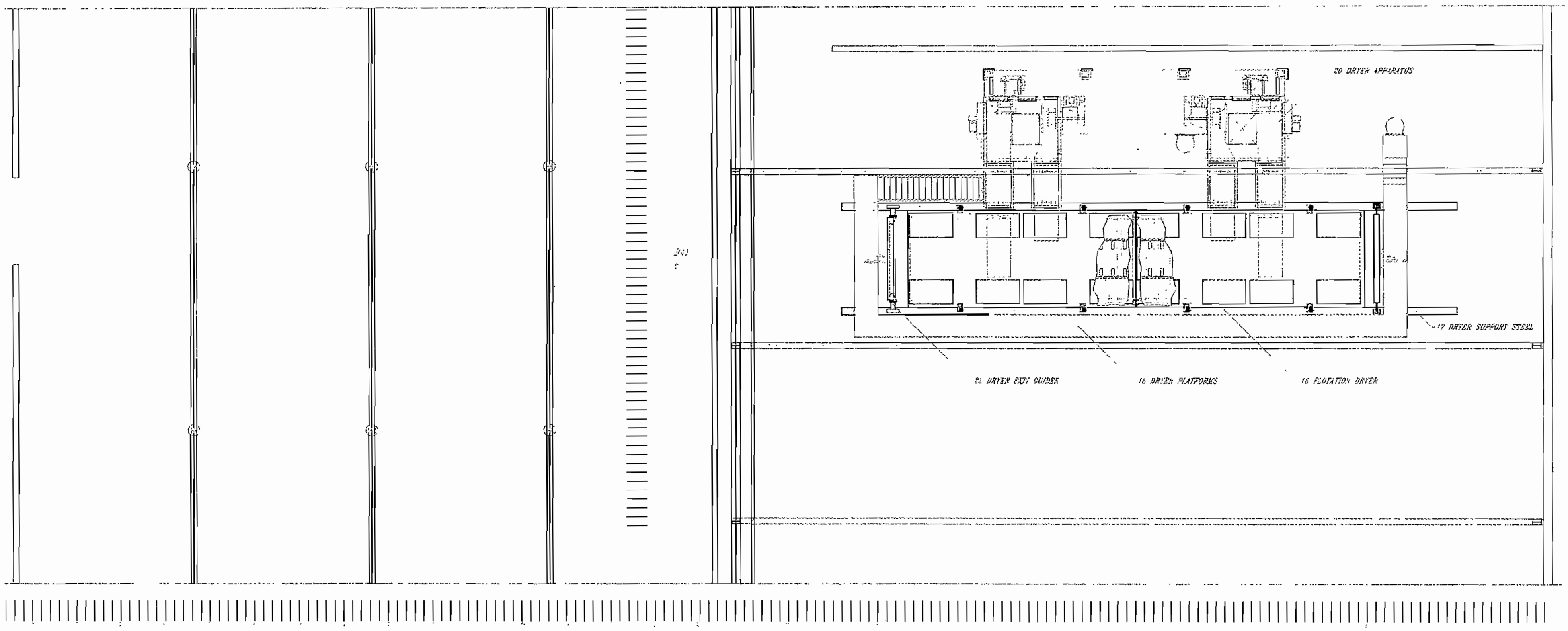
CUSTOMER:
JOB NO.
CHECKED BY: DATE:

NEW ERA

TITLE: [illegible]

E9-90150

SHEET [illegible] OF 3



NOTES
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2) - SEE E9-90150 SHEET 1 OF 3 FOR SIDE ELEVATION OF EQUIPMENT
3) - SEE E9-90150 SHEET 2 OF 3 FOR PLAN VIEW OF FLOOR MOUNTED EQUIPMENT
4) - SAFETY RAILS NOT SHOWN

ITEM NO.	QTY	PART NAME OR DESCRIPTION	REV. NO.	REVISION	BY	DATE
			D	[illegible]	[illegible]	[illegible]
			B	[illegible]	[illegible]	[illegible]
			A	[illegible]	[illegible]	[illegible]

TOLERANCES UNLESS OTHERWISE SPECIFIED
FRACTIONS ± 1/64
DECIMAL X.XX ± 0.01
DECIMAL X.XXX ± 0.005
ANGLES ± 1/2°
THREAD CLASS 2A-EXT 2B-INT
REMOVE ALL BURRS
BREAK ALL SHARP EDGES

CUSTOMER.
JOB NO.
CHECKED BY: DATE:

NEW ERA CONVERTING MACHINERY, INC.

TITLE: [illegible]

DRAWN BY: [illegible] DATE: [illegible] SCALE: [illegible]
DRAWING NUMBER: E9-90150
SHEET [illegible] OF [illegible] REV. [illegible]

NEW ERA
JOB #I-13-10
INLAND PAPERBOARD & PACKAGING
PO#1193-000-OC

COATING/LAMINATING LINE

GENERAL SPECIFICATIONS:

Web Width -	60"-108"
Roll Face -	112" minimum
Line Speed -	1000 FPM Gear-in speed

Film Unwind:

Web Materials -	1-2 mil BOPP; 48 gauge – 2 mil PET
Roll diameter -	30"
Roll Weight -	4000 lbs.
Tension -	10-120 lbs. (total tension)
Cores -	3" & 6" I.D. Cardboard
Chucking -	Shaftless

Paper Unwinds:

Web Materials -	10-99 lb per (3000 square foot) ream paper
Roll Diameter	54"
RollWeight -	7500 lbs.
Tension -	10-120 lbs. (total tension)
Cores -	3", 4", & 6" I.D. Cardboard
Chucking -	Shaftless

Product Winder:

Web Materials -	Film/Paper or Paper/Film/Paper laminates
Roll Diameter -	65"
Roll Diameter -	10,000 lbs.
Tension -	30-300 lbs. (total tension)
Cores -	6" I.D. Cardboard
Chucking -	Shafted

Coating Parameters:

Method -	Direct Gravure (Pan Fed or Enclosed Doctor Blade)
Coating -	Water-based adhesive
Wet Lay-Down Rate -	5 lbs. per ream (per side of film) wet
Percent Solids -	50-55
Viscosity Range -	350-450 cps

NEW ERA CONVERTING MACHINERY, INC.
Post Office Box 377, Hawthorne, N.J. 07507
Phone (201) 670-4848 Fax (201) 670-8867

QUOTATION & SPECIFICATIONS

FOR

INLAND

COATING/LAMINATING LINE

Proposal NE-1929 Rev. A **February 7, 2001**

GENERAL SPECIFICATIONS:

Web Width -	60" – 108"
Roll Face -	112" minimum
Line Speed -	1000 FPM gear-in speed, options for 1500 FPM

Film Unwind:

Web Materials -	1-2 mil BOPP; 48 gauge - 2 mil PET
Roll Diameter -	30"
Roll Weight -	4000 lbs.
Tension -	10-120 lbs. (total tension)
Cores -	3" & 6" I.D. Cardboard
Chucking -	Shaftless

Paper Unwinds:

Web Materials -	10-99 pound per (3000 square foot) ream paper
Roll Diameter -	54"
Roll Weight -	7500 lbs.
Tension -	10-120 lbs. (total tension)
Cores -	3", 4" & 6" I.D. Cardboard
Chucking -	Shaftless

Inland
February 7, 2001
Proposal NE-1929 Rev. A

Product Winder:

Web Materials -	Film/Paper or Paper/Film/Paper laminates
Roll Diameter -	65"
Roll Weight -	10,000 lbs.
Tension -	50-500 lbs. (total tension)
Cores -	6" I.D. Cardboard
Chucking -	Shafted

Coating Parameters:

Method -	Direct Gravure (Pan Fed)
Coating -	Water-based adhesive
Wet Lay-Down Rate -	5 pounds per ream (per side of film)
Percent Solids -	50-55
Viscosity Range -	350-450 cps

Dryer Parameters:

Type -	Sinusoidal Flotation
Length -	50 feet
Number of Zones -	Two
Operating Temperature -	350°F
Nozzle Discharge Velocity -	6000 fpm
Heat Source -	Natural Gas at 5 PSIG
Operating Conditions -	Remove 2.5 pounds per (3000 square foot) ream of water from each side of web at 1000 feet per minute with 25 pound per (3000 square foot) ream paper on each side of film.

Idler Rolls:

Construction -	6" (minimum) diameter x 112" face (minimum) aluminum rolls with steel head; for web wraps of less than 45°;" (minimum) diameter x 112" face (minimum) aluminum rolls with steel heads for wraps in excess of 45°; dead shaft construction.
Surface Finish -	Hard coat anodized with 30 Ra surface. Rolls from Film Unwind to Laminator #1 to be microgrooved.
Mounting -	Split Cap Housings
Deflection -	0.017 at 120# tension and 90° wrap
Balance -	ISO G6.3 at 1500 FPM
T.I.R. -	0.005" maximum
Tram -	±0.0005" per foot (0.003" total maximum)

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February 7, 2001
Proposal NE-1929 Rev. A

Utilities:

Electrical -	480V/3 Phase/60 Hz. Power
Compressed Air -	Equipment designed for 80 PSIG
Water -	48°F
Natural Gas -	5 psig

A.C. Motor Starters - Included

Environment - General Purpose

SYSTEM OVERVIEW:

The system quoted is designed to unwind a film, corona treat both sides, apply a water-based coating to one side, unwind a paper which is laminated to the coated side of the film, coat the other side of the film, unwind a second paper which is laminated to the (second) coated side of the film, remove moisture from the product in an air flotation dryer, cool the web and wind the finished product. As an option, a web re-moisturizing system is quoted.

Included are three (3) Turret Unwinds, complete with dual direction, on-the-fly bump and splice systems to allow for full speed, continuous feeding of webs to the process. These turrets can be operated in an automatic, semi-automatic or manual mode of operation. The turrets are quoted as adjustable arm units for shaftless unwinding and include individual mill roll edge alignment.

Two (2) Coating Units are provided. Each coater is a direct gravure unit, provided complete with a manually adjustable pan, as well as an oscillating doctor blade assembly. (Testing on New Era's Tech Center Line can be performed to determine the ability to replace the pan and doctor blade assembly with an enclosed doctoring system.)

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Provided are two (2) marriage assemblies, each complete with two (2) S-wrap rolls about which the webs are combined. Each assembly is followed by a pneumatically activated laminating assembly for enhancing the film to paper bond.

A two zone 50 foot gas fired Flotation Dryer is included. This unit features dual orifice stainless steel pressure pad nozzles mounted on 8" centers. Top and bottom nozzles are staggered to give a sinusoidal web path. (Final dryer sizing may vary based on test results.)

A Cooling Section is located after the dryer. The system quoted is designed to remove heat from the web prior to winding. The actual temperature of the web as it exits the cooling section will vary based on speeds, web thicknesses, dryer temperatures and water temperatures. Computer models for various conditions can be provided by New Era.

The winder is a surface type unit, complete with core acceleration, as well as automatic web cut and transfer.

Electro-mechanical web guides are provided after each unwind, prior to web entry into Coater #2 and at the dryer exit. Each guider includes an ultrasonic web edge sensor mounted on a manually adjustable screw system, which allows for web width changes. Included are web width readouts to aid in setting.

A fully integrated Drive and Control System is provided. This system features Siemens A.C. Drives, Allen Bradley PLCs and operator interface screens, located at each unwind, the winder and at a main operator's panel. The screens allow for complete system control and troubleshooting.

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Provided are lift tables at each unwind and winder for roll handling as well as carts with associated floor tracks to move mill rolls into and out of machine.

Included in our price are turnkey services, which includes skidding, loading, delivery, unloading, spotting, mechanical erection and assembly, piping, wiring, debugging and startup.

COMPONENT LISTING:

1. Film Unwind
2. Corona Treater
3. Film Guider
4. Coater #1
5. Paper Unwind #1
6. Paper Guider #1
7. Marriage Section #1
8. Laminating Assembly #1
9. Web Conveyance Structure
10. Coater #2
11. Paper Unwind #2
12. Paper Guider #2
13. Marriage Section #2
14. Laminating Assembly #2
15. Sinusoidal Flotation Dryer
16. Dryer Exit Guider
17. Cooling Section
18. Product Winder
19. Drive and Control System
20. Roll Handling Equipment
21. Turnkey Services

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Proposal NE-1929 Rev. A

COMPONENT DESCRIPTION:

1. FILM UNWIND:

A) Type - Two-position indexing turret with dual direction automatic flying splice system.

B) Construction - Fabricated steel pedestals designed for direct floor mounting.

C) Turret Assembly - Heavy wall tubular steel cross shaft with precision bored flanged ends. Cross shaft is pillow block mounted on drive side with hollow bore Cone Drive worm reducer on operator's side. Reducer has an A.C. variable speed motor with brake to prevent turret drift.

D) Turret Arms - Fabricated steel construction, consisting of four (4) arms mounted on linear bearings and hardened steel tracks on the turret cross shaft. The four (4) arms (two drive side and two operator side) provide the means to change core length independently from one roll to the other. Each pair of drive side and operating side arms are connected by a lead screw with opposite hand threads at each end to allow arms to adjust for different width cores. Each lead screw is connected to a separate A.C. motor.

Also provided is new roll edge alignment, which allows the edge of the incoming bundle to be aligned with the edge of the expiring web prior to splicing. +/-3" of adjustment per spindle is provided.

E) Chucking & Spindle Motors - Previously described turret arm width adjustment system allows for the shaftless chucking of 3" and 6" cores. Drive side turret arms have spindle assemblies including 6" diameter pneumatically inflated chucks and are interconnected with reducers and individual turret arm mounted A.C. motors for unwind hold-back

tension. Operating side spindle assemblies are provided with 6" diameter hubs for interfacing with the mill rolls and are interconnected with spindle mounted sensors to confirm chucking.

Also provided are two (2) sets of adapters that are designed to be manually inserted into the 3" cores and inflated prior to chucking. These adapters interface with the turret mounted 6" chucks.

F) Tension Control - A low inertia pendulum type anti-stiction dancer roll with air cylinder loading and lead-in and lead-out idler rolls, controls a two motor A.C. drive; one motor to each spindle. The dancer roll control system will automatically control the regenerative A.C. drive to maintain constant tension from full roll to core. An idler roll mounted on a pair of force transducers is provided for tension readout.

G) Flying Splice System - Consists of an air cylinder operated bump roll assembly and an air cylinder operated serrated blade cut-off knife assembly and splice sequencing controls. This system has controls and bump roll and cut-off knife geometry for dual direction flying splice operation. Changeover from under to over splicing is accomplished by a selector switch. **No mechanical changes are required.** The tension control system and flying splice system are mounted on a motorized carriage which moves on linear bearing assemblies.

The sequence of operation is as follows:

1) While spindle "A" is unwinding, the operator loads a new roll onto spindle "B" and prepares the leading edge of the new roll with splicing tape. A sonic sensor scans the new roll, determining its diameter.

2) The drive and control system is monitoring the expiring roll. When the diameter is nearing expiration, a signal initiates the turret indexing, and the turret indexes until the new roll stops automatically in the "Ready" position. The new roll is then automatically accelerated to the matched speed with the expiring web by the A.C. motor connected to that spindle.

3) When the expiring roll reaches minimum diameter, the drive and control system initiates the splice sequence and the bump roll fires in sequence with the cut-off knife when the glue line (splice tape) is in the correct angular position for the bump roll to be fired as determined by the glue line tracking system.
An overlap splice with single side tape is provided.

4) After the splice is completed, the new roll is transferred from speed to tension control; the empty roll is stopped and the carriage is retracted by an A.C. motor.

Note: A manual sequence is also provided with an auto/manual selector switch to permit manual sequencing to be carried out.

H) Web Lead Idler Rolls - Mounted from the turret cross shaft on fixed arms are two idler rolls. These rolls control the web path from the expiring roll so that the web path is constant during splicing and for cut-off knife operation.

I) Controls - The Turret Unwind will incorporate the following machine mounted devices:

A) Machine mounted devices:

1) Power slip rings for the turret mounted devices.
2) Signal slip rings for the turret mounted devices.
3) Sonic sensor for determining new roll diameter
4) Chucking controls
5) Limit switches for the spindle sidelay and arm adjust
6) Dancer loading I/P transducer.
7) Volume Boosters for the dancer.
8) Dancer feedback RVDT
9) Solenoid valves with integral regulator and gauge for the Knife guards.
10) Limit switches for the Knife guards.
11) Solenoid valves with integral dual regulator and gauge for the Bump Roll cylinders.
12) Solenoid valves with integral regulator and gauge for the Knife cylinders.
13) A warning beacon/horn to alert machine motion.
14) Photo-eyes for glue line tracking.
15) A set of limit switches for the ends of carriage motion.
16) A Resolver for turret position
17) A pair of force transducers for web tension readout
18) Two E-stop rope pull cords.

19) Length counter

These devices will be pre-wired for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices which may be adjustable. Separate runs will be used for signal level wiring. The pneumatic feed (lockout valve, and filter) will be mounted on the machine frame. Pneumatic piping will be done in reinforced flexible hose.

2. CORONA TREATER:

A) Type – Enercon Universal Roll Two-Sided Treating Station complete with two (2) 20kw power supplies.

B) Construction – Fabricated steel frame designed to support Corona treating rolls. System designed for direct floor mounting.

C) Treater Rolls – Two (2) 300mm diameter coated ground rolls provided, mounted in anti-friction bearings and complete with keyed shaft extensions for drive purposes.

D) Electrodes – High efficiency rectangular ceramic electrodes provided, mounted about treater rolls. Electrodes are hinged for ease of cleaning and include pneumatic cylinders for retraction for threadup purposes.

E) High Voltage Transformer – Six (6) high voltage transformers provided, mounted to the treater station.

F) Nip Roll – Provided is one (1) pneumatically loaded, hypalon rubber covered (60 duro shore A) nip roll mounted about a treater roll.

G) Idlers – Provided are appropriate idler rolls to contour the web throughout the section. Rolls include microgrooving for web handling purposes.

H) Drive Transmission Assembly – Timing belt system provided to drive both treater rolls. Included is a geared speed reducer as well as mounting base and drive safety guard.

I) Ozone Decomposer – One (1) 4500 CFM ozone decomposer provided, complete with A.C. motor driven exhaust blower. Unit is of free-standing construction.

J) Controls – Provided is a machine-mounted control panel complete with the necessary controls to allow for proportional speed control as well as remote operation from the Main Operator's Panel.

3. FILM GUIDER:

A) Type – Positive displacement web guider.

B) Construction – Fabricated steel frame, designed to hold guider and sense head assembly. Unit designed for mounting off of web conveyance structure.

C) Guider – Offset pivot roll type intermediate steering guider provided with electro-mechanical actuator. System designed to provide +/- 1 ½" (3" total) travel. Included are two (2) 6" diameter dead shaft hardcoated aluminum idler rolls mounted on the guider.

D) Controls – One (1) ultra-sonic web sensor provided, which will allow for edge guiding. System includes manual sense head positioning. A machine mounted panel will provide the operator control of the guider.

4. COATER #1:

A) Type – Two Roll Direct Gravure Coater.

B) Construction - Precision machined heavy duty steel parent frame complete with cross machine tubular steel tie rods for rigidity.

C) Impression Roll – Steel tube core, covered to 12" diameter, with 60-65 duro EPDM rubber. Roll mounted in precision roller bearings. Bearings held in a precision machined split cap blocks. Roll T.I.R. in bearings of 0.001". Housings are mounted in fixed position on the Coater sideframes. Housings provided complete with roll-out arms that allow for ease of roll change.

D) Gravure Roll - Heavy wall steel tube, 12" diameter roll, including copper base, chromeplating and mechanically engraved gravure pattern (final gravure pattern to be determined). Roll mounted in precision roller bearings. Bearings held in precision machined split cap blocks for ease of roll removal and provided complete with seals and cover plates. Roll T.I.R. in bearings of 0.001". Housings are mounted in machined slides on the coater sideframes beneath the impression roll and are interconnected with machine mounted pneumatic cylinders for roll positioning and loading. Roll provided complete with drive shaft extension. Roll driven by separate A.C. motor.

E) Doctor Blade - A pneumatically loaded doctor blade is provided with adjustable wiping angle. The doctor blade holder is mounted on an aluminum base that consists of two (2) aluminum fabrications. The top half is mounted on hardened steel shafts and precision

bearings to allow 1/2" of oscillation. The doctor blade oscillation is pneumatically operated.

F) Coating Pan - A stainless steel contour coating pan is provided below the gravure roll. The pan is mounted on a manual raise/lower assembly, with manually adjustable position stops.

G) Nip Adjustments - Dual range adjustment assemblies are provided for between the gravure roll and impression roll bearing housings with screw adjustment for initial setting and minimum backlash worm gear vernier adjusters for nip gap setting. Gap adjusters allow for adjustment while running. Dial indicators are provided to indicate gap setting.

H) Force Transducer Roll – Provided is one (1) web spreader roll mounted on a pair of force transducers. This roll is located after the coater and is used for sensing and controlling the web tension exiting the coater.

I) Idler Roll - Provided immediately prior to coater is a web spreader roll mounted in manually adjustable brackets to allow for skew control.

J) Drive Stand - Fabricated steel drive stand provided for the gravure roll drive. Stand supports one flange mounted low backlash geared speed reducer, complete with C-face adapter for mounting of A.C. drive motor. Roll is interconnected with the reducer through precision Schmidt coupling, which allows for roll drive throughout its range of motion.

K) Coating Supply System - By customer

L) Controls - The Coating Section will incorporate the following machine mounted devices:

1. Solenoid valves with integral regulator and gauge for gravure roll cylinders.

2. Solenoid valves with integral regulator and gauge for doctor blade oscillation and loading cylinders.

3. Tension amplifier boards (mounted in junction box).

4. Emergency stop cable(s)

These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices, which may be adjustable. Separate runs will be used for signal level wiring. The pneumatic feed (lockout valve, filter, and pressure switch) will be mounted on the machine frame. Pneumatic piping will be done in flexible hose.

5. PAPER UNWIND #1:

A) Type - Two-position indexing turret with dual direction automatic flying splice system.

B) Construction - Fabricated steel pedestals designed for direct floor mounting.

C) Turret Assembly - Heavy wall tubular steel cross shaft with precision bored flanged ends. Cross shaft is pillow block mounted on drive side with hollow bore Cone Drive worm reducer on operator's side. Reducer has an A.C. variable speed motor with brake to prevent turret drift. A caliper disk brake is also provided to maintain turret in fixed position.

D) Turret Arms - Fabricated steel construction, consisting of four (4) arms mounted on linear bearings and hardened steel tracks on the turret cross shaft. The four (4) arms (two drive side and two operator side) provide the means to change core length independently from one roll to the other. Each pair of drive side and operating side arms are connected by a

lead screw with opposite hand threads at each end to allow arms to adjust for different width cores. Each lead screw is connected to a separate A.C. motor.

Also provided is new roll edge alignment which allows the edge of the incoming bundle to be aligned with the edge of the expiring web prior to splicing. +/-3" of adjustment per spindle is provided.

E) Chucking & Spindle Motors - Previously described turret arm width adjustment system allows for the shaftless chucking of 3", 4" and 6" cores. Drive side turret arms have spindle assemblies including 6" diameter pneumatically inflated chucks and are interconnected with reducers and individual turret arm mounted A.C. motors for unwind hold-back tension. Operating side spindle assemblies are provided with 6" diameter hubs for interfacing with the mill rolls and are interconnected with spindle mounted sensors to confirm chucking.

Also provided are two (2) sets of adapters that are designed to be manually inserted into the 3" cores and inflated prior to chucking as well as two (2) sets of adaptors for use with 4" cores. These adapters interface with the turret mounted 6" chucks.

F) Tension Control - A low inertia pendulum type anti-stiction dancer roll with air cylinder loading and lead-in and lead-out idler rolls, controls a two motor A.C. drive; one motor to each spindle. The dancer roll control system will automatically control the regenerative A.C. drive to maintain constant tension from full roll to core. An idler roll mounted on a pair of force transducers is provided for tension readout.

G) Flying Splice System - Consists of an air cylinder operated bump roll assembly and an air cylinder operated serrated blade cut-off knife assembly and splice sequencing controls. This system has controls and bump roll and cut-off knife geometry for dual direction flying splice operation. Changeover from under to over splicing is accomplished by a selector switch. **No mechanical changes are required.** The tension control system and flying splice system are mounted on a motorized carriage which moves on linear bearing assemblies.

The sequence of operation is as follows:

1) While spindle "A" is unwinding, the operator loads a new roll onto spindle "B" and prepares the leading edge of the new roll with splicing tape. A sonic sensor scans the new roll, determining its diameter.

2) The drive and control system is monitoring the expiring roll. When the diameter is nearing expiration, a signal initiates the turret indexing, and the turret indexes until the new roll stops automatically in the "Ready" position. The new roll is then automatically accelerated to the matched speed with the expiring web by the A.C. motor connected to that spindle.

3) When the expiring roll reaches minimum diameter, the drive and control system initiates the splice sequence and the bump roll fires in sequence with the cut-off knife when the glue line (splice tape) is in the correct angular position for the bump roll to be fired as determined by the glue line tracking system.

An overlap splice with single side tape is provided.

4) After the splice is completed, the new roll is transferred from speed to tension control; the empty roll is stopped and the carriage is retracted by an A.C. motor.

Note: A manual sequence is also provided with an auto/manual selector switch to permit manual sequencing to be carried out.

H) Web Lead Idler Rolls - Mounted from the turret cross shaft on fixed arms are two idler rolls. These rolls control the web path from the expiring roll so that the web path is constant during splicing and for cut-off knife operation.

I) Controls - The Turret Unwind will incorporate the following machine mounted devices:

A) Machine mounted devices:

1) Power slip rings for the turret mounted devices.
2) Signal slip rings for the turret mounted devices.
3) Sonic sensor for determining new roll diameter
4) Chucking controls
5) Limit switches for the spindle sidelay and arm adjust
6) Solenoid valve for the turret disc brake.
7) Dancer loading I/P transducer.
8) Volume Boosters for the dancer.
9) Dancer feedback RVDT
10) Solenoid valves with integral regulator and gauge for the Knife guards.
11) Limit switches for the Knife guards.

12) Solenoid valves with integral dual regulator and gauge for the Bump Roll cylinders.

13) Solenoid valves with integral regulator and gauge for the Knife cylinders.

14) A warning beacon/horn to alert machine motion.

15) Photo-eyes for glue line tracking.

16) A set of limit switches for the ends of carriage motion.

17) A Resolver for turret position

18) A pair of force transducers for web tension readout

19) Two E-stop rope pull cords.

20) Length counter

These devices will be pre-wired for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices which may be adjustable. Separate runs will be used for signal level wiring. The pneumatic feed (lockout valve, and filter) will be mounted on the machine frame. Pneumatic piping will be done in reinforced flexible hose.

6. PAPER GUIDER #1:

A) Type – Positive displacement web guider.

B) Construction – Fabricated steel frame, designed to hold guider and sense head assembly. Unit designed for mounting off of a web conveyance structure.

C) Guider – Offset pivot roll type intermediate steering guider provided with electro-mechanical actuator. System designed to provide +/- 1 ½" (3" total) travel. Included are two (2) 6" diameter dead shaft hardcoated aluminum idler rolls mounted on the guider.

D) Controls – One (1) ultra-sonic web sensor provided, which will allow for edge guiding. System includes manual sense head positioning. A machine mounted panel will provide operator control of the guider.

7. MARRIAGE SECTION #1:

A) Type - Two Roll driven S-wrap assembly, with lead-out roll. Rolls positioned to allow film to be combined with paper about first roll.

B) Construction - Steel plate sideframes designed for mounting off of web conveyance structure above coater.

C) Marriage Rolls - Two (2) 6" diameter chrome covered steel rolls are provided. Roll shafts are extended and keywayed on drive side for mounting of timing belt pulleys. Rolls are dynamically balanced and mounted in anti-friction bearings.

D) Drive - All mechanical drive components are provided including high efficiency gearbox, timing belts and pulleys to allow for both rolls to be driven. Suitable drive guard enclosure is provided.

E) Lead-Out Roll – Provided is one (1) web spreader roll, mounted on a pair of force transducers. This roll is located between the Marriage Section and Laminating Section and used for sensing and controlling web tension between the two sections.

F) Controls - The Marriage section will incorporate the following machine mounted devices:

1. Tension amplifier board (mounted in junction box).

These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices that may be adjustable. Separate runs will be used for signal level wiring.

8. LAMINATING ASSEMBLY #1:

A) Type - Two (2) roll nip, fixed roll driven. Steel and rubber roll in vertical configuration.

B) Construction - Heavy duty fabricated steel framework with rectangular steel tube stretchers. Laminator frames designed for mounting off of web conveyance structure above marriage roll assembly.

C) Steel Roll - 12" nominal diameter, chromeplated .002" thick and ground to 16Ra surface finish. Roll is mounted in anti-friction bearings in steel bearing housings with quick release caps. T.I.R. of roll mounted in bearings and housings is .001". Bearing housings are located in pivot mounted arms.

D) Rubber Roll - 12" nominal diameter, heavy wall single shell, EPT covered 3/4" per side. (durometer to be determined). Roll is mounted in anti-friction bearings and housings with quick release caps. T.I.R. of roll mounted in bearings and housings is 0.002". Bearing housings are located in fixed position off of previously described frames. Drive side journal is extended and keywayed for drive connection.

E) Gap Adjustments - Dual range gap adjusters are provided between the laminator rolls bearing housings with screw adjustment for initial setting and minimum backlash worm

gear venier adjusters for nip gap setting. Gap adjusters allow for adjustment while running.

F) Nip Loading - The steel laminating roll pivot arms are pneumatically loaded to allow nip pressure control.

G) Gap Readout - Two (2) mechanical dial indicators are provided; one per side.

H) Drive - A fabricated steel drive base is provided for interconnecting the rubber laminating roll to the A.C. motor.

I) Controls - The Laminator will incorporate the following machine mounted devices:

1) Solenoid valves with integral regulator and gauge for Laminator Roll Cylinders. These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices, which may be adjustable. The pneumatic feed (lockout valve, filter and pressure switch) will be mounted on the machine frame. Pneumatic piping will be done in flexible hose.

9. WEB CONVEYANCE STRUCTURE:

A) Type - Structural steel frame designed to provide for overhead web conveyance from Laminating Assembly #1 to Coater #2. Assembly designed to support Marriage Sections, Laminating Assemblies and guiders.

B) Construction - Structural steel frame, machined on all mounting surfaces and provided complete with structural steel stretchers for rigidness and stability.

C) Idler Rolls - Appropriate dynamically balanced aluminum idler rolls mounted in precision bearings are provided to contour the web throughout the section.

D) Web Guider - Single roll steering guider provided, complete with manually adjustable ultrasonic edge guide head. Unit located to guide web into Coater #2.

E) Force Transducer Rolls – Provided are two (2) idler rolls, each mounted on a pair of force transducers. One roll is located between Laminator #1 and Coater #2 and used for sensing and controlling web tension between the two sections. One roll is mounted between Laminator #2 and the Cooling Section and used for sensing and controlling web tension between the two sections.

F) Thread Mechanism - Manually operated thread chain system provided to contour web from entry of Marriage Section #1 to entry of Coater #2.

G) Controls – The following machine mounted devices are provided:

1. Tension amplifier board (mounted in junction box)
2. Guider control panel

These devices will be pre-wired for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices, which may be adjustable.

10. COATER #2:

A) Type – Two Roll Direct Gravure Coater.

B) Construction - Precision machined heavy duty steel parent frame complete with cross machine tubular steel tie rods for rigidity.

C) Impression Roll – Steel tube core, covered to 12" diameter, with 60-65 duro EPDM rubber. Roll mounted in precision roller bearings. Bearings held in a precision machined

split cap blocks. Roll T.I.R. in bearings of 0.001". Housings are mounted in fixed position on the Coater sideframes. Housings provided complete with roll-out arms that allow for ease of roll change.

D) Gravure Roll - Heavy wall steel tube, 12" diameter roll, including copper base, chromeplating and mechanically engraved gravure pattern (final gravure pattern to be determined). Roll mounted in precision roller bearings. Bearings held in precision machined split cap blocks for ease of roll removal and provided complete with seals and cover plates. Roll T.I.R. in bearings of 0.001". Housings are mounted in machined slides on the coater sideframes beneath the impression roll and are interconnected with machine mounted pneumatic cylinders for roll positioning and loading. Roll provided complete with drive shaft extension. Roll driven by separate A.C. motor.

E) Doctor Blade - A pneumatically loaded doctor blade is provided with adjustable wiping angle. The doctor blade holder is mounted on an aluminum base that consists of two (2) aluminum fabrications. The top half is mounted on hardened steel shafts and precision bearings to allow 1/2" of oscillation. The doctor blade oscillation is pneumatically operated.

F) Coating Pan - A stainless steel contour coating pan is provided below the gravure roll. The pan is mounted on a manual raise/lower assembly, with manually adjustable position stops.

G) Nip Adjustments - Dual range adjustment assemblies are provided for between the gravure roll and impression roll bearing housings with screw adjustment for initial setting

and minimum backlash worm gear vernier adjusters for nip gap setting. Gap adjusters allow for adjustment while running. Dial indicators are provided to indicate gap setting.

H) Force Transducer Roll – Provided is a web spreader roll mounted on a pair of force transducers. This roll is located and after the coater and is used for sensing and controlling the web tension exiting the coater.

I) Idler Rolls - Provided immediately prior to coater is a web spreader roll mounted in manually adjustable brackets to allow for skew control.

J) Drive Stand - Fabricated steel drive stand provided for the gravure roll drive. Stand supports one flange mounted low backlash geared speed reducer, complete with C-face adapter for mounting of A.C. drive motor. Roll is interconnected with the reducer through precision Schmidt coupling, which allows for roll drive throughout its range of motion.

K) Coating Supply System - By customer

L) Controls - The Coating Section will incorporate the following machine mounted devices:

1. Solenoid valves with integral regulator and gauge for gravure roll cylinders.
2. Solenoid valves with integral regulator and gauge for doctor blade oscillation and loading cylinders.
3. Tension amplifier board (mounted in junction box).
4. Emergency stop cable(s)

These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices,

which may be adjustable. The pneumatic feed (lockout valve. filter and pressure switch) will be mounted on the machine frame. Pneumatic piping will be done in flexible hose.

11. PAPER UNWIND #2:

A) Type - Two-position indexing turret with dual direction automatic flying splice system.

B) Construction - Fabricated steel pedestals designed for direct floor mounting.

C) Turret Assembly - Heavy wall tubular steel cross shaft with precision bored flanged ends. Cross shaft is pillow block mounted on drive side with hollow bore Cone Drive worm reducer on operator's side. Reducer has an A.C. variable speed motor with brake to prevent turret drift. A caliper disk brake is also provided to maintain turret in fixed position.

D) Turret Arms - Fabricated steel construction, consisting of four (4) arms mounted on linear bearings and hardened steel tracks on the turret cross shaft. The four (4) arms (two drive side and two operator side) provide the means to change core length independently from one roll to the other. Each pair of drive side and operating side arms are connected by a lead screw with opposite hand threads at each end to allow arms to adjust for different width cores. Each lead screw is connected to a separate A.C. motor.

Also provided is new roll edge alignment which allows the edge of the incoming bundle to be aligned with the edge of the expiring web prior to splicing. +/-3" of adjustment per spindle is provided.

E) Chucking & Spindle Motors - Previously described turret arm width adjustment system allows for the shaftless chucking of 3", 4" and 6" cores. Drive side turret arms have

spindle assemblies including 6" diameter pneumatically inflated chucks and are interconnected with reducers and individual turret arm mounted A.C. motors for unwind hold-back tension. Operating side spindle assemblies are provided with 6" diameter hubs for interfacing with the mill rolls and are interconnected with spindle mounted sensors to confirm chucking.

Also provided are two (2) sets of adapters that are designed to be manually inserted into the 3" cores and inflated prior to chucking as well as two (2) sets of adaptors for use with 4" cores. These adapters interface with the turret mounted 6" chucks.

F) Tension Control - A low inertia pendulum type anti-stiction dancer roll with air cylinder loading and lead-in and lead-out idler rolls, controls a two motor A.C. drive; one motor to each spindle. The dancer roll control system will automatically control the regenerative A.C. drive to maintain constant tension from full roll to core. An idler roll mounted on a pair of force transducers is provided for tension readout.

G) Flying Splice System - Consists of an air cylinder operated bump roll assembly and an air cylinder operated serrated blade cut-off knife assembly and splice sequencing controls. This system has controls and bump roll and cut-off knife geometry for dual direction flying splice operation. Changeover from under to over splicing is accomplished by a selector switch. **No mechanical changes are required**. The tension control system and flying splice system are mounted on a motorized carriage which moves on linear bearing assemblies.

The sequence of operation is as follows:

1) While spindle "A" is unwinding, the operator loads a new roll onto spindle "B" and prepares the leading edge of the new roll with splicing tape. A sonic sensor scans the new roll, determining its diameter.

2) The drive and control system is monitoring the expiring roll. When the diameter is nearing expiration, a signal initiates the turret indexing, and the turret indexes until the new roll stops automatically in the "Ready" position. The new roll is then automatically accelerated to the matched speed with the expiring web by the A.C. motor connected to that spindle.

3) When the expiring roll reaches minimum diameter, the drive and control system initiates the splice sequence and the bump roll fires in sequence with the cut-off knife when the glue line (splice tape) is in the correct angular position for the bump roll to be fired as determined by the glue line tracking system.

An overlap splice with single side tape is provided.

4) After the splice is completed, the new roll is transferred from speed to tension control; the empty roll is stopped and the carriage is retracted by an A.C. motor.

Note: A manual sequence is also provided with an auto/manual selector switch to permit manual sequencing to be carried out.

H) Web Lead Idler Rolls - Mounted from the turret cross shaft on fixed arms are two idler rolls. These rolls control the web path from the expiring roll so that the web path is constant during splicing and for cut-off knife operation.

I) Controls - The Turret Unwind will incorporate the following machine mounted devices:

A) Machine mounted devices:

1) Power slip rings for the turret mounted devices.

2) Signal slip rings for the turret mounted devices.

3) Sonic sensor for determining new roll diameter

4) Chucking controls

5) Limit switches for the spindle sidelay and arm adjust

6) Solenoid valve for the turret disc brake.

7) Dancer loading I/P transducer.

8) Volume Boosters for the dancer.

9) Dancer feedback RVDT

10) Solenoid valves with integral regulator and gauge for the Knife guards.

11) Limit switches for the Knife guards.

12) Solenoid valves with integral dual regulator and gauge for the Bump Roll cylinders.

13) Solenoid valves with integral regulator and gauge for the Knife cylinders.

14) A warning beacon/horn to alert machine motion.

15) Photo-eyes for glue line tracking.

16) A set of limit switches for the ends of carriage motion.

17) A Resolver for turret position

18) A pair of force transducers for web tension readout

19) Two E-stop rope pull cords.

20) Length counter

These devices will be pre-wired for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices which may be adjustable. Separate runs will be used for signal level wiring. The pneumatic feed (lockout valve, and filter) will be mounted on the machine frame. Pneumatic piping will be done in reinforced flexible hose.

12. PAPER GUIDER #2:

A) Type – Positive displacement web guider.

B) Construction – Fabricated steel frame, designed to hold guider and sense head assembly. Unit designed for mounting off of web conveyance structure.

C) Guider – Offset pivot roll type intermediate steering guider provided with electro-mechanical actuator. System designed to provide +/- 1 ½" (3" total) travel. Included are two (2) 6" diameter dead shaft hardcoated aluminum idler rolls mounted on the guider.

D) Controls – One (1) ultra-sonic web sensor provided, which will allow for edge guiding. System includes manual sense head positioning. A machine mounted panel will provide operator control of the guider.

13. MARRIAGE SECTION #2:

A) Type - Two Roll driven S-wrap assembly, with lead-out roll. Rolls positioned to allow film to be combined with paper about first roll.

B) Construction - Steel plate sideframes designed for mounting off of web conveyance structure above coater.

C) Marriage Rolls - Two (2) 6" diameter chrome covered steel rolls are provided. Roll shafts are extended and keywayed on drive side for mounting of timing belt pulleys. Rolls are dynamically balanced and mounted in anti-friction bearings.

D) Drive - All mechanical drive components are provided including high efficiency gearbox, timing belts and pulleys to allow for both rolls to be driven. Suitable drive guard enclosure is provided.

E) Lead-Out Roll – Provided is one (1) web spreader roll, mounted on a pair of force transducers. This roll is located between the Marriage Section and Laminating Section and used for sensing and controlling web tension between the two sections.

F) Controls - The Marriage section will incorporate the following machine mounted devices:

1. Tension amplifier board (mounted in junction box).

These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices that may be adjustable. Separate runs will be used for signal level wiring.

14. LAMINATING ASSEMBLY #2:

A) Type - Two (2) roll nip, fixed roll driven. Steel and rubber roll in vertical configuration.

B) Construction - Heavy duty fabricated steel framework with rectangular steel tube stretchers. Laminator frames designed for mounting off of web conveyance structure above marriage roll assembly.

C) Steel Roll - 12" nominal diameter, chromeplated .002" thick and ground to 16Ra surface finish. Roll is mounted in anti-friction bearings in steel bearing housings with quick release caps. T.I.R. of roll mounted in bearings and housings is .001". Bearing housings are located in pivot mounted arms.

D) Rubber Roll - 12" nominal diameter, heavy wall single shell, EPT covered 3/4" per side. (durometer to be determined). Roll is mounted in anti-friction bearings and housings with quick release caps. T.I.R. of roll mounted in bearings and housings is 0.002". Bearing housings are located in fixed position off of previously described frames. Drive side journal is extended and keywayed for drive connection.

E) Gap Adjustments - Dual range gap adjusters are provided between the laminator rolls bearing housings with screw adjustment for initial setting and minimum backlash worm gear venier adjusters for nip gap setting.

0F) Nip Loading - The steel laminating roll pivot arms are pneumatically loaded to allow nip pressure control.

G) Gap Readout - Two (2) mechanical dial indicators are provided; one per side.

H) Drive - A fabricated steel drive base is provided for interconnecting the rubber laminating roll to the A.C. motor.

I) Controls - The Laminator will incorporate the following machine mounted devices:

1) Solenoid valves with integral regulator and gauge for Laminator Roll Cylinders. These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices,

which may be adjustable. The pneumatic feed (lockout valve, filter and pressure switch) will be mounted on the machine frame. Pneumatic piping will be done in flexible hose.

15. FLOTATION DRYER:

A) Type – Two zone, direct gas fired, horizontal sinusoidal flotation dryer with vertical retraction and unitized, close coupled apparatus units.

B) Housing – Double wall aluminized steel construction with 4" of high density mineral fiber insulation. Carbon steel reinforcements are located within the insulation cavity. The exterior is finished with machinery enamel. Two (2) viewing windows are provided on the operator's side with matching lights on the drive side. Central supply headers with dual nozzle feeds and dual return collection slots at quarter points insure symmetrical airflow. The lower housing half is fixed and the upper haft is vertically retractable 15" for threading and cleaning access. Relief/access panels are located on the top of the housing upper half.

C) Support – A steel support structure is provided to elevate the dryer zones above the floor mounted web handling equipment. Heavy duty box section beams and columns are used for rigidity.

D) Walkways – A 30" wide walk way constructed of aluminum treadplate extends along the full length of the dryer at the operators' side. A cross walk is also provided at each end. Appropriate toe plates and handrails are incorporated.

E) Access Stairs – Two sets of access stairs are provided.

F) Retraction Mechanism – A motorized multi-point ball screw lift jack assembly provides vertical retraction of the upper halves of the two dryer zone housings. The AC brake motor, reducer, miter boxes, propeller shafts, etc. are pre-assembled to the dryer structure.

G) Nozzles – Dual orifice stainless steel pressure pad nozzles are arranged 8" center to center in a staggered (top v. bottom) pattern to promote a sinusoidal (corrugated) web configuration for stability and edge curl counteraction. Nozzles are internally baffled and have dual feed points for even air distribution.

H) Circulation Fans – Two (2) variable speed circulation fans are provided for each dryer zone; one for the upper half and one for the lower half. The fans are centrifugal airfoil plug type and are integrated into the circulation apparatus units. Each fan is sized for 13,000 cfm and is furnished complete with a v-belt drive and a 25 HP AC motor. Variable frequency drive units are provided for operator adjustment of the circulation volume.

I) Heaters – A 3.5×10^6 Btu/hr direct fired natural gas burner provides the heat input for each of the dryer zones. The heaters are each furnished complete with a pre-piped and pre-wired safety pipe train containing the appropriate gas pressure regulator, motorized block and bleed valves and high and low gas pressure switches. An electronic flame supervision unit, circulation, exhaust and combustion air flow monitoring switches and a high temperature limit switch are also provided for each zone. All safeties are selected to conform to IRI and FM standards.

J) Apparatus Units – A unitized plenum assembly of double wall aluminized steel construction with 4" of high density mineral fiber insulation is furnished for each dryer zone. The circulation fans, the gas burner and a manual fresh air intake damper are incorporated into each unit along with a system exhaust connection and supply and return connections for the dryer zone upper and lower halves. Maintenance access doors with relief hardware are provided for each compartment.

K) Exhaust Fans – A separate variable speed exhaust fan is provided for each dryer zone. The fan is a centrifugal airfoil type of arrangement 9, class 2 construction. The fan is sized for 6,000 cfm and is furnished complete with a v-belt drive and a 10 HP AC motor. A variable frequency drive unit is provided for operator adjustment of the exhaust volume.

L) Apparatus Platforms – An elevated platform is provided for each of the apparatus units, configured to allow maintenance access to the fans and burners. The platforms include steel deck plate, safety handrails and caged ladders.

M) Ductwork – Allowance based on circulation apparatus unit and exhaust fan being located immediately adjacent to the drive side of the dryer. Included are the supply and return connections between the apparatus unit and the dryer (flexible connectors for the retractable upper half) and the appropriate exhaust fan inlet ductwork with integral manual balancing dampers. A 15 ft. exhaust stack with rain cap is included in the optional installation package. All ductwork is insulated.

N) Controls – Temperature control and fan speed loop controllers are resident within the line control PLC (system described elsewhere in this proposal). Operator access to the control loops as well as for starting and stopping the fans and burner is via the Main Operator's Panel. Retraction pushbutton stations are provided for mounting at each end of the dryer as is a perimeter cable type E-stop switch. A local controls enclosure, containing a remote PLC rack, the electronic flame supervision unit and the necessary hardwired burner safety logic is furnished for mounting adjacent to the apparatus.

16. DRYER EXIT GUIDER:

A) Type – Intermediate web guider.

B) Construction – Fabricated steel frame, designed to hold guider and sense head assembly. Unit designed for mounting off of dryer support steel.

C) Guider – Single roll intermediate steering guider provided with electro-mechanical actuator. System designed to provide +/- 1 ½" (3" total) travel. Included are two (2) 6" diameter dead shaft hardcoated aluminum idler rolls mounted on the guider.

D) Controls – One (1) ultra-sonic web sensor provided, which will allow for edge guiding. System includes manual sense head positioning. A machine mounted panel will provide operator control of the guider.

17) COOLING SECTION:

A) Type – Two (2) S-wrap roll cooling section.

B) Construction – Heavy duty steel plate sideframes with steel tube stretchers. Designed for direct floor mounting.

C) Cooling Rolls – Two (2) 18" nominal diameter cooling rolls, chromeplated to .002" thick and ground to 30 Ra. finish. Rolls are jacketed and spiral wrapped and are suitable for use with cooling fluid. Cross roll temperature profile of within 2 deg. F. Roll shafts are extended and keywayed on drive side for connection to A.C. motor gearbox. Rotary joints with 18" long rubber hoses are provided for each cooling roll. Rolls are dynamically balanced and mounted in anti-friction bearings.

D) Drive – All mechanical drive components are provided including gearbox, timing belt and pulleys to drive both rolls with a single motor. Suitable drive guard enclosure is provided.

E) Idler Rolls – Appropriate 6" diameter dead shaft aluminum hardcoated idler rolls are included to provide the proper web path throughout the section.

F) Controls – This unit will incorporate the following machine mounted devices:

1. Emergency stop pull cable(s).

These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices that may be adjustable. Separate runs will be used for signal level wiring.

18) PRODUCT WINDER:

A) Type – Single drum surface winder with flying transfer.

B) Construction – Fabricated steel plate sideframes with rectangular steel tube stretchers. Mounted on top of the sideframes are longitudinal machined rails to support the mandrel bearings. Sideframes designed for direct floor mounting.

C) Winding Drum – 30" nominal diameter tubular steel, mounted in anti-friction bearings and housings from sideframes. Drum is finish ground on O.D. to .002" T.I.R. and chromeplated .002" thick. Drive side journal is extended and keywayed for drive connections.

D) Primary Arms – Heavy duty steel plate primary arms with slideways for mounting the new mandrel/core shaft. The arms are pivoted concentrically with the winding drum. Arms indexed by Cone Drive reducer with A.C. motor with integral brake. Air cylinder operated pivoting mandrel clamps are mounted to the primary arms and a cam release mechanism insures that the mandrel is held out of contact with the web running against the winding drum until the time of cut and transfer.

E) Secondary Arms - Heavy duty steel plate arms are mounted on a pivoting cross shaft in the winder sideframes. Arms are air cylinder loaded to provide a pressure nip between the winding drum and the roll being wound. The nip pressure is adjustable from the operator's panel.

F) Flying Transfer Knife – Consists of knife assembly positioning arms mounted on a pivoting cross shaft from support brackets mounted from the winder sideframes. The arms are indexed into the transfer position by a Cone Drive reducer with A.C. motor with integral brake. Knife firing arms are mounted on a pivoting cross shaft from the positioning arms. The knife is mounted on a rectangular tube holder, which is carried in the knife arms. The knife firing arms are operated by air cylinders.

G) Mandrel Bearing and Shaft Assemblies – Two (2) assemblies are provided consisting of an air shaft with two (2) tubular housings with machined grooves to fit the rails mounted on the top of the winder sideframes. The housings have anti-friction bearings mounted in them to support the roll shafts.

H) Drive – The winding drum is driven by a separate A.C. gearhead motor through timing belt and pulleys. Safety guards are included with the timing belt and pulleys.

I) Idler Rolls – Three (3) idler rolls are provided mounted in anti-friction bearings. One roll is provided with squaring provisions. One roll would be mounted on force transducers for control of the winder drive. In addition to the three (3) idler rolls, a Mt. Hope type bow roll is provided. This roll is a non-driven fixed bow spreader roll and will be located immediately before the winding drum.

J) Controls – A machine mounted, pre-piped pneumatic control panel is included with all necessary pneumatic regulators and gauges and filter lubricator. A machine mounted pre-wired electrical junction box is also provided.

K) Core Starter – Consists of a wheel with inflatable rubber tire mounted on a support arm with a second wheel with solid rubber tread. The second wheel is driven by nip contact with the winding drum. The first wheel is positioned between the new core and the second wheel. Prior to the new core being lowered into contact with the web against the winding drum, the first wheel is inflated, the diameter increases creating nip contact between the two wheels and the core and causing the core to be accelerated to matched surface speed with the winding drum.

19. DRIVE AND CONTROL SYSTEM:

A) System Overview

Provided will be an integrated AC Drive and PLC control System. The system will consist of several NEMA 1 enclosures, which will contain the AC drive equipment, and the PLCs required for controlling the Coating/Laminating line.

There are five (5) Allen-Bradley PLCs associated with the system. The main PLC (Allen-Bradley SLC5/04) is located in the drive panel. The other Allen-Bradley PLCs are SLC5/04s and are located in the Paper Unwind #1 PLC Enclosure, Film Unwind PLC Enclosure, Paper Unwind #2 PLC Enclosure, and Product Winder PLC Enclosure. There will also be a thirteen (13) slot Remote I/O panel located at the Dryer. Operator stations with Allen-Bradley Panelview 1000 color touch screens are located on the Paper Unwind #1, Paper Unwind #2, Film Unwind and Product Winder machine sections. Allen-Bradley Panelview 600 color touch screens are located on Coater #1 and Coater #2. The main operator console includes an Allen-Bradley Panelview 1400 color touch screen.

B) Communication Overview

Drive to drive communication will be the Siemens peer to peer network. This network is responsible for the line speed synchronization of the multi-motor drive system. The data transfer rate is 38.4kbit/sec.

Main PLC to the Siemens drives communication is via Profibus. This network is responsible for passing status, setpoint and feedback information to and from the drive system and the PLC system. The data transfer rate is 12mbit/sec.

Main PLC to machine mounted PLC's communication is via Allen-Bradley DH+. This network is responsible for passing the respective machine status and data from machine section to machine section. The data transfer rate is 220.4kbit/sec.

Main PLC to drive cabinet remote I/O racks communication is via Allen-Bradley Remote I/O. These networks control and monitor the I/O. The data transfer rate is 220.4kbit/sec.

C) Drive System Overview

The drives will be mounted in a multi-bay enclosure. One (1) bay will be dedicated as an ACMCC (AC motor control center). One (1) bay will be dedicated as a PLC bay. The remaining bays will house the drives.

The ACMCC bay will include a main circuit breaker disconnect, AC 3 phase bus for AC power distribution, AC motor protectors, AC motor starters and control transformers with required protection.

The PLC bay will include an Allen-Bradley SLC 5/04 I/O rack with required modules pre-wired to terminal strips for field connections. This rack will hold the profibus communication card for interfacing the drive network.

The main line drive bays incorporate a Siemens Master AC drive system. The drive system features a regenerative DC bus system, which feeds each of the AC drives through a DC Busbar power distribution system. The DC busbar system includes a main disconnect switch, isolation transformer and a regenerative bridge auto transformer. Each of the Master AC drives is provided with communication cards for both peer to peer and profibus communication and an output reactor to minimize noise and harmonics. The unwind spindle drives will be provided with technology boards for outer loop control.

D) Operator Stations

A main operator's panel will be provided with an Allen-Bradley Panelview 1400-color touch screen. Six (6) secondary operator's panels will be provided, each of which will contain an Allen-Bradley Panelview color touch screen. These will be utilized for operator's interface.

1) Main Operators Control Panel

The Main Operator's Panel will be a freestanding enclosure that will incorporate all associated operator devices for drive and machine control. This enclosure will contain the following devices for operating the machine:

Allen-Bradley Panelview 1400 color touchscreen with:
Tension setpoints and feedbacks
Drive loads
Length counter displays
Dryer control and status

Machine control and status

Line speed

Motor RPM and current

Dryer temperature zones

Dryer temperature setpoint and feedback

Fan controls

Zone controls and status

Web thickness

Drive status

Data Highway Plus communication capability

Operator information from other sections

Line stop push button

Emergency stop push button

Emergency stop reset push button

Beacon

2) Turret Operator's Panels (3)

The Operator's Panel will be a turret base mounted enclosure that will incorporate all associated operator devices for drive and machine control. This enclosure will contain the following devices for operating the machine:

Allen-Bradley Panelview 1000 color touchscreen with:

Tension setpoint and feedback

Spindle loads

Spindle start/stop/jog controls

New roll diameter preset

Turret controls

Splice mode selection

Splice sequence controls

Length counter display

Data Highway Plus communication capability

Operator information from other sections

Line stop pushbutton

Splice stop pushbutton

Emergency stop- red jumbo head push-pull maintained button

3) Product Winder Operator's Panel

The Operator's Panel will be a pedestal mounted enclosure designed for mounting a minimum of five feet away from the winder. The panel will incorporate all associated operator devices for drive and machine control. This enclosure will contain the following devices for operating the machine:

Allen-Bradley Panelview 1000 color touchscreen with:

Tension setpoint and feedback

Spindle loads

Spindle start/stop/jog controls

New core diameter preset

Transfer mode selection

Transfer sequence controls

Length counter display and presets

Data Highway Plus communication capability

Operator information from other sections

Line stop pushbutton

Transfer stop pushbutton

Emergency stop- red jumbo head push-pull maintained button

4) Coater Operator's Panels (2)

The Operator's Panel will be a machine mounted enclosure that will incorporate all associated operator devices for drive and machine control. This enclosure will contain the following devices for operating the machine:

Allen-Bradley Panelview 600 color touchscreen with:

Tension setpoints and feedbacks
Motor loads
Coater & Laminator controls
Data Highway Plus communication capability
Operator information from other sections
Line stop pushbutton
Emergency stop- red jumbo head push-pull maintained button

E) Machine Mounted Enclosures

There are several machine-mounted enclosures that include PLCs, remote I/O racks and miscellaneous operator controls.

1) Unwind and Winder Machine Mounted I/O Panels (4)

The machine-mounted panel will be an enclosure that will incorporate all associated I/O and controls for the splicing/transfer sequence. This enclosure will house the Allen-Bradley

SLC5/04 processor and the appropriate modules. All I/O points will be wired to terminal strips. A minimum of 25% spare space will be provided in the panel and I/O rack. Also, this enclosure will contain the following devices:

Allen-Bradley SLC5/04 processor
Allen-Bradley analog and digital I/O
Allen-Bradley encoder module (unwind turret position)
Appropriate fusing and protection devices.
Appropriate D.C. power supplies.

2) Dryer Remote I/O Panel

The Dryer I/O Panel will be mounted near or on the dryer, that will incorporate all associated controls for the dryer. This enclosure will house the Allen-Bradley remote I/O rack with the appropriate modules. All I/O points will be wired to terminal strips. A minimum of 25% spare space will be provided in the panel and I/O rack. Also, this enclosure will contain the following devices:

Allen-Bradley ASB module
Allen-Bradley analog and digital I/O
Appropriate fusing and protection devices.
Appropriate D.C. power supplies.
Electronic flame supervision unit.
Hardwired burner safety circuitry.

F) Drive Panel

Each bay will include lighting, appropriate fans and a convenience outlet.

The Drive panel will include the following elements:

1) AC Drive Panel

The drive panel will include all the necessary control hardware for the variable speed motors in a NEMA 1 ventilated enclosure. The Siemens regenerative bridge supplies a DC bus to the following drives:

Section	Motor #	HP	Drive	Control Type
Paper Unwind #1 Spindle A	M1	50	Vector	Dancer
Paper Unwind #1 Spindle B	M2	50	Vector	Dancer
Paper Unwind #1 Turret Index	M3	15	Inverter	Speed
Film Unwind Spindle A	M10	30	Vector	Dancer
Film Unwind Spindle B	M11	30	Vector	Dancer
Film Unwind Turret Index	M12	10	Inverter	Speed
Corona Treater	M19	15	Vector	Tension
Coater #1	M20	15	Vector	Tension
Marriage Section #1	M21	15	Vector	Tension

Laminator #1	M22	15	Vector	Tension
Coater #2	M23	15	Vector	Tension
Paper Unwind #2 Spindle A	M24	50	Vector	Dancer
Paper Unwind #2 Spindle B	M25	50	Vector	Dancer
Paper Unwind #2 Turret Index	M26	15	Inverter	Speed
Marriage Section #2	M33	15	Vector	Tension
Laminator #2	M34	15	Vector	Tension
Cooling Section	M35	15	Vector	Lead
Product Winder	M36	20	Vector	Tension
Dryer Zone #1 Exhaust Fan	M42	10	Inverter	Speed
Dryer Zone #1 Top Supply Fan	M43	25	Inverter	Speed
Dryer Zone #1 Bottom Supply Fan	M44	25	Inverter	Speed
Dryer Zone #2 Exhaust Fan	M46	10	Inverter	Speed
Dryer Zone #2 Top Supply Fan	M47	25	Inverter	Speed
Dryer Zone #2 Bottom Supply Fan	M48	25	Inverter	Speed

All of the Siemens drives will have CB1 profibus cards for communication. The unwind drives will have T300 centerwind technology boards.

All drive motor wires are connected to output reactors.

2) ACMCC Bay

This system includes a NEMA 1 enclosure with a Siemens FastBus 3 phase busbar power distribution system within the enclosure bay which houses all motor starters and 3 phase power distribution equipment for the web transport equipment. The enclosure has a main circuit breaker disconnect interlocked with the enclosure doors. Required power supplies and the control transformer are located here. Each motor starter includes a thermal/magnetic circuit breaker, contactor and thermal overload with auxiliary contact. The motor starter coils and thermal overloads will be wired to the PLC and the motor leads will be brought to terminal strips for ease of field wiring. The following is a list of the AC motors that are controlled by starters:

Section	Motor #	HP	Control Type
Paper Unwind #1 Carriage	M4	1 ½	FVR
Paper Unwind #1 Spindle A Arm	M5	1 ½	FVR
Paper Unwind #1 Spindle A Offset	M6	½	FVR
Paper Unwind #1 Spindle B Arm	M7	1 ½	FVR
Paper Unwind #1 Spindle A Offset	M8	½	FVR
Paper Unwind #1 Lift Table	M9	5	FVNR
Film Unwind Carriage	M13	1 ½	FVR
Film Unwind Spindle A Arm	M14	1 ½	FVR
Film Unwind Spindle A Offset	M15	½	FVR

Film Unwind Spindle B Arm	M16	1 ½	FVR
Film Unwind Spindle A Offset	M17	½	FVR
Film Unwind Lift Table	M18	5	FVNR
Paper Unwind #2 Carriage	M27	1 ½	FVR
Paper Unwind #2 Spindle A Arm	M28	1 ½	FVR
Paper Unwind #2 Spindle A Offset	M29	½	FVR
Paper Unwind #2 Spindle B Arm	M30	1 ½	FVR
Paper Unwind #2 Spindle A Offset	M31	½	FVR
Paper Unwind #2 Lift Table	M32	5	FVNR
Product Winder Primary Arms	M37	3	FVR
Product Winder Knife Arms	M38	3	FVR
Product Winder Lift Table	M39	5	FVNR
Dryer Retraction	M40	3	FVR
Dryer Zone #1Combustion Blower	M41	2	FVNR
Dryer Zone #2Combustion Blower	M45	2	FVNR

3) **PLC Bay**

Provided will be a NEMA 1 enclosure with an Allen-Bradley SLC 5/04 in a 13 slot rack. The required machine and drive panel I/O will be connected to terminals. The system will include necessary communication interfaces to provide connectivity according to the system block diagram. All PLC hardware will be provided by New Era including the following:

Power Supplies

Allen- Bradley SLC rack

Interface Cables

SLC 5/04 processor

16 pt. 115 VAC Input Modules

16 Pt 115 VAC Output Modules

Analog Input Modules

Analog Output Modules

Profibus Module

20. ROLL HANDLING EQUIPMENT:

A) Type – Three (3) mill roll conveyance carts and four (4) hydraulic lift tables provided to feed material to and remove material from unwinds and winder. (One (1) conveyance cart services both Paper Unwind #2 and Product Winder.)

B) Sequence of Operation:

1. Unwind (Loading):

- conveyance cart is pushed into position at end of tracks in aisle adjacent to machine.
- operator rolls material onto conveyance cart.
- conveyance cart is pushed into position about centerline of machine.
- operator rolls material off of conveyance cart and onto lift table at unwind
- turret is jogged to load position
- operator raises lift table (via pushbutton) until core lines up with chucks

2. Winder (Unloading):

- operator raises lift table (via pushbutton) until material is raised off winder
- operator extracts core from winder
- operator lowers lift table (via pushbutton)
- conveyance cart is pushed into position about centerline of machine
- operator rolls material off of lift table and onto conveyance cart
- conveyance cart is pushed into position at end of tracks in aisle adjacent to machine.
- operator rolls material off of conveyance cart

C) Conveyance Carts - Provided are three (3) conveyance carts. Each cart includes a lower frame assembly complete with two (2) flanged and two (2) unflanged casters. Lower

frame assembly designed for mounting below grade (in customer provided pit). Each cart includes a low profile upper frame assembly complete with roll holding cradle and double sided ramp members. Upper frame and lower frame are interconnected by structural member, which extends through floor opening.

D) Conveyance Cart Tracks - Two (2) machined tracks are provided for each cart. Tracks designed for interfacing with conveyance cart casters and mounting in customer provided pit. Each track measures approximately 40' in length.

E) Conveyance Cart Pit Covers - Machined plates are provided to cover pits for each cart. Plates are designed to allow gap for upper/lower cart frame interconnect member to pass.

F) Lift Table – Four (4) scissor type table assemblies provided, each complete with hydraulic cylinder assembly for raising and lowering tabletop. Units designed for mounting in customer provided pits. Each unit includes a "V" shaped top for supporting varying diameter material rolls.

G) Hydraulic Pump System – Provided for each lift table is a self-contained pump system, complete with pump, pump motor, storage tank, directional valves, flow controls and pressure reducing valves to allow for the control of the raise/lower cylinders.

H) Control Panels – Provided is a pushbutton panel for operating each lift table.

21. TURNKEY SERVICES:

The following Turnkey Services will be provided:

A) ENGINEERING SERVICES:

New Era will provide the following **technical information** to facilitate the installation of the web line in the facility of customer.

1. Prepare piping system connection details, including specifications and approximate connection locations for:

- Compressed Air
- Chilled Water
- Gas
- Steam (if applicable)

2. Prepare footprint drawing indicating location of machinery with respect to the machine centerline and the building reference column line.

3. Prepare electrical installation information including interconnection pull chart, wire type and size, installation specifications and conceptual cable tray/ conduit design in accordance with National Electric Code Article 318.

4. Provide all Mechanical Assembly and Sub-assembly drawings that may be required for installation

5. Compile the detailed electrical elementary diagrams to facilitate conduit installation and wire termination. (Interconnect drawings)

6. Prepare a site condition synopsis, which outlines the expectations of the activities of labor that will be utilized at site. This includes all procedural and safety requirements, which are in force at the installation location.

B) **SHIPPING:**

New Era will provide the following services:

1. Skidding and packaging of all equipment sections prior to shipment.

2. Loading of all equipment sections onto appropriate trucks

3. Transportation of all equipment sections to customer's loading dock in Linden, NJ.

C) **INSTALLATION:**

New Era will undertake the installation of the process lines in the facility of Inland in Linden, NJ according to the following defined scope of work. This work will be performed by the employees of New Era or by our designated contractors whom will be working in conjunction with New Era personnel. The following synopsis defines the scope of work to be performed:

1. **New Era** will provide the following **personnel** to assist the installation contractor during the various phases of the installation.

a. The **Installation Supervisor** will be stationed at the installation location for the entire duration of the installation and startup. He will be responsible for the coordination of the interaction between New Era, Customer and the installation contractor(s).

b) The **Mechanical Supervisor** will be a New Era employee whom will be responsible for providing the mechanical trades with direction in the rigging, millwrighting and pipefitting work. It is envisioned that he will be a working leadman and will take an active role in the mechanical installation.

c) The **Electrical Supervisor** will be a New Era employee who will be responsible for providing the electrical trades with direction in the conduit and cable tray installation, wire pull and termination work. It is envisioned that he will be a working leadman and will take an active role in the electrical installation.

2) **New Era** will provide the following **equipment and services.**

a) Soleplates on which the equipment will mount.

b) Mechanical erection and installation of the equipment according to the proposal.

3) **The Installation Contractor(s)** provided by New Era will provide the necessary **equipment, services and personnel** to undertake the installation of the equipment listed in the included proposal. All tools and installation materials required will be provided. All Certifications of Insurance will be presented to customer prior to commencement of any work.

The following is a synopsis of the work to be performed:

a) Off load, unskid, uncrate as required all equipment shipped to site. It should be assumed that a certain portion of the equipment will need to be staged at a laydown area located in proximity to the machine installation.

b) Establish centerline, offset centerline, and provide permanent floor mounted targets to facilitate installation as well as future alignment by customer. Also, the zero elevation reference point will established.

c) Install all the equipment contained in this proposal except for items not supplied by New Era. This equipment will be installed on pre-leveled and aligned above grade soleplates and will then be anchored and optically aligned to a tolerance of 0.5 mil/ ft. of roll face.

Note: Dryer support steel and certain miscellaneous sections will not be mounted on soleplates. These sections are shimmed and mounted on grade.

d) Provide the necessary air connections to the individual pieces of equipment from customer supplied header to New Era supplied lockout valves on equipment, in sweat type copper tubing. Customer header to be provided parallel to equipment site, within 20' of centerline and complete with "T" connections and ball valves located as per New Era drawings.

e) Provide the necessary chilled water connections to the individual pieces of equipment, from customer supplied supply and return headers in screw threaded black iron pipe. Customer header to be provided parallel to coating line, within 20' of centerline and complete with "T" connections and ball valves located as per New Era drawings.

f) Provide all necessary gas piping, between the customer supplied gas line, complete with shut-off valve, located within 20 feet of dryer. Piping to be performed using black iron pipe and threaded fittings.

g) Provide all necessary steam piping, between the customer supplied steam line, complete with shut-off valve, located within 20 ft. of dryer. Piping to be performed using black iron pipe and threaded fittings.

h) Insulate all exposed chilled water and steam piping with fiberglass insulation.

i) Provide interconnecting wiring for the system according to the electrical drawings. The design philosophy for this machine is to provide a main drive cabinet located approximately 20 feet from the machine centerline. A cable tray system will be run the length of the process line with segmented compartments for power control and signal cable runs. Each of the individual pieces of equipment will be tied into the cable tray system utilizing threaded rigid conduit and flexible sealtite where required. It is assumed that there are no local codes or plant regulations, which exceed the NEC as a reference for installation methodology.

j) Erect all ductwork provided with dryer. This includes all intra-dryer ductwork and an insulated exhaust stack from each exhaust fan discharge to 5 feet above customer roofline (curbed roof penetration by customer).

k) Provide touch up painting for all New Era provided equipment.

D) STARTUP AND COMMISSIONING:

New Era will provide the following personnel to accomplish the startup and commissioning as outlined below:

- Control engineer(s) to perform the mechanical setup and debugging of the control logic of the New Era equipment and to assist the drive start-up personnel in and drive system tuning.
- Drive system technician(s) to tune the drive system to actual process conditions
- Electrician(s) to assist with the calibration of the instrumentation devices on the machine and to implement any electrical modifications required as a result of the startup
- Dryer technician(s) to assist in the startup and balancing of the Dryer and Incinerator system.
- Corona Treater technician(s) to assist in the calibration and startup of the system.
- Startup technician(s) to perform dry web test(s) to confirm systems web handling capabilities in the modes as outlined in the Equipment Overview. This does not include the handling or application of any coatings, drying of any coatings or lamination of any webs.

CUSTOMER RESPONSIBILITIES:

Customer will be responsible for the following:

1) A clean, level floor adequately designed for the static and dynamic load of the equipment to be installed.

2) Free and Clear access for unloading of equipment and a laydown area in close proximity to the machine installation

3) Main electrical disconnect(s)

4) Adequate Utilities located within 20' of the machine as indicated on the installation engineering package, located in the same physical room of the facility as the machine. This includes all power distribution equipment, control transformers, etc.

5) Plant grounding connection point.

6) Any civil work or building modifications required to facilitate the machine installation.

7) All coating piping, pumps, filters, etc. as required for handling coating solution.

8) Sanitary facilities and lockable office space with phone line access.

9) All temporary utilities and lighting required for machine installation

10) All fire suppression equipment.

11) Permanent machine or area lighting.

12) Permits, licenses, taxes, duty etc. required to allow the importation of the equipment as well as the installation work to proceed.

13) Access to allow trade labor of our choice to be utilized at the discretion of the installation contractor(s)

14) All equipment for the web line not provided by New Era, including its respective installation

15) Operating personnel and process engineers to facilitate the pre-shipment testing, startup and commissioning

16) Removal and disposal of all trash generated.

PAINTING, ASSEMBLY, GUARDING & TESTING

A. All machine frames requiring painting will receive one coat of primer and two coats of enamel unless otherwise specified by customer.

B. All machine sections are be pre-assembled, pre-wired and pre-piped to terminal strips, bulkheads, and machine mounted panels, as indicated in the machinery component section. All machine mounted rolls are optically aligned and pinned in place (where appropriate).

C. The equipment is provided with safety controls, drive transmission guards and nip guards, in accordance with generally accepted machine design and OSHA standards as known to us. Any additional safety controls or guards required by the Purchaser to meet their company policy or local law, ordinance or special insurance requirements, can be provided at additional cost to the purchaser.

All safety items are inspected prior to shipment. Documentation of this inspection is submitted to the customer for his records.

D. All machine sections will be electrically and pneumatically sequence tested prior to shipment (A.C. and pneumatic logic functions.)

Inland
February 7, 2001
Proposal NE-1929 Rev. A

PRICE AND DELIVERY:

PRICE:

The price of this equipment less Turnkey Services, as previously

described is **$3,150,000.00**

The Turnkey Services Price is..... **$604,000.00**

The above price is exclusive of any local, state and Federal taxes or tariffs.

This price is valid for sixty (60) days from the date of this proposal.

Delivery on this equipment is in accordance with the attached schedule. Delivery, however, is affected by our production schedule at the time of order placement. Delivery will be confirmed when an order is placed.

Any changes in specification or requirements after the release of a purchase order may result in a change in price and delivery. Before any requested changes are made, **NEW ERA will advise the buyer, in writing, as to the price and/or delivery changes that will be incurred.**

OPTIONAL EQUIPMENT:

I. REMOISTURIZING EQUIPMENT

A) Roll Type Contact Unit:

1) Type - Two (2) two roll liquid applicator systems, provided to apply water to both sides of the web after cooling. Units mounted in staggered configuration to allow for independent application to each side of web.

2) Construction - Heavy duty steel sideframes complete with cross machine stretchers as well as precision machined mounting surfaces. Frames designed to allow for support of two (2) liquid applicator systems.

3) Applicator Roll - Two (2) 10" diameter chromeplated hydrophilic rolls, mounted in fixed position in specially designed split bearing housings. Rolls provided complete with keyed shaft extension.

4) Metering Roll - Two (2) 8" diameter resilient covered steel rolls, mounted in specially designed split bearing housings. Rolls are pneumatically loaded against applicator rolls for application of coating.

5) Roll Drive - Provided are independent drive transmission assemblies for each applicator and metering roll, complete with geared speed reducers and transmission safety guards.

6) Coating Pan - Two (2) large capacity stainless steel liquid supply pans provided, each complete with fill pipe connection, drain pipe connection, and liquid level sensor to indicate low liquid in pan and automatically shut system when level reaches minimum preset.

7) Adjustment Stripe - Metering roll to applicator roll stripe adjustment is provided, complete with dial indication. Adjustment is independent from side to side and is provided with both side's controls mounted on the operator's side of unit.

8) Skew Adjustment - Provided on operator's side of machine is system designed to allow cross web profiling of coating.

9) Idler Rolls - Included are 6" diameter dead shaft aluminum idler rolls mounted to contour the web throughout the equipment.

10) Controls - The following machine mounted devices are provided:

1. Solenoid valves with integral regulator and gauge for the metering roll cylinders. These devices will be pre-wired to junction boxes for ease of installation. The machine wiring will be run in rigid conduit. Flexible sealtight will be used to tie in any devices that may be adjustable. Separate runs will be used for signal level wiring. The pneumatic feed (lockout valve, filter, pressure switch) will be mounted on the machine frame. Pneumatic piping will be done in flexible hose.

This option, which is suitable for use at 1000 or 1500 fpm, has an installed sell price of $461,000.00

B) Thermo Web System Steam Unit:

We can supply a Thermo Web Systems, Inc. dual steam remoisturizing unit that will consist of: Two (2) 304L stainless steel units, capable of providing moisture/curl control for a 108" wide web. The unit has (18) cross-machine direction zones on 6" centers, 36" of steam application area (42" machine direction length), and a field profileable vacuum chamber. The complete system will be approximately 7 feet long.

The heart of this system is the patented Coanda nozzles, which eject steam counter and parallel to the sheet run. These nozzles ensure an efficient and uniform application of steam to both sides of the web. External surfaces of the device are preheated which eliminates the potential for

condensation. The unit includes steam flow interlocks, for automatic steam shut-off on sheet-break or maintenance check.

Two (2) Manual Steam-Foil PSI Control Packages, each consisting of:

Steam flow interlocks for automatic steam shut-off on sheet-break or maintenance check. This package includes all of the necessary steam conditioning equipment as follows:

- Fisher V200 Steam PSI Control Valve
- Type 1052 Actuator
- Type 3620J Position w/ I/P Converter
- Foxboro IGP10-A20C1F PSI Transmitter
- Wright Austin Coalecer Steam Separator:
  - (1) Type 35L-CLC for Main Supply Line
- Steam Separators:
  - (1) per Steam-Foil Type ST for the process line
  - Type ST for the preheat line
- Safety Relief Valves:
  - (1) for the process steam line
  - (1) for the preheat steam line
- Honeywell UDC 3000 Controller
- New York Blower Vacuum Fan
- Magnatrol Process Steam Line
- Solenoid Valve - (1) per Steam-Foil

This option, which uses up to 800 pounds per hour of steam at 1000 fpm and up to 1200 pounds per hour of steam at 1500 fpm (at a maximum of 15 psig), has an installed sell price of $455,000.00

C) Pagendarm Steam Unit:

We can supply a Pagendarm Fluidex Plano steam remoisturizing unit that will consist of:

Two (2) 2000mm (40") long stacked condensation chambers and one (1) vacuum extraction section, capable of providing moisture/curl control for a 108" wide web. The complete system will be approximately 7 feet long.

The heart of this system is the use of profiling blades, which control steam that is simultaneously furnished to both sides of the web. The unit is designed to eliminate the potential for condensation. It also includes steam flow interlocks, for automatic steam shut-off on sheet-break or maintenance check.

The steam control system is completely pre-piped and includes:

- 1 Pneumatic stop valve to interrupt the steam supply
- 2 Regulating valves to control the steam quantity
- 1 Steam main filter
- 2 Pressure reduction valves
- 1 Steam distribution unit for the frame heating, with steam trap
- 1 Steam saturator
- 1 Condensate steam trap system
- 1 Exhaust air ventilator
- 1 Exhaust air collector with flaps
- Operating panel

This option, which uses up to 800 pounds per hour of steam at 1000 fpm and up to 1100 pounds per hour of steam at 1500 fpm (at a maximum of 50 psig) has an installed sell price of $310,000.00

D) Moisture Sensors:

We can provide an infra-red moisture sensor system, complete with support bracket and PLC interface, to display the moisture content of the web surface.

The price addition for this option is ..... $17,750.00 per side of web.

II. WINDER SHAFT EXTRACTOR:

We can provide a winder shaft extractor assembly mounted from the previously described winder main frame. This assembly will allow for the following operation:

- The operator will pass the shaft extractor cable through a new core
- The operator will place the new core on the shaft extractor cradle
- After transfer, the operator will lift the product roll with the previously described lift table until the core is aligned with the new core sitting on the shaft extractor cradle.
- The operator will deflate the shaft
- The operator will attach the shaft extractor cable to the end of the shaft
- The operator will manually retract the cable, pulling the shaft out of the product roll and into the new core.

Included with this option is a fabricated steel cradle, a manually operated shaft extractor cable and a mounting frame.

This option has a sell price of $10,500.00

III WINDER SHAFT HOIST ASSEMBLY

We can provide a fabricated monorail beam complete with trolley and electric hoist located to allow a core and shaft to be transported from the shaft extractor cradle to the winder primary arms.

This option has a sell price of $9,000.00

IV. WINDER WEB SPLITTER:

We can provide the following system to allow for centersplitting of the product prior to winding.

A) Type - Score cut driven assembly designed for mounting in winder frame.

B) Shear Cut Blades - One (1) pneumatically loaded slitter blade assembly mounted on a centrally located dovetail arrangement. Pneumatic manifold, complete with air regulating equipment and solenoid valve for extending and retracting blade is provided.

C) Shear Cut Roll - One hardened steel cutting ring provided for mating with cutting blade. Ring mounted on chrome covered steel shaft and held in place by locking screws. Roll provided with keyed shaft extension.

D) Bow Rolls - Two (2) fixed angle bow rolls are provided; one before and one after the shear cut roll to allow for web separation at winding.

E) Shear Section Drive - One (1) drive transmission assembly, complete with hardware to allow for driving of bow rolls and shear cut roll, including variable pitch belt system for speed adjustment of shear cut roll with respect to bow rolls. Included is a 10 HP A.C. motor and a Vector drive (located in the main drive cabinet).

This option has a sell price of $56,500.00

V. COATER IMPRESSION ROLL SLEEVE SYSTEM:

The previously described Coater Impression Roll can be provided with a sleeve roll system, designed to allow for the toolless change of rubber sleeves. This system features a pneumatically inflated mandrel which is cantilever mounted in the drive side bearing block, allowing for quick changes of the sleeve.

Included are two (2) cantilever mandrels (one for each coater), four (4) sleeves made of 60-65 duro EPDM rubber and one (1) service mandrel.

The price for the above option is $69,900.00

VI. ENCLOSED DOCTOR BLADE SYSTEM:

We can provide an enclosed doctor blade system that can be used to replace the previously quoted doctoring system. This unit, which features a coated aluminum chamber complete with entry and exit doctoring blades, as well as pneumatic cylinders for loading the chamber against the gravure cylinder, is designed to interchange with the currently quoted doctor blade.

This option can be provided for either coater for $18,000.00

VII. COATER BACKING ROLL DRIVES:

The previously quoted coaters can be provided with separate drives for the backing rolls. This option will include drive transmission products, a transmission safety guard, a motor mounting base, a 15 HP A.C. motor and a vector drive (mounted in the drive cabinet).

This option can be provided for either coater for $18,500.00

VIII. SUPERVISORY SYSTEM:

We can provide a Main Operator's Panel which will be a free standing console that will house a Wonderware system. The personal computer contained in this enclosure will serve to provide HMI functionality and supervisory control of the process line. The console will include the following:

18" viewable color flat panel touch screen

Pentium 3 computer running at 800 Mhz with 256 meg of RAM. The hard drive will have 16 gigabytes of memory. The operating system will be Windows NT4.0.

Color laser jet printer

Uninterruptible power supply

Wonderware Intouch Runtime and Development license

DH+ communication card

Line stop push button

Emergency stop push button

Emergency stop reset push button

Beacon