

**CORRUGATOR
BHS / FOSBER / AGNATI
CORRUGATING LINE, FLUTE
E,B,C,R LHDPG, 2500 MM / 98"
PRODUCTION SPEED 300 M/MIN
CAPACITY FOR 3 LAYERS: 20000 KG/HR
CAPACITY FOR 5 LAYERS: 33000 KG/HR
STIMATED DIMENSIONS: L*W*H (105*6*4 M)
STIMATED WEIGHT: 165000 KG**











GENERAL SPECIFICATIONS:

- A. MAX. PAPER PRODUCTION WIDTH: 2500MM.
- B. MAX. PRODUCTION SPEED: 300 M/MIN.
 - UNDER 70% OF MAX. WORKING SIZE
 - PAPER QUALITY: LINER 150--180 GR/M²
 - MEDIUM 110--127 GR/M²
 - UNDER 5M (MACHINE, MATERIAL, MAINTENANCE, MAN AND MANAGEMENT) SUITABLE CONDITIONS.
- C. STEAM CONSUMPTION: 8400 KG/HR. FOR 2500MM WIDTH MACHINE.
 STEAM PRESSURE IS REQUIRED UP TO 14 KG/CM² AT MACHINE SIDE.
- D. BRAND OF ELECTRICAL COMPONENTS:

NO FUSE BREAKER:	SCHNEIDER / FRANCE
MAGNETIC CONTACTOR:	SCHNEIDER / FRANCE
RELAY:	OMRON / JAPAN
LIMIT SWITCH:	PANASONIC / JAPAN --
PHOTO SENSOR:	SUNX / JAPAN OR P+F / GERMANY
PUSH BUTTON:	TELEMECANIQUE / FRANCE
INVERTER:	mitsubishi / JAPAN
PLC:	mitsubishi / JAPAN
- E. MAIN MOTOR: "TECO" INVERTER MOTOR
- F. BEARING: SKF, NTN, IKO
- G. POWER SUPPLY: REQUIRED APPROX. 865 KW.
- H. AIR PRESSURE: MINIMUM 7 KG/CM² FOR CORRUGATOR USE. (AUTO SPLICER REQUESTED WOKING PRESSURE 7 KG/CM² CONTINUOUSLY)
- I. CYLINDERS & SOLENOID VALVES

Machine: Web End

1. SHAFTLESS MILL ROLL STAND

MODEL: MS4-N

- Type: hydraulic (swing type)
Maximum loading diameter of reel 1500 mm
Minimum loading diameter of reel 330 mm
Maximum loading weight 3000 kg
- Every stand equipped with HMI control and magnetic switch on both arms at operation side
- Two pairs of arms can clamp with two paper rolls by individually hydraulic cylinder operation with rule and indicator needle
- Standard clip type air disk brake fits for paper tension control by manual adjustment. If it links with Auto splicer will be full automatic tension control of paper.
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- **RENOVA” brake is multi layers brake with cooling fan**
- **Infrared laser paper roll alignment system**
- **Hydraulic push bat device**
- **Motorized track rails for paper roll (single trolley)**



2. PREHEATER ROLL:

Model: LPH-N

- Preheater roll: $\varnothing 1100\text{mm}$
- Includes Preheater synchronization AC inverter motor with auto integrated preheat area
- Automatic wrap arm



3. Preconditioner Roll:

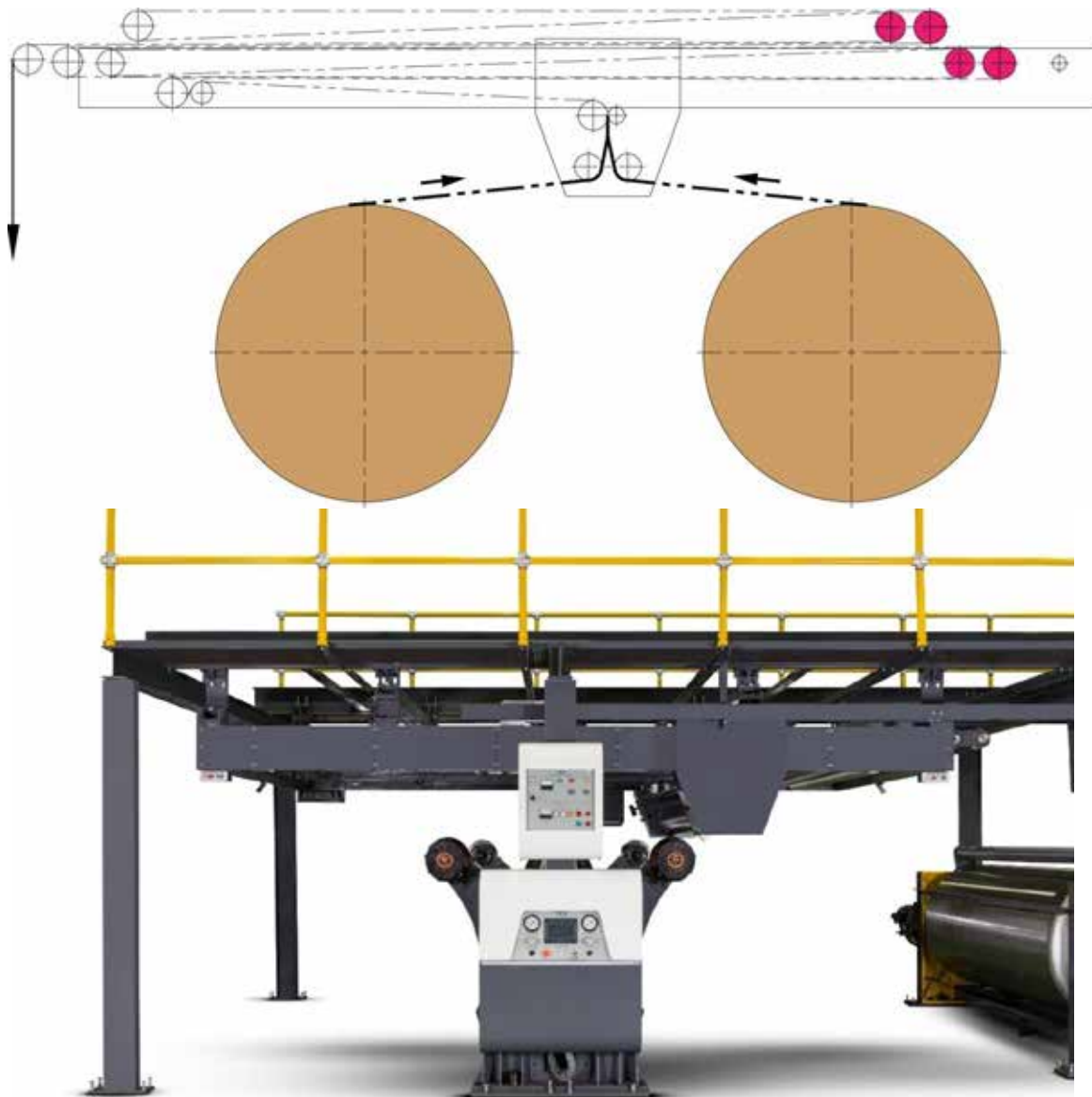
Model: 2PH-N

- preconditioner roll: $\varnothing 900\text{mm}$
- Includes Preconditioner synchronization AC inverter motor with auto integrated preheat area
- Automatic wrap arm



4. AUTO SPLICER MODEL: SP-100N

- Max. design splicing speed for SP-100N: 300 m/min. The mentioned splicing speed is based on linear speed of paper. (The 4 dancing rolls design for accumulation for each layer of paper: 4000–4500 mm)
- Spliced area: zero tail from edge to edge with adhesive tape 40 mm – 50 mm.
- Minimum interval between splicings is less than 1 min.
- One step cutting by reliable saw-teeth type cutter.



5. SINGLE FACER (FINGERLESS BLOWING TYPE)

MODEL: BSF-N

- Flute type: A or C or B or E flute
- Upper corrugating roll Size: \varnothing 408 mm.
- Lower corrugating roll Size: \varnothing 408 mm.
- Preheater roll for medium paper with warp angle control.
- Preheater roll for liner paper with warp angle control.
- Main drive by AC Inverter motor included and timing Belt Driven.
- Paper feeding gap between bottom corrugator roll and glue roll is opened by hydraulic.
- Independent variable speed motor for glue applicator roll synchronized with main motor and with idling run to prevent glue conglutination when machine is stop.
- Doctor and application rolls equipped with high-precision micro adjusting device for obtaining more accurate gap in between with corrugating rolls
- Steam shower with cocks has installed for spraying the steam on the web avoid breakage during
- Pre-piped steam system is complete with pipes, valves and steam strap fittings for machine itself
- Web break detector with automatic stop control.
- Pressure roll gap adjusting by gear reducer motor.
- Quick flute roll change system (cartridge type).
- Ping blower unit for positive pressure system.
- corrugating roll with cartridge device for quick roll change within 10 minutes.
- Auto glue dam adjustment and glue gap adjustment for single facer.
- Corrugating roll in cartridge type including cassette module with motorized drive trolley device.



6. TRIPLE PREHEATER

MODEL: 3LPH-N

Preheater roll: $\varnothing 11100\text{mm}$

- Includes Preheater synchronization AC inverter motor with auto integrated preheat area
- Automatic wrap arm
- **Expansion roll for liner use**



7. DOUBLE GLUING SECTION

MODEL: 2GL-N

Two application rolls

- Doctor roll 2 pieces fit with self-weight doctor blade to scrape remain glue.
- Glue tank with glue medium circulating system is via 5HP x 8P AC Motor with gear pump for glue feedback while the machine is not running.
- **Contact bar**
- Each application roll is driven by independent inverter moto
- Digital display for getting accurate gap between application and doctor rolls.
- Automatic glue dam position integrated with production control system



8. DECK CONVEYOR BRIDGE

MODEL: FS-N

- Bridge construction are made of channel iron and iron plate and etc.
- one take-up conveyor belt for each corrugating web from each single facer driven by an independent inverter motor.
- Two horizontal transportation conveyors with 2 sets of inverter motor.
- With safety support frame and ladders.



8-1. Web guiding system (E+L Germany) :

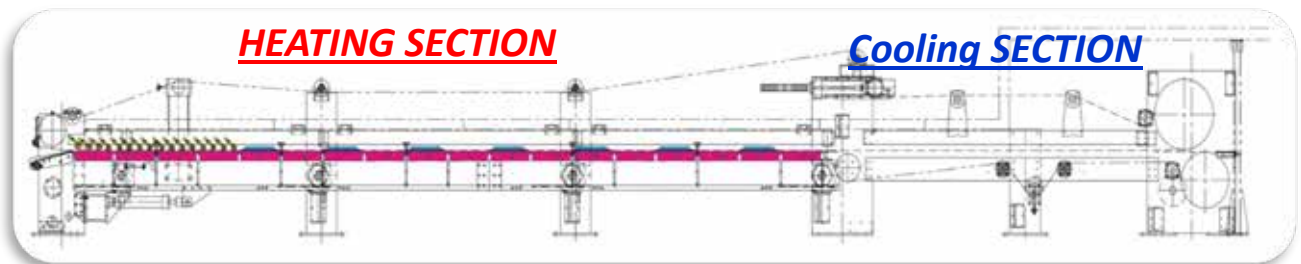
- Bridge Web Tension Control and Bridge Guiding System



9. DOUBLE FACER (HEATING & COOLING SECTION)

MODEL: CDB-N

- Heating plate made by cast iron steel and surface grind with hard chrome plated: 20 pieces.
- Pressure rolls lowering and lifting available for micro adjustment to meet with the thickness of single wall and double wall sheet by HMI touch screen.
- Drive roll in the front of this section to be covered with rubber to prevent slip. Upper drive roll outside diameter: 900 mm and lower roll outside diameter: 720 mm.
- Each 6 heating plates as a group. Each group is equipped with one thermometer. Three thermometers on heating section.
- Upper belt stretcher is operated by hydraulic cylinder and Lower belt stretcher with manual adjustment.
- Transverse movement of tension roll for upper belt
- Weight rolls system to fit in full section.
- Steam supply is controlled by HMI for setting temperature.
- Automatic upper belt alignment device
- **Thermo Bar**



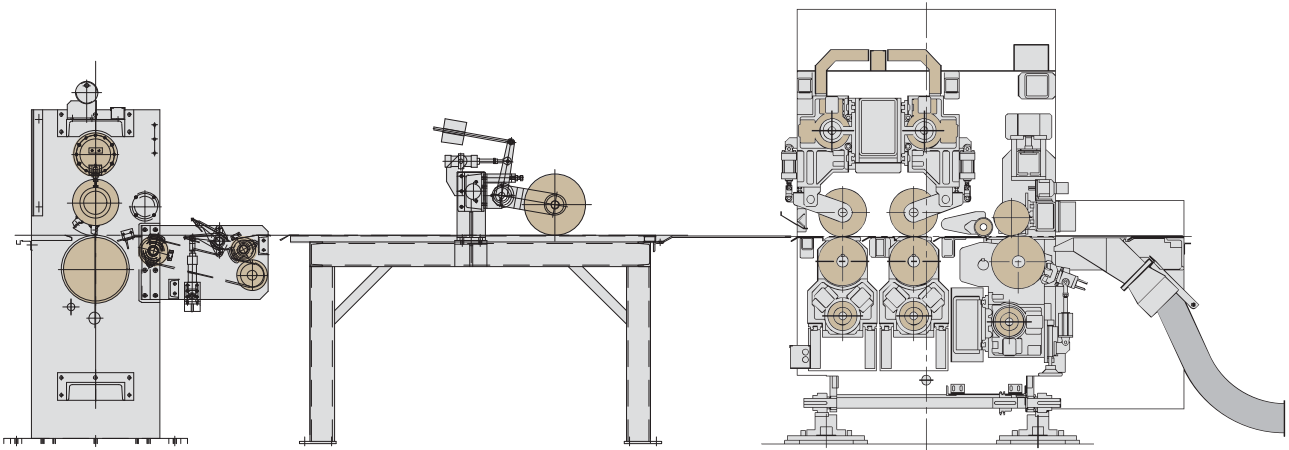
10. Steam Piping Equipment on Machine

Machine: Dry End

1. ROTARY SHEAR CUTTER

MODEL: QCT

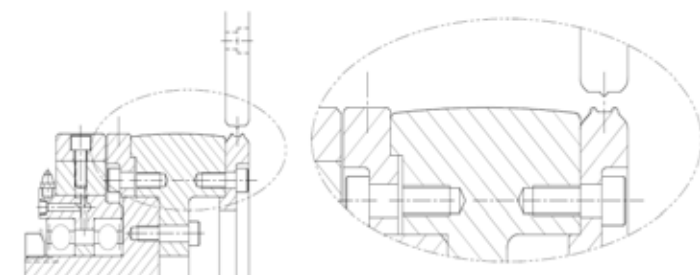
- Maximum speed: 220 m/min.
- Driven by AC vector motor and controller.
- Upper knife drum and lower anvil drum.
- Defective sheet diverter with scraps removal is controlled by pneumatic cylinder.
- Waste sheet cutting length is less than 900 mm via setting.
- Available for continuously cutting waste and single cutting for order change.



2. QUICK SETTING SLITTER SCORER (SERVO CONTROL)

MODEL: Q-SD

- Basic construction: Double scoring shafts with single slitting (bottom knives) shaft.
- Outside diameter of slit knife: \varnothing 280 mm made by tungsten carbide and grinding stone.
- Number of slitters: 7 sets slitting knives for 6 outs.
- Min. distance between both slitting knives: 190 mm.
- Number of scorer: total 12 sets / 6 sets scorer in front shaft and 6 sets scorer in rear shaft.
- Number of scorers: 6 sets in front shaft and 6 sets in rear shaft.
- Min. distance between both scoring lines: Zero gap for using double scoring shaft and 120 mm for using single scoring shaft.
- Scoring type: 2 types as male to female and male to flat.
- Outside diameter of scorer wheel: \varnothing 280 mm.
- Scoring gap (pressure): Motorized adjustment by manual push button.
- Accuracy of process dimension: \pm 1 mm under stable and constant running speed.
- Max. working Speed up to 300 m/min.
- Unit transverse movement between \pm 100 mm.
- All positions of slit & scorer are moved by individual AC servo motors with ball screws.
- Full intergraded control by CNC links with production computer for automatic operation.
- 30HP Cutter Blower with Motor Without Air Pipes-1set



3. Duplex Nc Cutter (Double Level)

Model: SNCD

- Cutting length: 500-4000 mm from 150 up to 350 m/min.
- Sleeve cutter design.
- AC servo motor with controller. (Twin motors)
- Accuracy ± 1 mm (no overspeed)
- Helical knives with fully adjustable blade positioning for optimum tune.
- Helical meshed gears at each shaft end of knife shaft.
- Max cutting sheet weight is 1500 gr/m²
- Oil circulatory system (no greasing)



4. Six Stage Automatic Down Stacker

Model: Q-STT

- Six Stages of belting conveyor driven by inverter motor
- Max. sheet length for double sizes of sheet are 4600mm & 3600 mm (or as requested)
- Automatic order change via interrupter device.
- Hydraulic cylinder for platform quick lift and smooth descent for sheet accumulation via electrical shunt control.
- Platform fit plastic chain roller conveyor for bundle sheet delivery without damage
- Studied geometric profile to eliminate board damage.
- First stage uses the suction belt with blower and drive by inverter motor.
- All catwalks, stairs platforms hand-rails etc.
- Easily upgraded to match with high performance of machine.
- Independent drive suction belt for sheet delivery out. Model: S7
- Automatic down stacker conveyor upgrade with plastic belt



5. Computerized System

For production control of corrugated cardboard making machine use Includes Production Showing Plate

- Avoid the operation mistake, reduce the stop time, and ensure the good quality.
- Automatic product control, increase the production efficiency.
- The high accuracy order change signal, reduce the loss of the material.
- Monitoring of the Corrugator running status in real time.
- Centralized data process, for the management and analysis.
- The window compatible PC and PLC control easy maintenance.

SCHEDULE COMPUTER

- Monitor running status immediately.
- Input the schedule orders.
- List the schedule order and the paper roll material.
- List the daily report and statistics.
- List the monthly report and statistics.

WEA COMPUTER

- Monitor the corrugator running status.
- Paper roll material list.
- Order change alarm.
- Auto splice on line control.
- Record the running data.
- Synchronous speed control.
- Bridge paper level control.
- Order change auto speed down control.
- Linear and medium paper synchronous splicing control

DEA COMPUTER

- Monitor the corrugator running status.
- Input the schedule orders.
- Running speed control.
- NC cutter on line control.
- NC slitter on line control.
- Order change timing sequence.
- Record the running data

STACKER MONITOR

- Stacking sheet

Remarks:

1. Attached all motors is enough for machine operation and control panels for the above quoted items.

2. Provided by buyer:
 - A. Foundation works, material and its erection;
 - B. All power supply panels and components from the panels to the power source terminals in machine operation control boxes including all electrical parts in power supply panels: start-delta starters, cables, cable slots, wiring jobs.
For all motor over 25HP in the machine, the buyer has to provide power cable. Electronic control cables and power cables should be separated to avoid electrical interference.
 - C. Water source;
 - D. Illumination device;
 - E. 8 tons (or 10 tons) steam boiler, pressure: 14 kgf/cm² (or 16kgf/cm²);
 - F. Main steam piping from boiler to the machine side;
 - G. Water soften disposal device & thermo keeping device for steam piping from boiler to the machine side;
 - H. Main glue feeding & returning pipes from glue preparing & recycle equipment to single facer and glue machine and glue storage tanks;
 - I. Air compressor & pipe connect to the side of the machine;
 - J. Air compressor;
 - K. Air pipes from trim blower.
 - L. Glue (starch) mixing unit

3. From the rated voltage, the machine can with stand $\pm 5\%$ fluctuations. If voltage difference exceeds $\pm 5\%$, causing running of the machine to become unstable, then buyer have to provide stabilize power or transformer to the machine.

4. Terms & condition for supervision and installation engineer(s):
 - A. Hotel accommodations, all lodging expenses and the transport between hotel and customer's premise shall be taken care by buyer.

B. The quoted charge for supervising installation is based on the timing schedule which supplied by TCY engineers when they start the installation job. The buyer is requested to comply with timing schedule and supply the necessary auxiliary equipment for installation. Any delay due to the late supply of auxiliary equipment or jobs from buyer and cause the delay of installation, we shall charge extra US\$450.- per day for each engineer.

5. Inspection: by buyer prior to the shipment in Taiwan.

6. Installation: minimum 60 days installation, test run, training realized by manufacturer's engineers at customer's site.

Customer will take care of followings (before engineer's arrival):

- All electrical power supply & its wirings;
- To load the machine on the floor level;
- To provide skilled electrician to help the TCY engineers for whole installation time;
- To provide experienced workers to assist whole installation jobs. Number of workers will be specified by seller.

7. Warranty time expired:

Service charge US\$450 per day, working hours from 8AM – 5PM (working hours less than 8 hours per day will be deemed as one day charge) round trip air tickets, lodging, meals and transportation between hotel and factory are at the buyer's account.

8. Notice:

- a. For "Free replacement parts" or "Warranty replacement parts", the shipping delivery costs are at seller's account. The local import charges such as customs duty, customs clearance, import VAT, import duty, inspection fee, etc., are at buyer's account.
- b. The machine installation, technical services fee, training or any other local fees that are subject to withholding taxes are at buyer's account.

Corrugator Line Technical Features:

- . **S/Line 400: production speed 400 m/min**
- . **S/Line 350: production speed 350 m/min**
- . **Splicing speed: 350 m/min**
- . **Gapless order change speed : 300 m/min**
- . **Fastest roll change cycle in the Industry**
- . **Wet-end Beltless technology**
- . **Dry-end Oil Free technology**
- . **Short order run capability**

Capacity for 3 layers: 20000 kg/hr

Capacity for 5 layers: 33000 kg/hr

Stimted dimensions: l*w*h (105*6*4 m)

Stimted weight: 165000 kg

**Energy efficiency is guaranteed right across the production range through
From the lightest possible micro-flute grades to the heavies t jumbo flute**

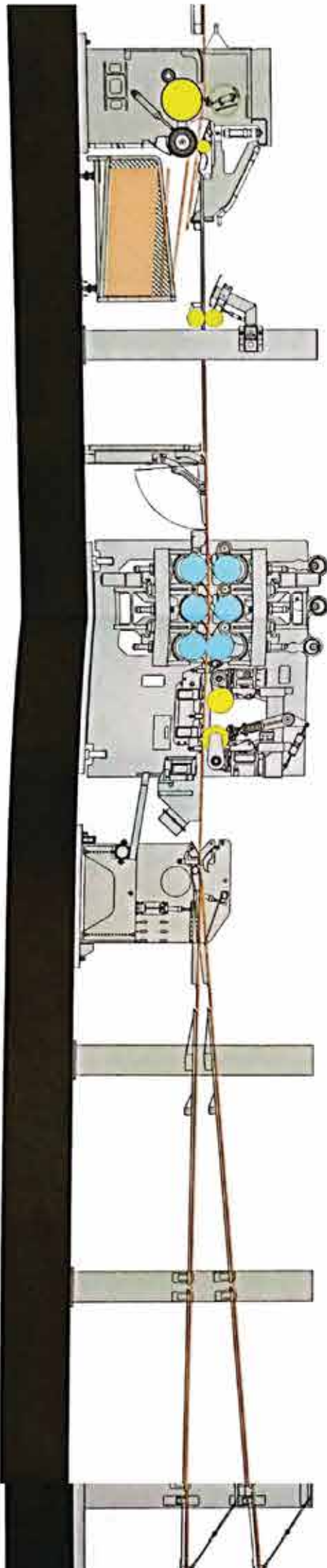
DRY END OIL FREE TECHNOLOGY

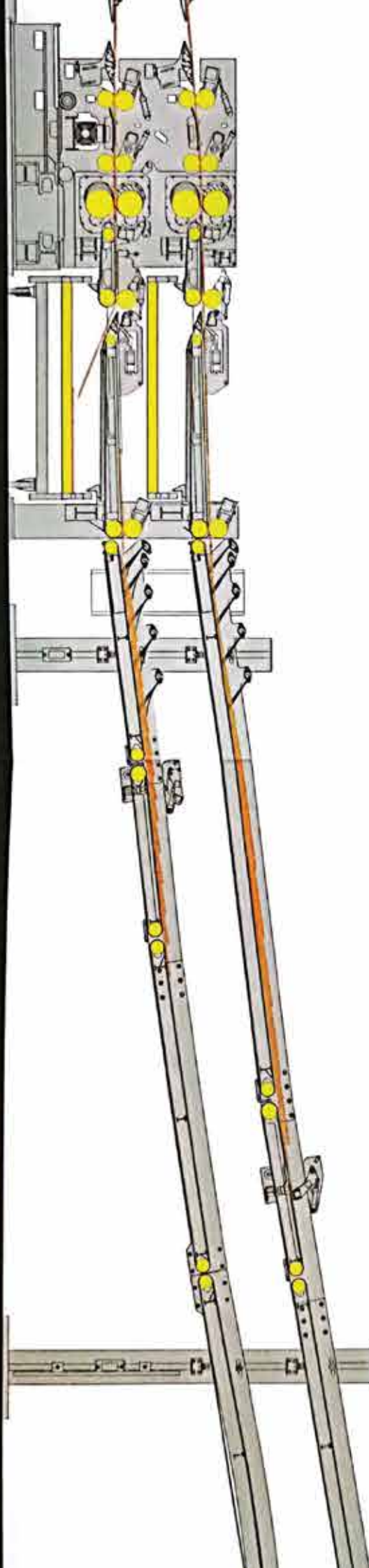
POTARY SHEAR / SHEAR

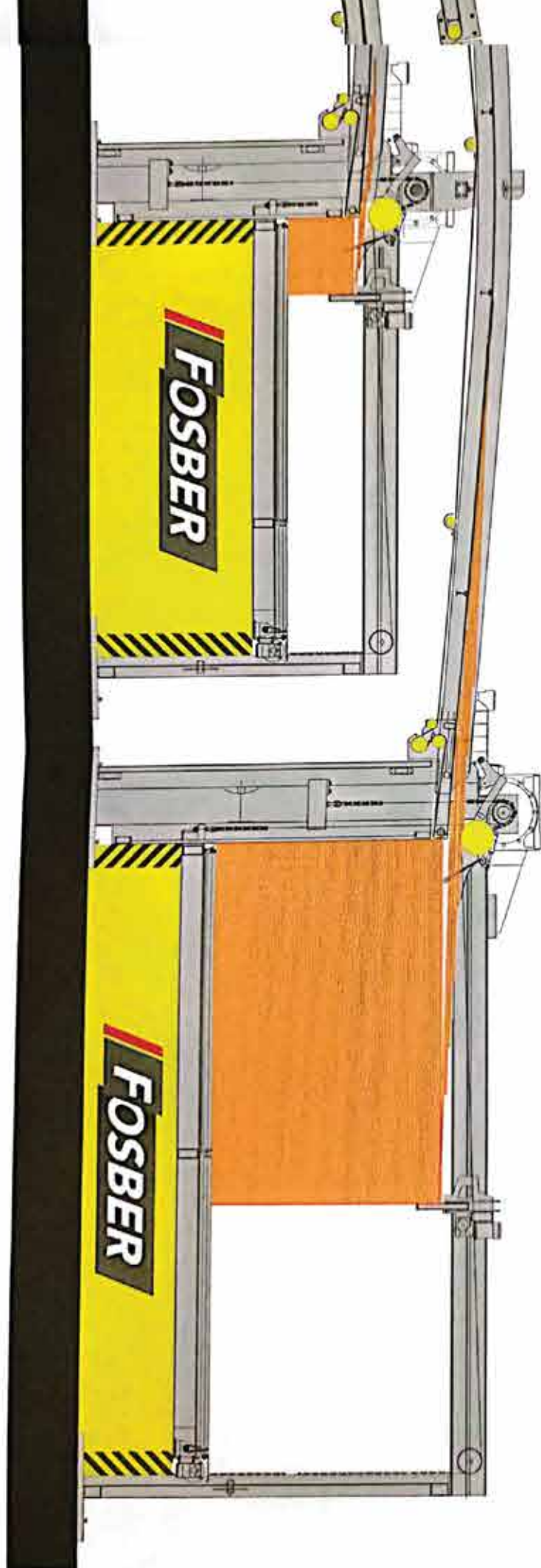
SLITTER SCORER / TWIN

CUT-OFF KNIFE / MASTER

STACKER / TERMINAL







Fosbers Complete Corrugator Line Guarantees:

- . Maximum production flexibility**
- . Optimum bord quality**
- . Lowest cost of ownership and operation**

The innovative modular design is configurable in various performance levels from the "state -of -the -art" range for mage volume producers down to an easily upgradeable "entry level" machine for smaller capacity requirements

WET END BELTLESS TECHNOLOGY

ROLL STAND AND SPLICER / LINK M2

ROLL STAND AND SPLICER / STAND M2 + LINK

SINGLE FACER / SMART

ROLL STAND AND SPLICER / LINK M3

GLUE UNIT / THERMOSTACK + CREST

DOUBLE FACER / EXPRESS

