



Erhardt+Leimer

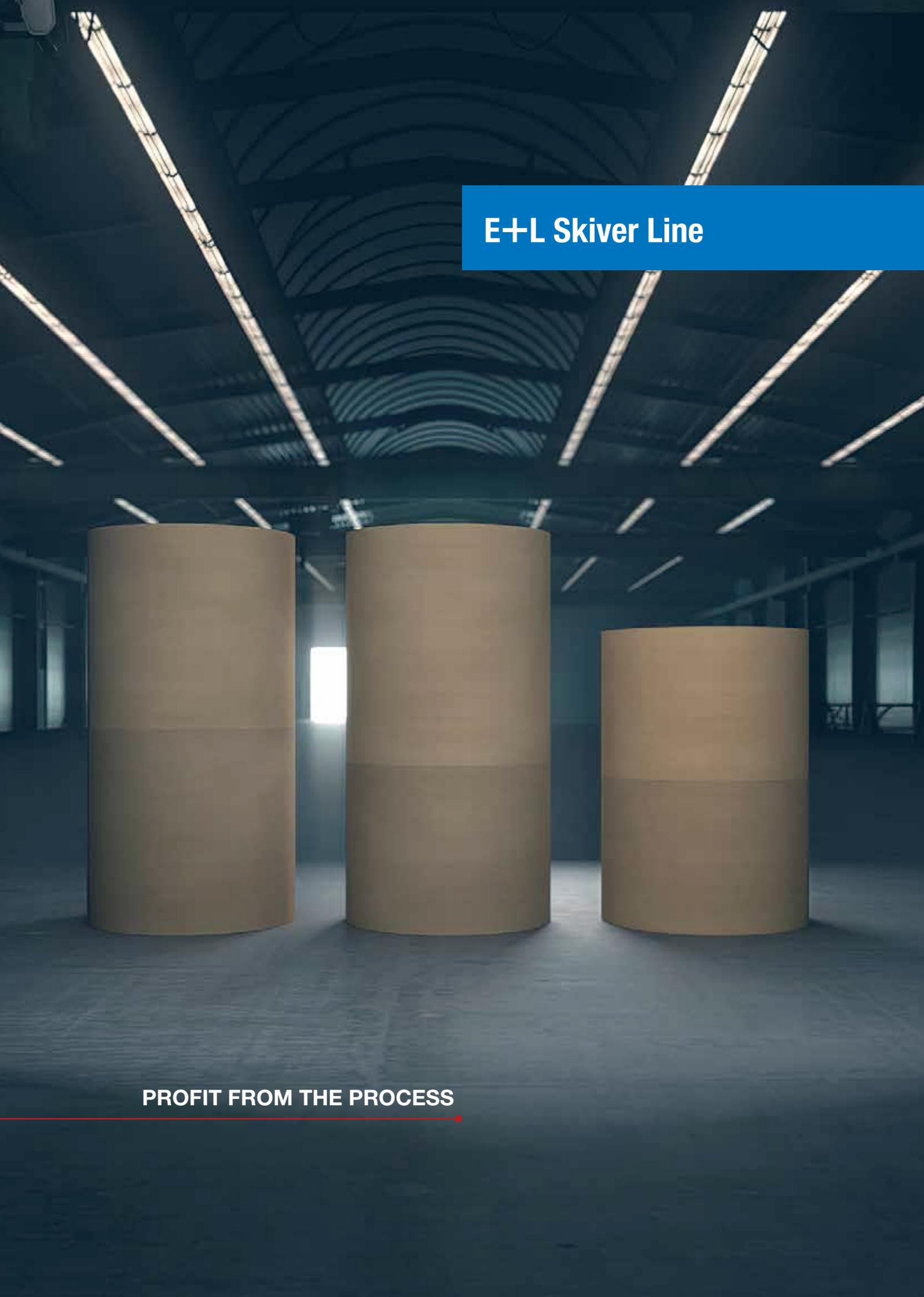
E+L Skiver Line

One-step process to join narrow rolls



Contents

The Skiver Line process: Increase profitability in one step	4
Input roll details	5
Skiver Line process overview	5
Skiver Line machine details	6
Skiver Line options	8
Technical data	10

The image shows three large, vertical rolls of paper standing in a dark industrial space. The ceiling is high and features a complex, curved metal structure with several long, parallel light fixtures. The rolls are positioned in the foreground, and the background is dimly lit, showing some structural elements of the factory.

E+L Skiver Line

PROFIT FROM THE PROCESS

The Skiver Line process: Increase profitability in one step

The Skiver Line allows paper manufacturers and corrugated box producers to increase their profitability by utilizing the narrow paper rolls which result from the paper manufacturing and slitting process at the paper plant.

The Skiver Line is a one-step process which joins two narrow rolls to form a full width paper roll which can then be converted into corrugated sheets without any adverse effect to the performance of the finished box.

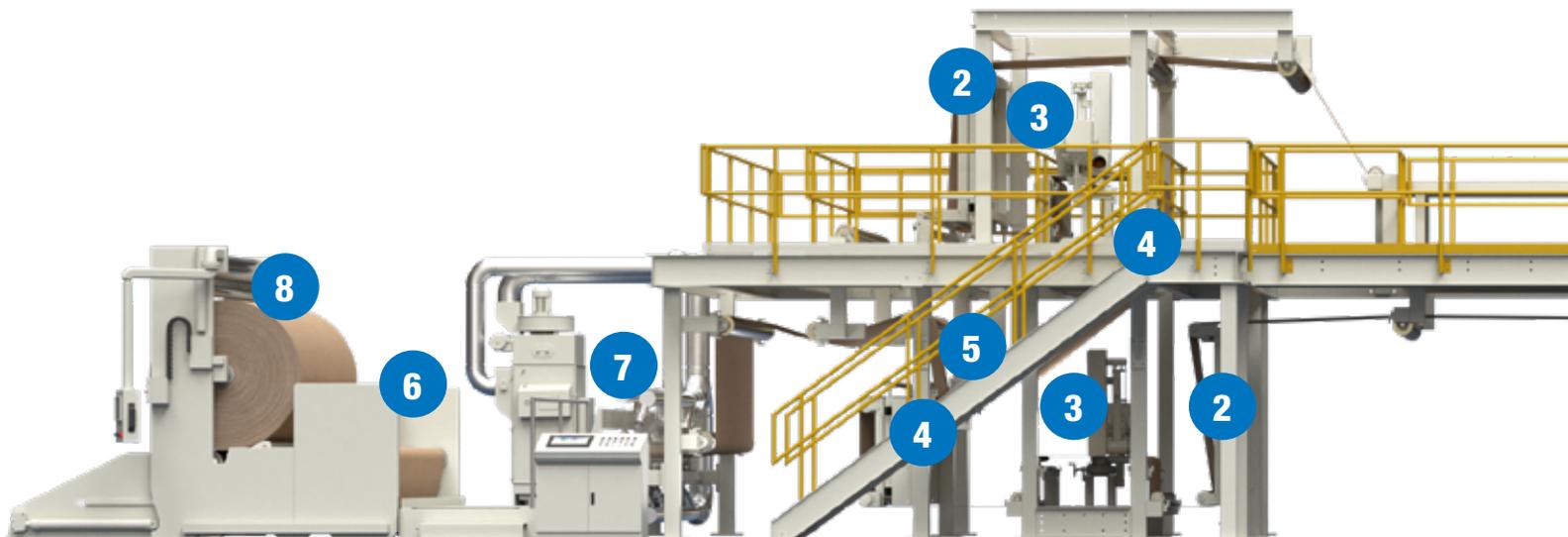
Utilization of narrow reels ensures that paper producers can eliminate the costs associated with recycling narrow paper rolls which can not be sold. Similarly, corrugated box producers can

reduce the cost of production by taking advantage of the price discount associated with narrow rolls which can not be run on a standard corrugator.

Central to the Skiver Line process is the center splice function which joins the two paper webs and converts the narrow rolls into a full width roll. The first step in creating the center splice is to grind the two corresponding paper edges to form an accurate chamfer profile. Glue is then applied to one paper edge and the two paper webs are constantly guided together to ensure an accurate and consistent center splice which has constant thickness.

Optimum machine efficiency is ensured by the inclusion of automatic splicing systems within the unwind section. The rewind section features a two drum surface rewinder to ensure optimum rewind quality and ensuing maximum unwinding performance on the corrugator.

In order to keep production costs at an absolute minimum, the Skiver Line has been designed to be able to be run by only two operators. The robustness and reliability of the Skiver Line is synonymous with all E+L products, allowing the Skiver Line to be utilized 24/7 with minimal scheduled maintenance.



Input roll details

Paper width combinations

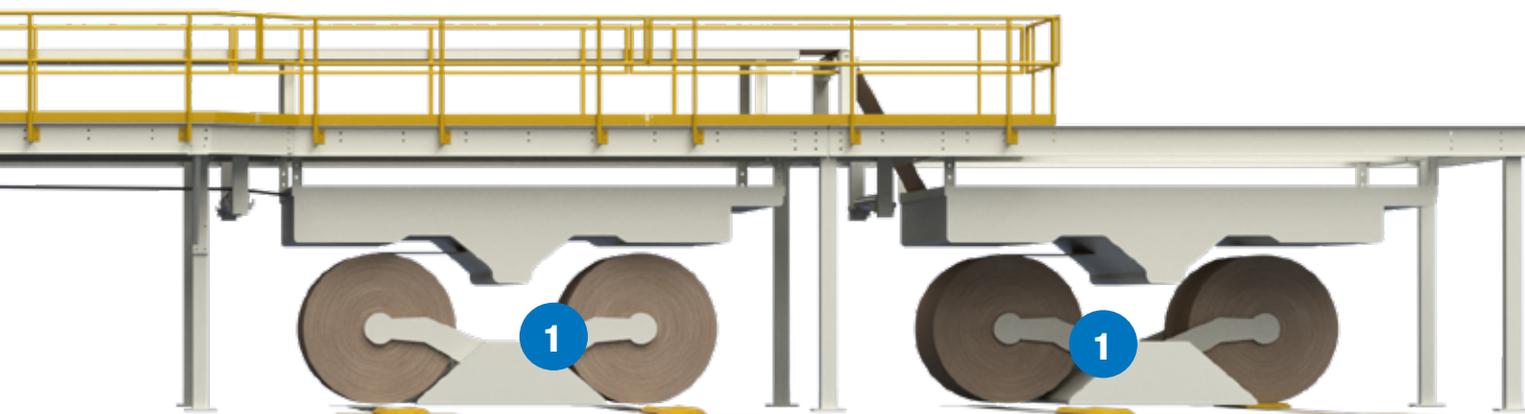
- Widths from 500 mm to 1.400 mm (20"-55")
- Asymmetric widths can be joined
- Roll diameters can vary

The unwind section configuration can limit the above possibilities.



Skiver Line process overview

- Two narrow rolls are loaded into the roll stands and prepared for the upcoming splice whilst the Skiver Line is running.
- Guiding systems guide the paper webs into the two grinding systems to ensure consistent positioning of the two chamfers.
- Grinding systems create a consistent chamfer profile on the corresponding center edges of the two paper webs. Grinding dust is removed by the plant vacuum system.
- Guiding systems guide the two paper webs into the lamination point to ensure they are correctly positioned for the center splice.
- The Glue application system ensures that the minimum amount of glue is applied to the edge of one paper web before the center splice takes place.
- If included in the scope of supply, the edge trimming system trims the full width paper to ensure a constant width which results in the finished full width roll having a high quality side wall profile.
- If included in the scope of supply, the ELCLEAN system removes residual dust created by the Skiver Line process and the paper manufacturing process thereby increasing the value of the finished full width roll.
- The full width paper is rewound on a surface rewinding system. When the desired rewind diameter is achieved an automatic cross cut severs the paper and the finished full width roll is lowered to the floor. The operator then loads the new core to enable the next rewind cycle to begin.



Skiver Line machine details

Unwind section

- Two roll stands and two splicers are used to ensure optimum machine efficiency and provide maximum flexibility with regards to the widths and diameter of the narrow rolls to be joined.
- A special design single roll stand and splicer can be used when customers have space restrictions.



Operator control interface

- The HMI (human machine interface) touch-screen allows the operator to control and review the complete Skiver Line.



Guiding systems

- Guiding systems guide the paper webs into the two grinding systems to ensure consistent positioning of the two chamfers required for the center splice.
- Guiding systems guide the paper webs into the lamination point to ensure they are correctly positioned for the center splice.



Tension measurement systems

- Load cells are incorporated into the guiding systems to measure the tension of the left and right paper which is then displayed on the operator control interface.
- The tension measurement system is used to control the brakes on the unwind roll stands.



Skiver Line machine details

Grinding systems

- One grinding system per paper web creates the chamfer profile on the corresponding edge and surface. Control of the chamfer profile is of utmost importance to ensure a high-quality center splice with constant thickness.
- A fine adjustment raises/lowers the grinding system to allow precise adjustment of the chamfer profile.



Glue application system

- The cold-set glue applicator is located at the center splice point.
- Minimal glue application is applied to the chamfered edge of one narrow paper web.
- A glue pump is included for customer supplied cold-set glue tote or barrel.



Rewinder section

- A two-drum surface rewinder system produces a standard full width paper roll.
- A kick-out mechanism moves the roll to the adjacent J-table and lowers it to the floor.
- Rewinding recommences after the operator has inserted a new core.



Skiver Line options

Option 1:

Edge trimming system

- The edge trimming system ensures a constant paper width resulting in the finished full width roll having a high-quality side wall profile.
- The edge trimming system will utilize the customer's trim suction unit.



Position of trimming system

Option 2:

Video display system

- Various process points within the Skiver Line can be monitored by cameras and displayed on a large screen at the operator control station.



Option 3:

ELCLEAN system

- The ELCLEAN System removes residual dust created by the Skiver Line process and the paper manufacturing process. Top and bottom vacuum cleaning heads ensure that both surfaces are cleaned.
- A dedicated filter fan unit with self-cleaning filter function is included with the ELCLEAN system.



Option 4:

Production display screen

- A 95" screen display can be included to display the current job and Skiver Line performance data.
- The display can be customized to meet customer requirements.

Line speed	1,200 fpm
Average speed	1,021 fpm
Total linear	23,157 ft
Shift linear	156,846 ft

Line speed	400 m/min
Average speed	387 m/min
Total linear	7.719 m
Shift linear	52.282 m

Skiver Line options

Option 5:

Scheduling software interface

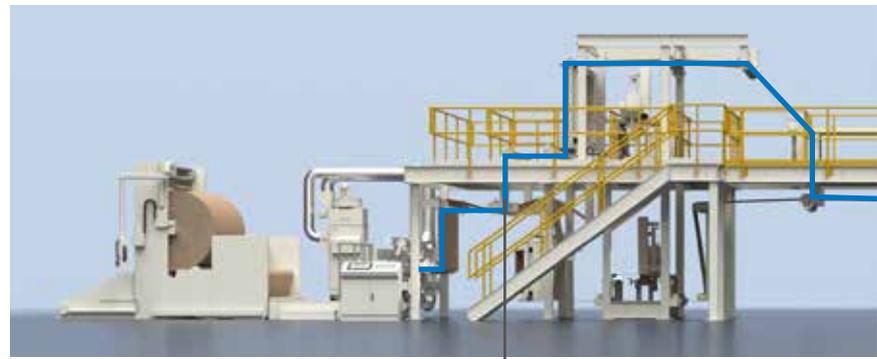
- E+L offers the interface development to customers inventory control software for keeping track of used end rolls and full width rolls produced on the Skiver Line.
- The interface can also be used to supply data to the customer supplied label printing system.



Option 6:

Full width paper capability

- Full width paper can be run through the Skiver Line, bypassing the processes used to create the center splice. This option can be used to splice multiple short rolls into one large roll.
- Damaged rolls can be run through the Edge Trimming System to ensure that the finished roll will have a high-quality side wall profile.



Position of full width paper

Option 7:

Coater/Printer integration

- A customer supplied coater/printer can be integrated, allowing the coating of full width paper. This could replace a dedicated coating/printing line.

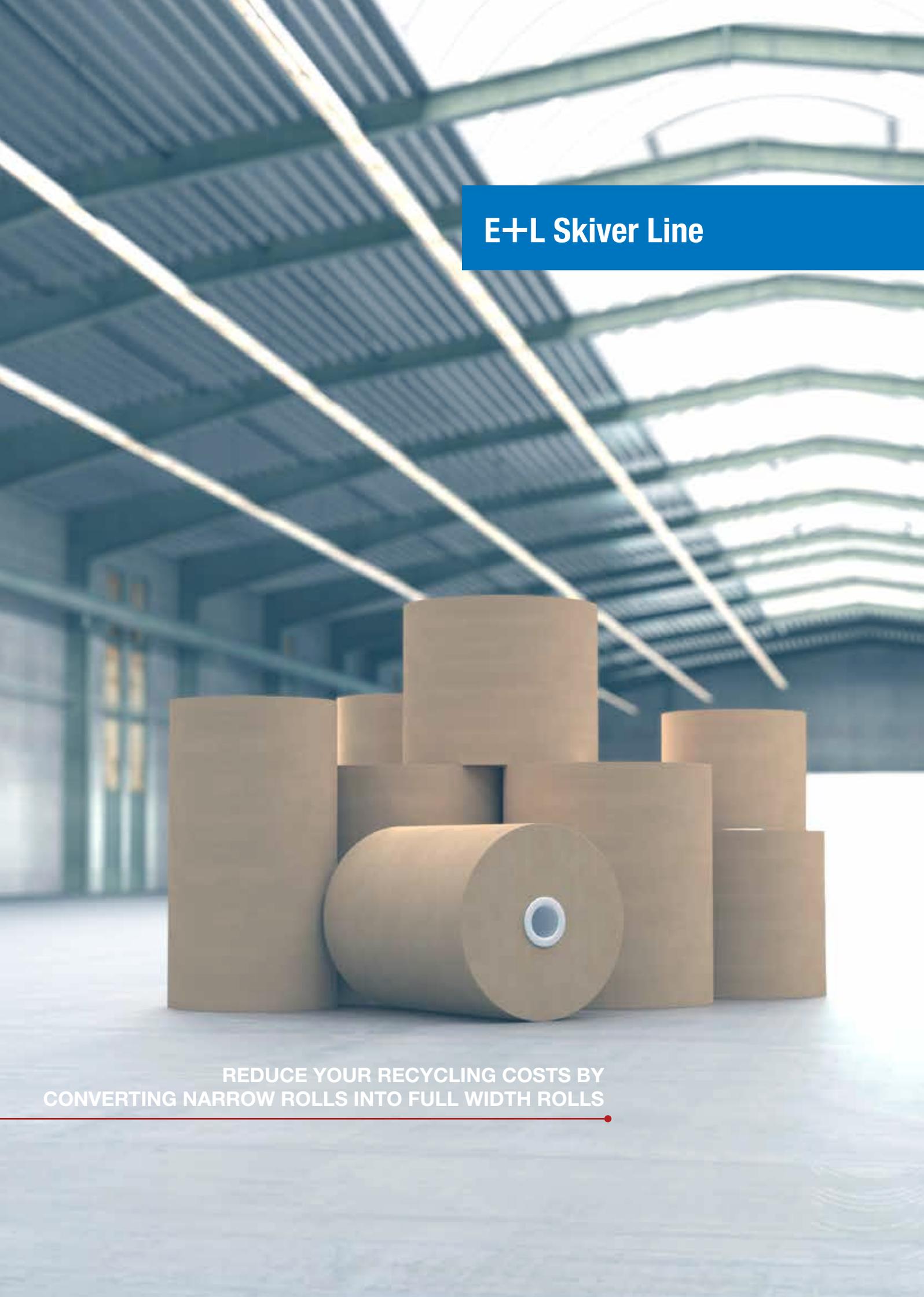
Note: Option 6 will also be required if option 7 is included.



Position of coater or printer

Technical data

		Metric				Std. (Imperial)			
		min.	max. 2,5 m	max. 2,8 m	UOM	min.	max. 98"	max. 110"	UOM
Paper type	Recycled / Test / Kraft								
Paper weight		90	225	225	g/m ²	23#	53#	53#	lb/sqf
Roll weight max.	Rewind		3.400	3.820	kg		7,500	8,400	lbs
Roll weight max.	Unwind		1.700	1.910	kg		3,750	4,200	lbs
Final paper width		1.000	2.500	2.800	mm	40	100	110	inch
Incoming paper width		500	1.250	1.400	mm	20.00	50.00	55.00	inch
Final paper roll diameter (min. = core dia)		100	1.500	1.500	mm	4	60	60	inch
Mechanical max. speed	@ 23 lb/sqf 90 g/m ²		300	300	m/min		1,000	1,000	fpm
Mechanical max. speed	@ 40 lb/sqf 170 g/m ²		230	230	m/min		750	750	fpm
Mechanical max. speed	@ 53 lb/sqf 225 g/m ²		150	150	m/min		500	500	fpm
Paper tension process section	Standard		3,5	3,5	N/cm		2.0	2.0	pli
Paper tension rewind section	Standard		10,0	10,0	N/cm		6.0	6.0	pli
Paper tension (process L/R absolute)			450	500	N		100	110	lbs
Paper tension (rewind absolute)			2.700	3.000	N		600	660	lbs
Operating voltage	480 V, 3 ph, 50/60 Hz								
Air pressure		2	7	7	bar	30	100	100	psi
Temperature range		2	40	40	°C	35	105	105	°F
Machine color	RAL 1013	Oyster white							
Electric cabinet color	RAL 7032	Pebble gray							
Documentation	English								

The background of the image is a large, modern industrial warehouse. The ceiling is made of a complex, grid-like structure of dark grey or blue corrugated metal panels, with several long, bright fluorescent light fixtures running across it. The floor is a smooth, light-colored concrete. In the foreground, there is a stack of several large, cylindrical rolls of brown cardboard. One roll is lying horizontally in front of the others, showing its circular end with a white center. The rolls are arranged in a way that suggests they are being prepared for use or storage.

E+L Skiver Line

REDUCE YOUR RECYCLING COSTS BY
CONVERTING NARROW ROLLS INTO FULL WIDTH ROLLS

North American office

Erhardt+Leimer Inc.
350 Tucapau Road,
Duncan, S.C. 29334; USA
Phone: +1 864 486 3000
info-us@erhardt-leimer.com

Head office

Erhardt+Leimer Stadtbergen, Germany

Subsidiaries

E+L Elektroanlagen Augsburg, Germany · E+L Automatisierungstechnik Augsburg, Germany ·
E+L Steuerungstechnik St. Egidien, Germany · E+L Bradford, England · E+L Mulhouse, France ·
E+L Stezzano, Italy · E+L Bucharest, Romania · E+L Barcelona, Spain · E+L Burlington, Canada ·
E+L Duncan, S.C., USA · E+L Guarulhos-São Paulo, Brazil · E+L Ahmedabad, India · E+L Hangzhou, China ·
E+L Tao Yuan, Taiwan · E+L Yokohama, Japan · E+L Seoul, Republic of Korea · E+L Bangkok, Thailand

Subject to technical modification without notice · GRU--251619-EN-02 · 06/2021 · 494771

