

Machines for strip edge trimming and strip surface treatment

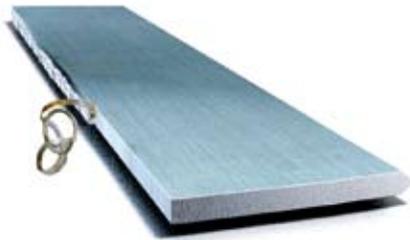
Julius in the course of time

- 1947 Just after the war, Ernst Julius founds the company Ernst Julius KG. He will produce spare parts for the textile industry and shredding machines. Later, machines and lines for the presses, rolling mills and stamping industry as well as de-coilers and re-coilers and special machines for mechanical engineering will be part of the product range.
- 1964 Rolf Julius takes over the company after the sudden death of his father. Under the name of Julius Maschinenbau GmbH the company starts into the next generation.
- 1968 A branch is founded in Emsland.
- 1980 Development of a chamfering machine for strip edges.
- 1988 A new production place is built. Julius moves from Emsland to Wülfrath.
- 1992 To include a bigger circle of customers, the modular range is developed. From now on, the customer has the possibility to integrate modules for strip edge trimming in his line later.
- 1993 Strip edge trimming has become the main part of the company. Thanks to the CNC controlled strip edge trimming and oil grooving line, Julius will become market leader in the field of strip edge trimming.
- 1995 Julius strip edge trimming machines are employed in the tube industry to improve the welded seam.
- 2007 The company Heinz Berger Maschinenfabrik GmbH & Co. KG takes over the company Julius Maschinenbau GmbH and integrates it in the Berger group. Julius starts into the next generation with a strong partner.
- Today Together with the companies Heinz Berger Maschinenfabrik, August Nell and Hauschild, Julius forms a strong team offering a competent solution when the job is strip edge trimming, strip surface treatment or polishing and grinding of strips and pieces.

Strip edge trimming in application

Deburring

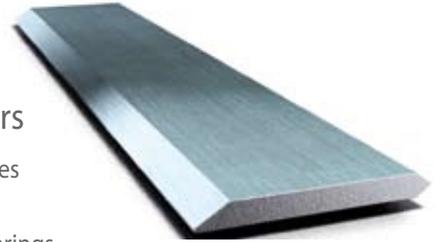
Press and stamping industry, automobile industry, service e.g. for slitting and cut-to-length lines, packaging industry



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Complex contours

Productions of steel rules
Service centres
Production of roller bearings and slide bearings
Metal products



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Traverse winding and multi-coil

Service centres
All other industries



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Covering free edges

Steel section production
Tube production
Electronic industry



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Levelling and calibrating

Service centres
Preparation of the strips for further processes



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Preparation of the welded seam

Tube industry production of steel sections and hollow sections



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Oil grooves

Electronic industry
Packaging industry
Doctor blades
Knife and blade industry
Automobile industry



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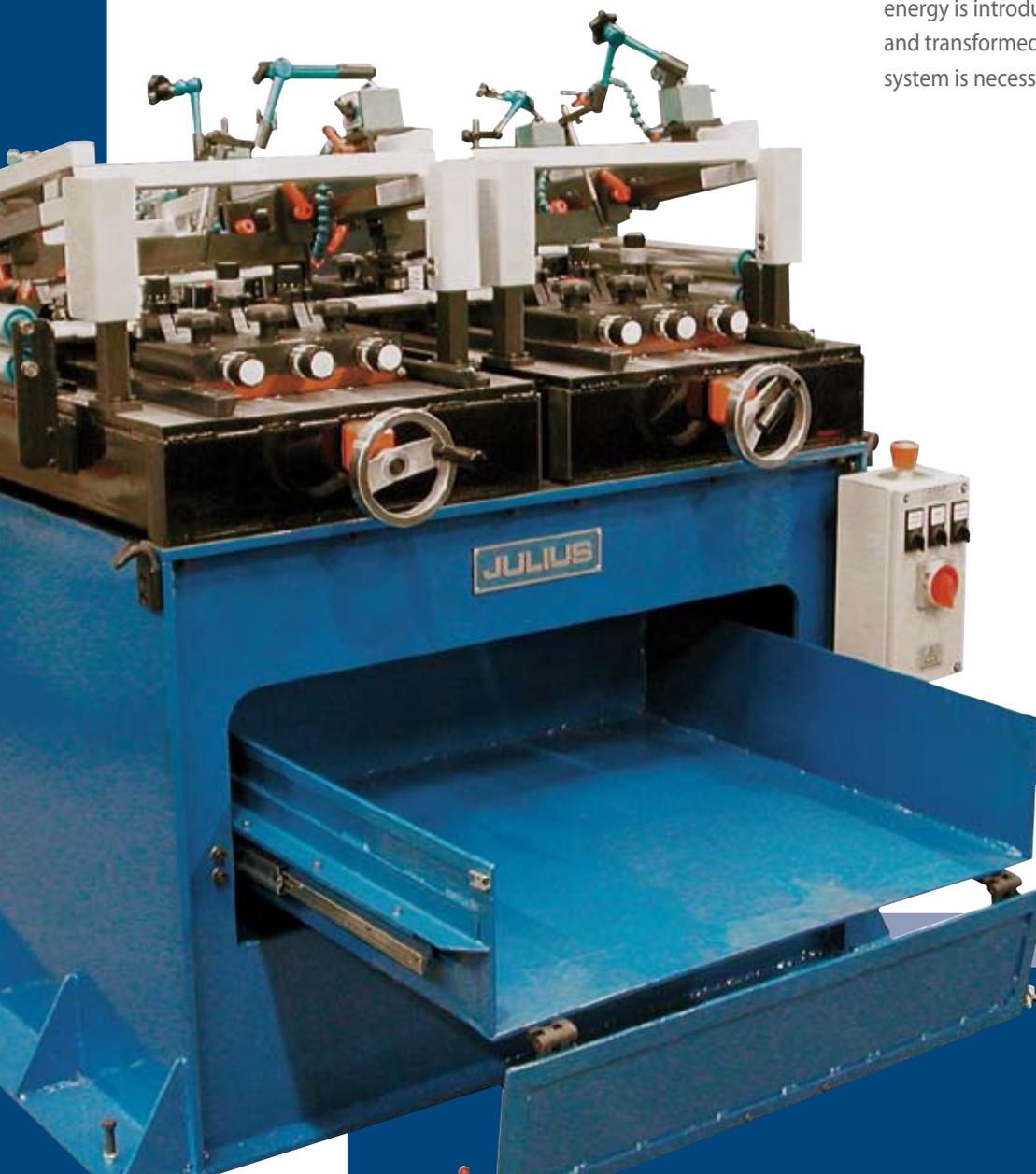
Modular strip edge trimming

From slit edge to finished edge

- When the edge has to be a finished product, the quality of the slit edge does not correspond to requirements.
- The strip edge trimming system of JULIUS puts off the burr. The swarfs are eliminated by a scrap transport system.
- The structure of the surface of the material is preserved.
- Even highest width tolerances are respected.
- In the tube industry strip edge trimming is of great importance to improve the welded seam.

The machine

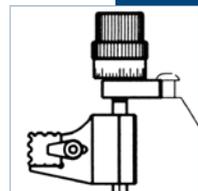
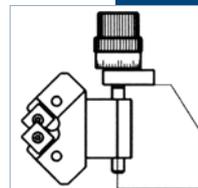
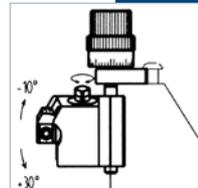
- Treats the edges by machining.
- Can be combined with strip surface treatment.
- Works with 3 tools / module.
- Can be integrated into existing lines.
- The tools can be adjusted flexibly.
- Thanks to a special adjustment even complex contours can be achieved.
- Due to the automatic opening the main supports and the horizontal guides are opened and closed automatically by hydraulics and pneumatics.
- When speed is high and / or the swarf is thick much energy is introduced into the production process and transformed into heat. A cooling and lubrication system is necessary.



DUO strip edge trimming machine with telescopic swarf box



The strip edge trimming machine type OCTO treats the edges of the strip with 24 tools.



The modular system of JULIUS

- The machine / line can be extended module by module so that the number of tools increases.
- Modules of strip edge trimming and strip surface treatment can be combined so that two production processes can be executed simultaneously.
- Also other modules can be integrated as e.g. the TRI-Step-system for the computer controlled horizontal adjustment of the backward tools.



Duo strip edge trimming machine with TRI-Step-system and flanged grooving device

Technical data

Strip width:	max. 1000 mm
Strip thickness:	0,15 mm – 6 mm
Contour:	different contours possible
Speed:	up to 300 m/min.
Strip material:	all kind of machinable material

Options of the machine

- Automatic opening
- Hydraulics and pneumatics
- Lubrication of the tools
- Cooling system for the tools
- Swarf blowing system

Travers winding and multi-coil systems

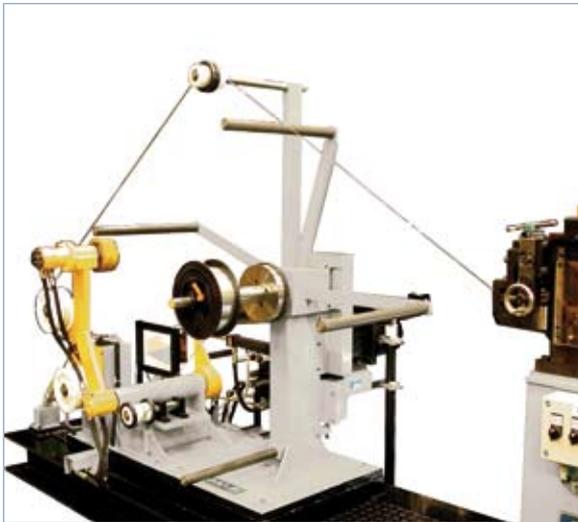
From coil to spool

- The traverse winding guide can be adjusted infinitely variably at different guiding widths.
- Different strip widths can be exchanged easily.
- With the cinematic traverse winding guide it is possible to spool near the coil.
- In this way the lateral movement is optimized.
- A fixed traverse winding guide is perfect when weak cross sections have to be treated.

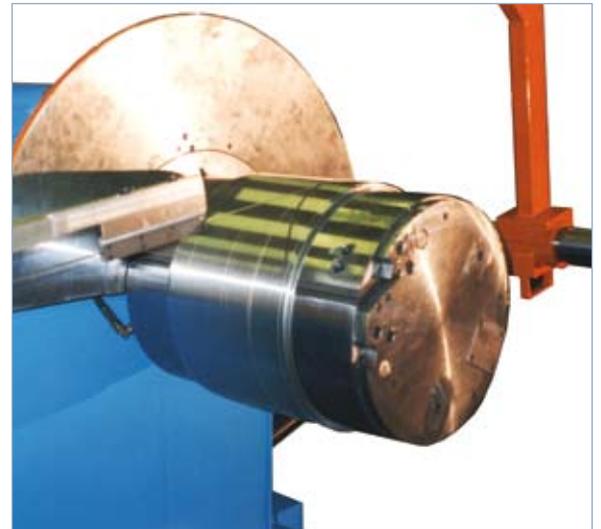
The modular line

- Combines strip edge trimming and traverse winding.
- Combined with strip tension regulation it can trim and traverse wind a big range of strip cross sections.

Strip edge trimming is sensible when the strip has to be spooled to avoid damages at the strip surface due to the burr at the strip edge or when small strips have to be wound.



Traverse winding system at the de-coiler with flat levelling machine: A special strip guide and a dancer with strip tension system make it possible that the strips can be traverse wound.



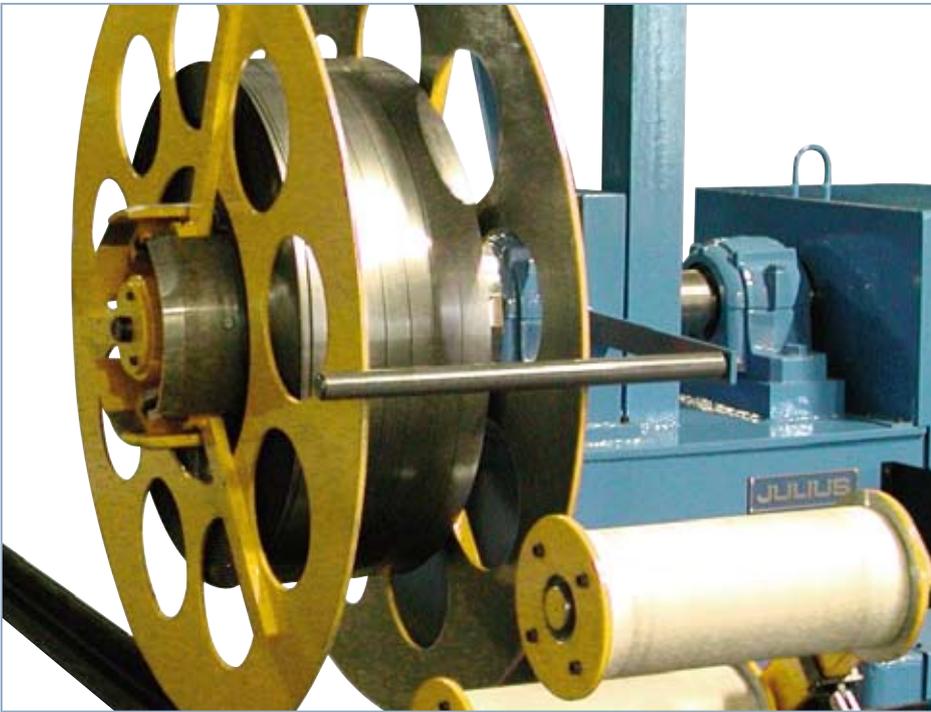
Traverse winding system at the re-coiler: With fixed traverse winding guide for optimized lateral movement

Technical data

Spool width:	300-400 mm if nothing else is arranged
Spool weight:	2,7 t max.
Strip width for traverse winding:	3-50 mm
Strip material:	all kind of machinable material

Traverse winding at the re-coiler

Choice between fixed or flexibly adjustable traverse winding guide
Strip tension regulation with S-bridle and dancer
Can be combined with strip edge trimming
(More options see p. 11)



Multi-coil system:
Reception of several coils which
are treated one after another



Strip edge trimming and traverse
winding line with:
De-coiler with traverse winding system,
dancer at the de-coiler side, flat levelling ma-
chine type DRAP, pad brake, strip edge trimming
machine type QUATTRO, stripper, re-coiler with traver-
se winding system and tension regulation

Traversal winding at the de-coiler multi-coil

- Special strip guide
- With dancer and strip tension system
- Pad brake
- 2 lateral guides

- Width of the slit strip pack:
250 mm if nothing else is arranged
- One by one, each coil of the slit strip pack
is positioned at the middle of the coiler.
- Weight of the slit strip pack: 2 t if nothing else is arranged

Strip tension regulation

Less strip tension for a major spectrum at strip cross sections

During certain strip treatments (e.g. machining a complex chamfer in the strip edge) the strip tension is too large if the strip cross sections are small.

In this case the strip tension is reduced with S-bridle and dancer.

Even thin and narrow strips can be treated and spooled afterwards or can be coiled for larger coil diameters.



Strip edge trimming line with: re-coiler, dancer, S-bridle, window roller, strip edge trimming line type DUO, flat levelling machine type de-coiler

Technical data for S-bridle

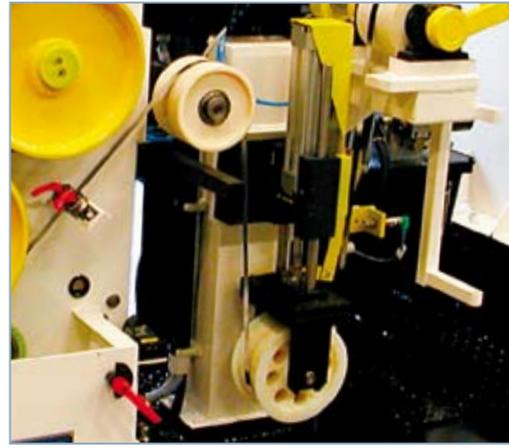
Strip tension reduction up to 1/5 and more

Technical data for dancer

Further strip tension reduction on lower level



S-bridle at the re-coiler side



Dancer at the re-coiler side



S-bridle

- Used for strip tension regulation , when the strip tension is reduced during the coiling process or when tractive forces must be increased.
- Further drums increase the F2-strip tension regulation accordingly.
- An automatic slip control is integrated in to the S-bridle.
- The use of the S-bridle is necessary for the treatment of edges with weak strip cross sections.

Dancer at the de-coiler side

Dancer

- Displaces the range of strip tension reduction.
- Even very small strip cross sections can be processed.
- Minimizes the de-coiler brake tension.
- Disconnects the strip tension from the coil bulk.

Range of use:

- Strip edge trimming lines
- Oil grooving lines
- Traverse winding lines
- All lines where the strip tension has to be controlled or even reduced



Levelling and calibrating

Strip levelling in preparation for further operating processes

- For further operating processes as e.g. treatment of the strip edge or strip surface, strip must be flat and straight.
- Coil set and edge bow must be dressed, so that further operating processes can take place perfectly.

Flat levelling machine DRAP

- Slight levelling of strip material.
- Reduces waviness of the strip.
- Removes coil set.
- Expandable with motor, supporting rolls and pinch rolls.



Strip edge trimming line with (right to left) de-coiler, flat levelling machine DRAP, vertical levelling machine, strip edge trimming machine type QUATTRO, brushing machine, S-bridle, dancer and re-coiler, F2-system



Brushing machine type BS

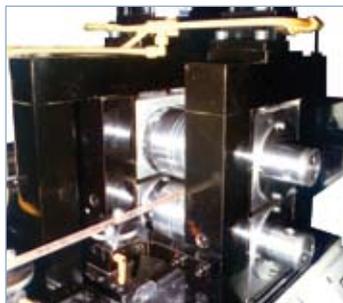
The brushing machine type BS removes pollutants on the strip surface. It consists of two easily exchangeable brushes.

Vertical levelling machine HDR

- Reduces the edge bow of the strip.
- For narrow strips with according thickness/width ratio.
- Can be easily integrated into existing lines.

Window roller FW0500

Used to calibrate the strip thickness with an accuracy of 0,005 mm.



Window roller type FW0500



Flat levelling machine type DRAP integrated into strip edge trimming line



Vertical levelling machine type HDR flanged at a strip edge trimming machine type DUO

Flat levelling machine DRAP

Strip width:	up to 1000 mm as a standard
Strip thickness:	up to 6 mm
Levelling rolls diameter:	variable according to the strip thickness
Number of rolls:	variable

Vertical levelling machine HDR

Strip width:	up to 50 mm with certain width to thickness ratio
	5 sets of vertical levelling rolls
	5 sets of positioning rolls

Measurement and CNC technology



CNC technology

- Use of servo motors to move the tool and roll holder
- Integration of measuring systems for adjustment as well as for compensation of tool wear.

Measurement technology

- Width and thickness measurement by laser systems.
- Identification of radii and angle by camera systems.
- Integration in closed loop in connection with CNC control or as supervision with warning signal.
- Integration of measuring systems for adjustment as well as for compensation of tool wear.

Computer controlled tools in connection with measurement technology



DUO strip edge trimming machine with strip width measurement system

Brushing machine BS

Brush width: 70 – 500 mm
Brush diameter: 70 – 250 mm
Number of brushes: 2
Capacity: 0,5/0,75/1,5 kW

Window roller FW 500

Strip width: up to 50 mm
Strip thickness: up to 3 mm
Motor capacity: according requirements

Machines for the treatment of the strip surface

The groove on the strip surface

- For some processes of manufacturing it is necessary to treat the edge as well as the surface of the strip. During the production of hollow sections e.g. one lap of the coating is removed so that the strip can be welded on itself.
- The grooving systems (NU and TRI-NU) remove a layer from the strip and machine one or more grooves into the strip surface.



DUO strip edge trimming machine with double grooving machine type NU 203



Grooving machine type TRI-NU



Double grooving unit DNU U treats the strip from below

The machine type NU 203

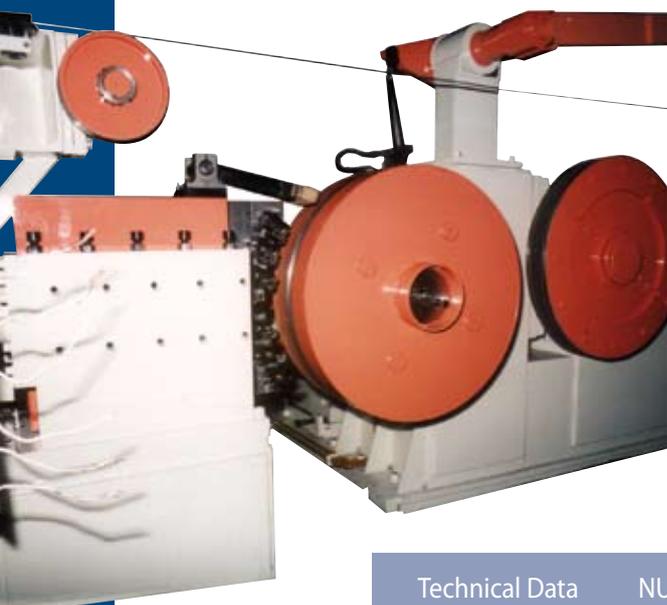
- Treats the surface by removing the swarf.
- Can be combined with strip edge trimming.
- Works with one tool per module.
- Can be integrated into existing lines.
- Tool can be adjusted vertically or horizontally.

The machine type TRI-NU

- Treats the esurface by removing the swarf.
- Employed when deep and/or wide grooves have to be machined into the strip surface.
- 3 tools are arranged in a special adjustment.
- Tools are vertically and horizontally adjustable.
- Can be integrated into existing lines.
- Can be extended later.

Groove dressing machine

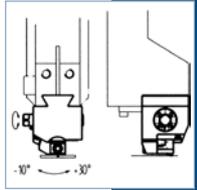
- machines a groove into the surface with 7 tools.
- for complex treatment for cross-section from 15mm² on and for tensile strength, on which the strip would break.
- Groove depth is computer controlled and adjusted on limit of tolerance automatically.
- Works with up to 3 tons cutting force.
- Tool lubrication integrated.
- Defect markings.



Groove dressing machine integrated into a strip edge trimming and grooving line.

Technical Data	NU	TRI-NU	options of the machine
Width of the groove	max. 3 mm	max. 20 mm	lubrication system
Depth of the groove	0,1 - 0,2 mm	0,02 - 1 mm	special tool holders
Number of the grooves	1 groove / machine	max. 3	swarf blow off system
Speed	up to 110 m/min	up to 100 m/min	flexible swarf deflector unit FSL
Strip material	all kind of machinable material		

Lines for the treatment of the strip surface



The groove on the strip edge

- If the cutting edge shall become a functional edge, the quality of slit strips doesn't meet demands.
- If the strip is very hard or if a lot of material must be removed from the surface of the strip edge it's useful to treat the strip edge from above. In this case the groove dressing machines are used. So even complex contours and long chamfers can be machined into the strip edge.

TRI-NU grooving line

- Treats the strip surface by removing the swarfs.
- Works with 3 tools per machine.
- Flexible, three-axle adjustability of the tools.
- Draws up to 3 grooves into the strip surface simultaneously.
- Can be retrofitted with further modules (levelling machine, brushing machine...).



Modular strip edge trimming and oil grooving line with de-coiler, flat levelling machine type DRAP, two DUO strip edge trimming machines, oil grooving machine type NU 203, brushing machine and re-coiler

Modular oil grooving line

- Machines the strip edge and the strip surface simultaneously.
- Can be extended later - modul by modul.
- Can be retrofitted with further muduls as e.g. levelling or brushing machine.



Tool adjustment at the TRI-NU oil grooving line

The oil grooving line with de-coiler, strip pull-in, two oil grooving machines type TRI-NU, strip thickness measurement and re-coiler



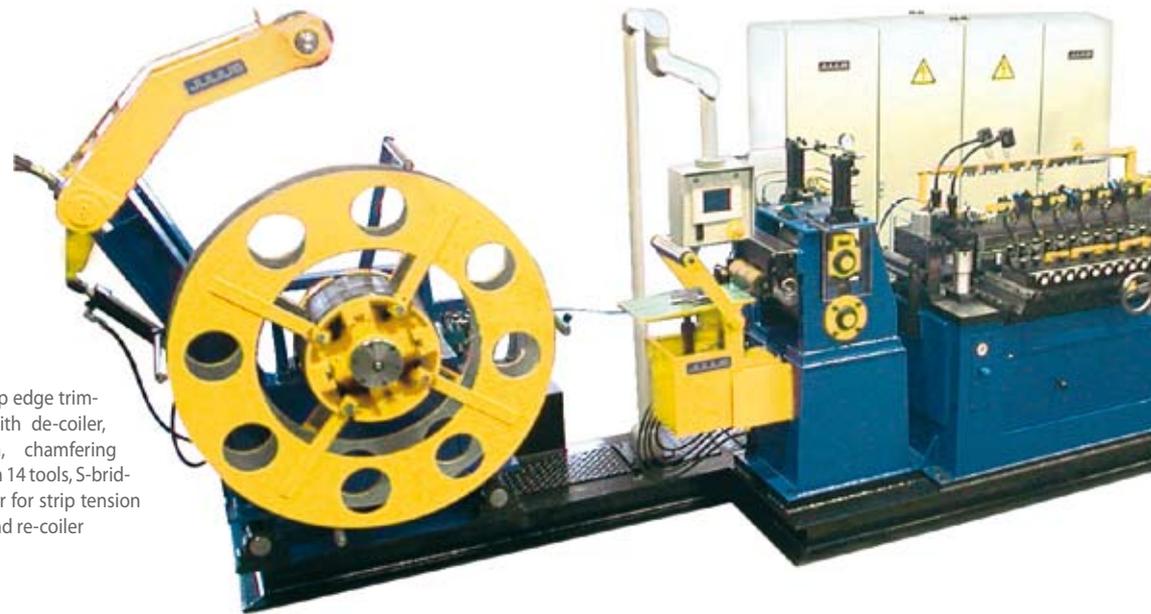
Technical Data

Width of the groove:	max. 20 mm
Depth of the groove:	max. 1 mm
Number of the grooves:	max. 3 / machine
Speed:	up to 100 m/min
Strip material:	all kind of machinable material

Options of the line

- Strip tension systems for extreme strip cross sections
- Traverse winding and multi-coil systems
- Flat and vertical levelling machines
- Strip thickness and strip width measurement system
- Swarf removal, brushing machine

Lines for strip edge trimming



Compact strip edge trimming line with de-coiler, strip pull-in, chamfering machine with 14 tools, S-bridle and dancer for strip tension regulation and re-coiler

Advantages of the swarf removing strip edge trimming of JULIUS

- The burr is cut and removed so that no more burr pieces can loosen while the strip is bended round.
- While the material flows crossways during the rolling process it isn't changed with strip edge trimming by removing the swarf.
- A special adjustment allows to machine even complex chamfers and contours into the strip edge, without changing the surface structure.

The line

- Trims the edges by removing the swarf.
- Works with 14 tools in a special adjustment.
- Can integrate a traverse winding and multi-coil system as well as strip tension technology for extreme strip cross sections.
- Can be combined with systems of the surface treatment.

Technical Data

Strip width:	max. 1000 mm
Strip thickness:	0,15 mm – 6 mm
Contour:	different contours
Speed:	up to 300 m/min
Strip material:	all kind of machinable material

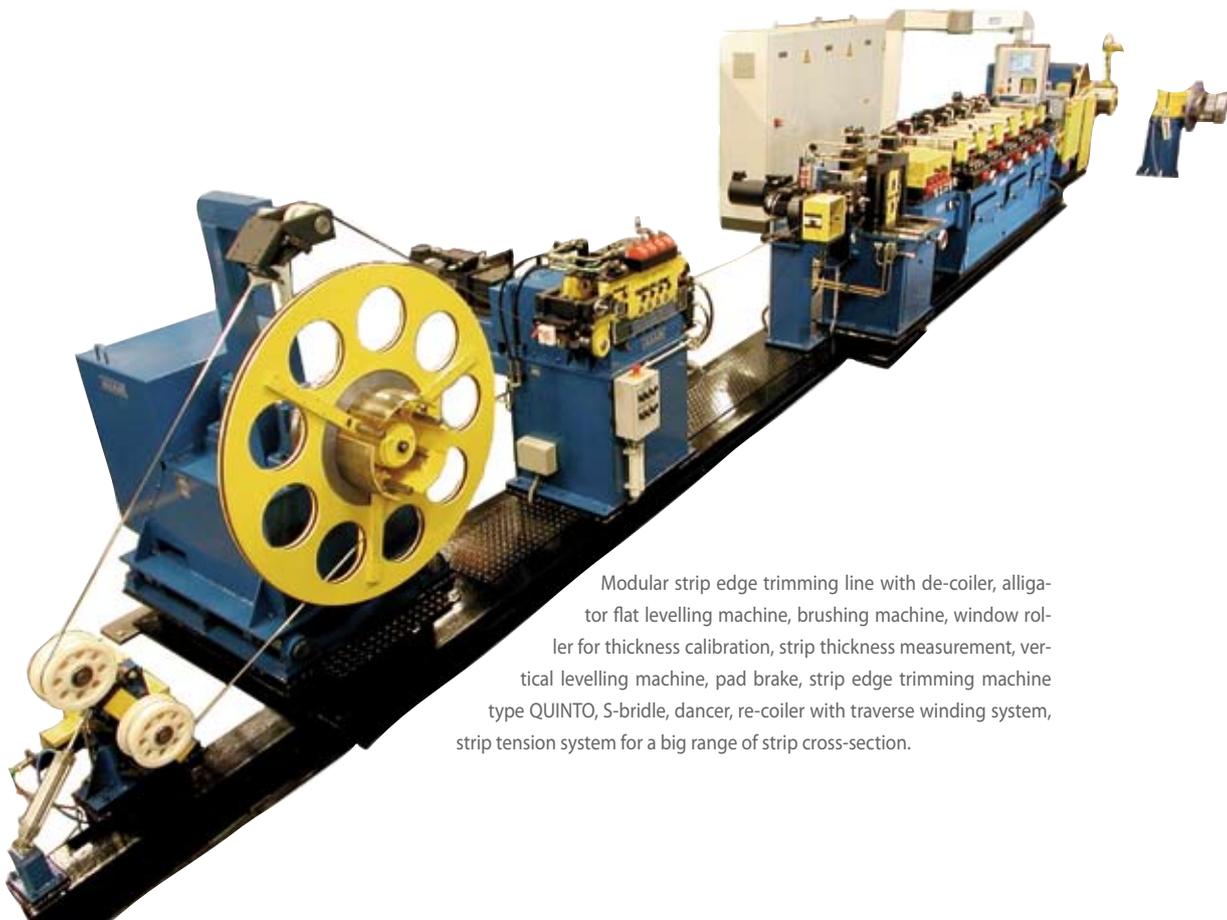
Options of the line

Strip tension systems for extreme strip cross sections
Traverse winding and multi-coil systems
Flat and vertical levelling machines
Strip thickness and strip width measurement system
Swarf removal, brushing machine



The modular line

- Treats the edges by removing the swarf.
- Works with 3 tools per module (here 5 modules).
- Can integrate traverse winding and multi-coil system as well as strip tension technology.
- Can be extended later – module for module.
- Works with a special adjustment so that even complex contours can be realized.



Modular strip edge trimming line with de-coiler, alligator flat levelling machine, brushing machine, window roller for thickness calibration, strip thickness measurement, vertical levelling machine, pad brake, strip edge trimming machine type QUINTO, S-bridle, dancer, re-coiler with traverse winding system, strip tension system for a big range of strip cross-section.

Powerful partners under one roof ...



The Berger group has expanded and fortified its market position with the integration of new partners. Now it consists of:

Heinz Berger Maschinenfabrik GmbH & Co. KG

Hauschild GmbH

August Nell jr. GmbH

Julius Maschinenbau GmbH

Joint development, engineering, manufacturing and customer service is provided from the corporate headquarters in Wuppertal-Cronenberg.

250 years of experience in grinding and polishing applications as well as strip edge machining are united together.

Our customers will profit from the synergetic effects in engineering, manufacturing, and purchasing as well as service and individual support - while preserving the identity of each partner!

... the Berger Group!

