

The LWDS Loop Winder Drum Stand range is designed to compliment Ridgway's range of loop winders during the loop winding process. A fabricated steel frame with cantilever drum shafts support the conductor drums. The number of drum positions can be configured to suit individual customer requirements.

- The drum shafts carry individual back tension brakes, comprising of a brake drum onto which a brake shoe operates.
- Each drum shaft has individual tension adjustment. The tension adjustment is provided via a pneumatic cylinder connected to an individual lever valve with a pressure regulator and visual pressure gauge.



MODEL	LWDS2	LWDS4	LWDS6	LWDS8	LWDS10	LWDS12
DRUM DIAMETER			Max	.800mm		
DRUM WIDTH			Max	.235mm		
WEIGHT OF DRUM			Ma	ax. 150kg		
DRUM CONFIGURATION	2 x 1	2 x 2	2 x 3	2 x 4	2 x 5	2 x 6



Active drum tension control

Compared to the alternative of the LWDS friction braking, active tensioning offers a wear free solution with accurately controllable individual constant drum tensions.

Tension adjustment for each drum is provided via a HMI on the winder control panel.

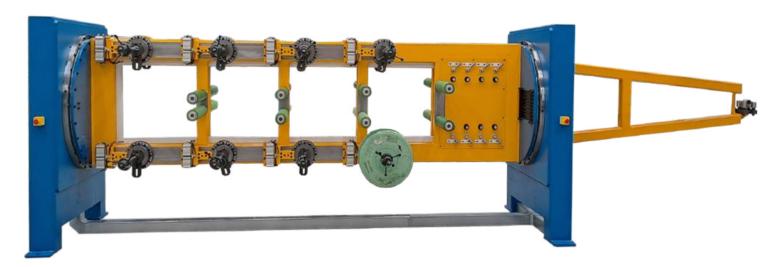
Tension range is 0 – 35kg per drum and is constant throughout the life of the drum.



The LWDS-R Rotating Loop Winder Drum Stand range is designed to rotate 180 degrees to assist in end-winding transposition of looped coils during the loop winding process. The number of drum positions can be configured to suit individual customer requirements.

SPECIFICATIO	N
DRUM DIAMETER	мах. 800mm
DRUM WIDTH	мах. 300mm
DRUM WEIGHT	мах. 150kg
DRUM SHAFT DIAMETER	Ø32mm

The fabricated frame is fixed to a front and rear support structure. Each of these structures includes a bearing system – the rear system consists of a slewing ring arrangement to enable the drum frame to rotate 180 degrees. Rotation of the slewing ring is controlled via a motor and drive system that is operated from a control panel located adjacent to the drum stand. The system is designed to rotate 180 degrees in one direction then back again.



- Cantilevered drum shafts, each with twin bearing units. The drums are mounted to the drum shafts by means of tapered cones to accept a range of drum bore sizes.
- The drum shafts also carry the back tension brake, comprising of a brake drum onto which a brake shoe operates. Tension adjustment for each drum is provided via a cylinder connected to a lever valve and a pressure regulator.
- Teach brake system can be switched on or off via the hand operated valve, with the tensions adjusted by the pressure regulator next to each hand valve, with a pressure gauge for reference.

Loop Winding Machine

For a versatile and cost effective solution to suit your loop winding requirements.

Sturdy construction, free standing control panel and digital turns counter are key features of our loop winding solutions.



Vector motor drive

The W-LMP incorporates the latest vector drive technology. A variable speed geared motor directly drives the main spindle, providing a high torque capability with soft start.

Quick release tooling

Operator friendly solutions for both the conductor clamping and winding pin assemblies. Optional "D" loop tooling also available.

Operator controls

Easy to operate control panel for the adjustment of winding speed and direction of rotation. Large digital turns counter with reset capability.

Guides

Free standing, adjustable conductor guides are incorporated into the winding line as standard.

Quick, accurate set up

All winding beams incorporate a pair of fully adjustable winding pins and a conductor clamping arrangement. For reference, scales are fitted to the winding beam, ensuring fast and accurate set-ups can be achieved.

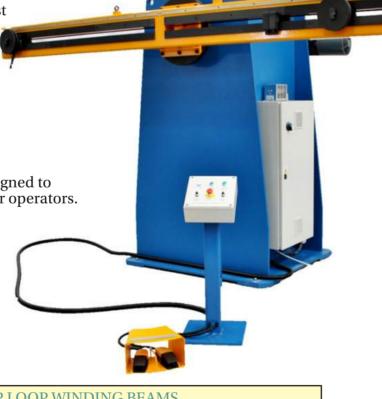
Anti-run back

The winder incorporates an electrically released brake, preventing run back and eliminating tension loss during stopping and starting.

Operator platforms

Optional work platforms are available, designed to ensure a safe working environment for your operators.





W-LMP & W	-LAP LOOP V	VINDING BE	AMS	
MODEL - LWWB	LWWB1500	LWWB2000	LWWB3000	LWWB5000
LENGTH OF LOOP		Min. 35	0mm	
LENGTH OF LOOP	мах. 1500mm	мах. 2000mm	мах. 3000mm	мах. 5000mm
PIN DIAMETER	міп. 15 т	m - мах. To suit с	customer requir	ements
CONDUCTOR WIDTH		міп. З	mm	
CONDUCTOR WIDTH		мах. 50	0mm	
LEAD CLAMP		YI	ES	
D-LOOP TOOLING		OPTIO	ONAL	



The range of Ridgway's W-LAP Loop Winders are used to manufacture precise multi turn looped coils.

Automatic programmable pin positioning, combined with conductor gathering and guidance systems ensure precise and consistent quality.

Programmable winding pin positioning

Automatic winding pin positioning and end of cycle release.

Tooling

V Optional D-Loop tooling available

MODEL	W-LMP1500	W-LMP2000	W-LMP3000	W-LMP5000	W-LMP7000
TORQUE	1500Nm	2000Nm	3000Nm	5000Nm	7000Nm
SPEED RANGE	0-25 rpm		0-20 rpm	<u> </u>	0-15 rpm

Improved quality

Fast, accurate and consistent winding of looped coils.

Anti-run back

The winder incorporates an electrically released brake, preventing run back and eliminating tension loss during stopping and starting.

Quick release tooling

Operator friendly solutions for both the conductor clamping and winding pin assemblies.



Conductor gathering and guidance

Conductor gathering and guidance systems ensure precise and consistent quality.

Servo motor drives

The W-LAP incorporates the latest servo drive technology.

Operator HMI control

▼ Easy to operate control panel for the adjustment of loop length, winding speed. Other functions include the ability to set and count the number of turns per coil and the quantity of coils per set. Coil winding details can also be stored within the control system for future use.



W-3DW - 3D MULTI-AXIS WINDER



Automatic Multi-Axis Narrow Coil Winding Machine

Improve production effectiveness by utilizing the Ridgway W-MAW. Incorporating a programmable multi-axis winding machine with active drum tensioning and conductor guidance systems, the equipment ensures fast, consistent and high quality production of complex shaped stator coils.

Automatic winding without the need for operator intervention.

Main spindle drive

The W-MAW incorporates the latest servo drive technology. A variable speed geared motor directly drives the main spindle, providing a high torque capability throughout the speed range.

Multi-axis winding beam

Encoder feedback ensures accurate positional control of the winding beam. An additional servo driven gearbox, mounted directly to the winding beam also provides rotational movement of the coil tooling.

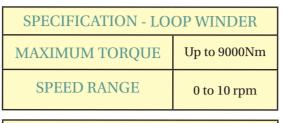
Conductor guidance

Conductor guidance is provided via a free standing guide post to ensure vertical, horizontal and angular positioning is maintained.

Additional servo controlled conductor guidance can also be fitted to the coil tooling if required.

Operator control

Easy to operate control console via HMI to enable operation of the machine, programming of winding sequences and adjustment of conductor tensions. Coil winding details can also be stored within the control system for future use.



SPECIFICATION - WINDING BEAM

MAXIMUM LENGTH Up to 2.5m

Servo controlled beam positioning

Servo controlled tool rotation



▼ Variable tension control

Adjustable guide rollers

Pneumatic break override

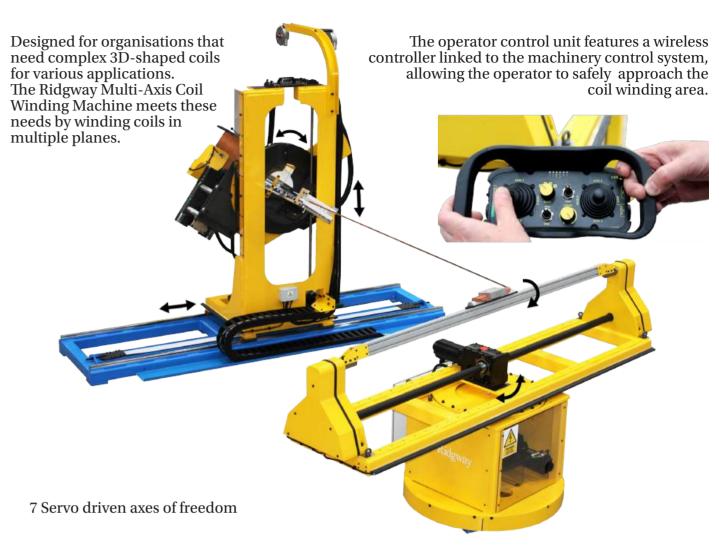
▼ Electrically driven option



Drum stands

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Compared to the alternative of friction braking, the W-MAW offers an electrically controlled wear free solution with accurately controllable individual drum tensioning.



CONDUCTOR PAY-OFF UNIT			
30mm H x 10mm W	MAXIMUM CONDUCTOR SIZE		
750mm	MAX HEIGHT MOVEMENT (Y AXIS)		
2600mm	MAX SIDE TO SIDE MOVEMENT (X AXIS)		
+/-120 ° from datum axis	MAX CONDUCTOR ROTATION (C AXIS)		
20mm per second	MAX LINEAR MOVEMENT SPEED		
30° per second	MAX CONDUCTOR ROTATION SPEED		

PAY-OFF DRUM STAND (STANDARD)				
MAX DRUM DIAN	METER 600mm			
MAX DRUM WI (HEIGHT)	DTH 350mm			
MAX DRUM WE	IGHT 75kg			
MAX PAY-OFF SI	PEED 10 rpm			
CONDUCTOR TE	NSION 50N to 500N +/-10%			

COIL WINDING MACHINE	
MAX BEAM ROTATION SPEED	4rpm
MAX BEAM TORQUE	750Nm
AX BEAM SPINDLE ROTATION SPEED	4rpm
MAX BEAM SPINDLE TORQUE	650Nm



SPECIFICATION				
MAXIMU	M TORQUE	Up to 10000Nm		
SPEED RANGE		0 to 10 rpm		
MAXIMUM ROTOR	W-RHD5000	Up to 5000kg		
WEIGHT	W-RHD10000	Up to 10000kg		



Rotor Tooling

Rotor Winding Machine

For a complete solution to enable the fast and effective winding of rotor pole coils.

Geared servo drive system

The W-RHD incorporates the latest servo drive technology. A variable speed geared motor directly drives the main spindle, providing a high torque capability throughout the speed range.

Pneumatic holding brake

The spindle is fitted with a pneumatic holding brake to ensure a positive stop.

Operator controls

The main control panel used to vary speed and direction of rotation is mounted on a free-standing pedestal giving greater operator flexibility.

Drum stands

A range of single and double friction braked or wear free active tensioned drum stands are available.

Capstan tension unit

- For optimum conductor control a range of pneumatically actuated single or double capstan tension units are available.
- Electrically driven capstan tension units are available

Indexing

Rotor support tooling available, with indexing clamps for repositioning between winding cycles.

Tooling and fixtures

Providing you with greater flexibility, a large faceplate is fitted as standard to enable easy direct fitting of existing tooling. Exclusive tooling/fixture design can also be incorporated offering you a complete solution.



Capstan tension unit

- ▼ Variable tension control
- Adjustable guide rollers
- Pneumatic break override
- ▼ Electrically driven option



Bar Bench Taping Machine

Providing the modern approach to production the BCTVL-B utilizes powered rollers to drive the component through a static taping head having a variable speed of up to 150 rpm.



Electrically driven

The BCTVL-B is an electrically driven taping machine that combines a synchronized rotating taping head and two roller feed units to push / pull the work piece through the machine. The roller feed units clamping pressure is easily adjustable.

Tape application

• Quality of tape application is assured by the powered drive rollers and traverse reversing gearbox arrangement guaranteeing consistent tape overlap. Both the tape overlap and tape tension settings are variable and easily adjusted by the operator if required. Tape can be applied in both directions.

Twin tape applicators

▼ The rotating taping head is fitted with twin tape applicators, enabling the simultaneous application of 2 layers of tape. A wide variety of tapes can be used including mica, glass, Nomex® and Kapton®.

Efficient production

The BCTVL -B effortlessly tapes at up to 8 times faster than traditional methods. Virtually no machine preparation or set up time is required.

SPECIFICATION				
CONDUCTOR CAPACITY	Min. 40mm W x 10mm H			
CONDUCTOR CAPACITY	мах. 150mm W x 50mm H			
TAPE WIDTHS	Min. 20mm			
IM E WIDTHS	мах. 35mm			
TAPE TENSION	1.0kg to 14.0kg			
TAPE SPOOL	Ø 25mm and Ø 55mm core			
TAFE SFOOL	Ø 170mm outside			
MACHINE TAPING SPEED	10 rpm to 150 rpm			
TRAVERSE RATE	10mm/rev. to 40mm/rev.			
MACHINE CENTRE HEIGHT	915mm nominal ± 50mm			
COMPRESSED AIR SUPPLY	6 bar – clean and dry			

Variable lap taping

▼ Head rotation speed and linear speed are fully adjustable to achieve the desired taping pitch / tape overlap. Connected mechanically, the roller units feed the material through the rotating tape pads at the required rate. The ratio of the feed is adjusted through a rotating thumb wheel on the control panel. The speed of the rotating applicator ring is controlled by a foot operated switch from 0 – 150 rpm.

Hot Coil Compaction Press Machine

The HCP Hot Coil Compaction Press is designed to heat and consolidate stator coils & bars. Standard models are available however, each machine can be tailored to the customer's specific requirements.



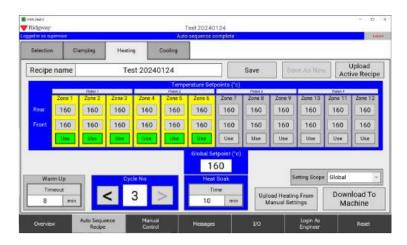
The HCP incorporates a set of hydraulic rams built into hinged arm assemblies across the top length and rear face of the working envelope, with independent hydraulic circuits. Each ram can deliver 10 tonnes of force and the number of rams can be selected to suit specific coil lengths.

Coil heating is achieved using a set of electrically heated platens (heater bars) at the front and rear sides of the machine. Each platen is independently operated/controlled from a free standing HMI cabinet.

After pressure is applied, the platen temperature is raised to a set point and held for a period of time (soak time). The platens are then cooled with an air blast followed by recyclable cooling water prior to hydraulic ram release and unloading of the coils.



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Full HMI Process Control

Full HMI operator control is provided from a free standing cabinet. This covers the entire compaction process from hydraulic, air and temperature control to cooling and power consumption for each of the control zones within the machine, including fault diagnosis.

Heater Platens

▼ Available in a range of sizes

Press space availability

• Can be configured to suit exact requirements

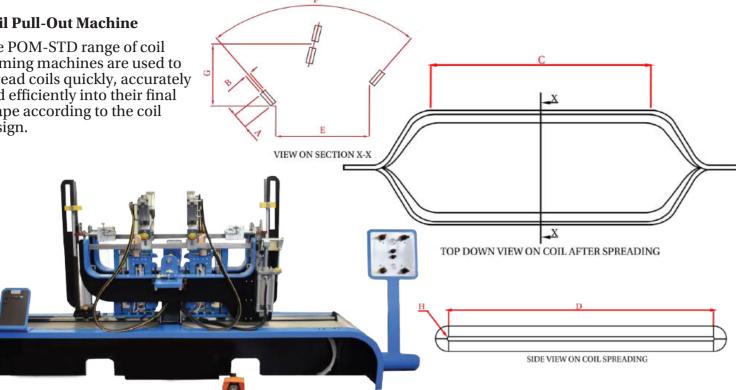
Water chiller/ Recirculating Unit

▼ Interfaced with the HCP through a water manifold arrangement and controlled via the PLC.

	SPECIFICATI	ON				
HCP - HOT COIL PRESS	HPC1000	HPC2000	HPC3000	HPC4000		
TOOLING SPACE AVAILABILITY	мах. 325mm W x 250mm H					
PRESSING SPACE AVAILABILITY		мах. 275mm W x 220mm H				
LOOP LENGTH	мах. 1500mm	мах. 2500mm	мах. 3500mm	мах. 4500mm		
PRESSING LENGTH	мах. 1000mm	мах. 2000тт	мах. 3000mm	мах. 4000mm		
HEATING TEMPERATURE		Typical	ly 165 °C			
NUMBER OF PRESS HEADS	4	8	12	16		
COMPACTION FORCE	10 Tor	nnes per cylinder	r (Horizontal & V	ertical)		
HYDRAULIC SYSTEM		Powered by	Air Multiplier			
HEATER PLATENS	Nom	Nominally 500mm L x 220mm H x 50mm W				
HEATER PLATEN POWER	Nominally 12Kw (per heater platen)					
COOLING CIRCUIT	With	air blast and red	cyclable water co	oling		

Coil Pull-Out Machine

The POM-STD range of coil forming machines are used to spread coils quickly, accurately and efficiently into their final shape according to the coil design.



SPECIFIC	CATION	CS15	CS20A	CS20B	CS25A	CS25B	CS25C
COIL HEI	IGHT (A)		35mm			60mm	
COIL WI	DTH (B)		18mm			30mm	
SLOT	MIN		130mm			135mm	
LENGTH (C)	MAX	760mm	1015mm	1220)mm	1529	5mm
LEIVOIII (G)	MIN (WITH RADIUS FORMING)	N/A			650mm		
LOOP LEN	NGTH (D)	1500mm	500mm 2000mm 2500mm				
MAXIMUM	AT 0 ° TWIST	400mm 790m			790mm		
SPREAD (E)	AT 90 ° TWIST		520mm 910		910mm		
011111111111111111111111111111111111111	AT 170 ° TWIST		636mm		650	mm	1040mm
INCLUSIV ANGL		170°					
LIFT	'(G)			250mm			340mm
PIN DIAM	ETER (H)	12mm					
AIR PRE	ESSURE			6 - 7 bar (90 - 100 PSI)		
AIR SU CONNE				1/4	" BSP		

Capabilities

▼ Pneumatically powered, the POM-STD range has the capability to form stator coils having a maximum loop length of 2500mm with a maximum coil stack size of 60mm x 30mm

Adjustable tooling

😈 Fall away pin type knuckle holders guarantee firm clamping action and quick release. Both the length and the thickness of the coil knuckle holders are adjustable.

Easy to operate

The coil forming process is driven by using air pressure. Little manual effort is required of the operator. After the loop has been loaded, actuation of a foot pedal closes all four slot clamps simultaneously. The exclusive ballast tank minimizes air supply fluctuations, producing coils smoothly and quickly.

V For reference, linear scales are fitted to ensure repeat accurate set ups are quickly and easily achieved.

Continuous Coil Forming Machine

The POM-CC range of coil forming machines are used to spread coils quickly, accurately and efficiently into their final shape according to the coil design.

Enabling the fast and effective winding of stators, this turn-key production solution dramatically reduces the number of winding connections required. Simple to operate, production efficiencies of 50% can easily be achieved.



Safety

Ensuring that safety is paramount feature, the operational area of the machine is guarded by a safety light curtain

Turn-key solution

To complement the POM-CC, a complete range of loop winders, loop winder tooling, turn tapers and drum stands is available.

Servo motor drives

The POM-CC incorporates the latest servo drive technology. A total of six axes, powered by servo motors and precision ball screws are used to position the machine.

Precision control

Resolver feedback ensures accurate and repeatable positioning of the machine axes.

Tooling and fixtures

V Exclusive bespoke tooling design is incorporated offering a complete manufacturing solution

Operator HMI control

V Easy to operate control console via HMI to enable operation of the machine and programming of the pull-out sequences. Coil winding details can also be stored within the control system for future use.

SPECIFICATION				
Dependent on	COIL STACK HEIGHT			
tooling	COIL STACK WIDTH			
_{Міп.} 380mm _{Мах.} 1000mm	LENGTH OF CELL (COIL STRAIGHT)			
_{Міп.} 875mm _{Мах.} 2000mm	OVERALL LOOP LENGTH (EYE TO EYE)			
Min. 0° Max. 120° (included)	ANGLE BETWEEN COIL SIDES			
Min. 150mm Max. 900mm	COIL SPREAD			



Advanced Narrow Coil Taping Machine

The Ridgway NCT Narrow Coil Taping machine offers an advanced and cost effective automated solution for taping narrow profile wind turbine generator stator coils.

The NCT features a unique multi-axis motion control system with a free standing programmable HMI, making it a truly versatile machine that simplifies the precision taping of all narrow coil configurations, straight or diamond shaped.

The innovative design solves a common problem where traditional taping machines have limited access to both sides of the coil.

The coil support system features automatic coil turn-over and height adjustment. This simplifies set-up and eliminates the need to remove or reposition a coil to tape both sides.

Unique Taping Motion

The NCT uses a unique multi-axis head motion. Lateral movement of the NCT taping head is controlled via a servo motor driven ball screw. This in turn is synchronised with the servo motors that drive the rotational aspects of the taping head. The action of this complex head motion results in a precise process that consistently provides high quality taped coils.

Constant Tension Control

▼ The Ridgway NCT features constant tension control between 20N and 50N.

Fully Programmable

The machine is fully programmable, for example, to set the number of layers required **V** Operated via a user friendly HMI control for each coil side, tape pitch and linear speed, the angle of diamond coil legs. Auto reverse at the end of each pass allows for uninterrupted, multiple tape layers without downtime.

SPECIFICATION	
ROTATIONAL SPEED	60 rpm maximum
TAPE WIDTH	20mm/25mm
PITCH CAPABILITY	5mm to 28mm
TAPE TENSION	20N to 50N
TAPE ANGLE	+/- 20 °
COIL LENGTH	Min. 700mm
	мах. 3000mm
DISTANCE BETWEEN COIL SIDES	Min. 65mm
	мах. 500mm
COIL CROSS SECTION HEIGHT	Min. 25mm
	мах. 160mm
COIL CROSS SECTION WIDTH	Min. 10mm
	мах. 25mm
MAXIMUM COIL WEIGHT	200kg

User Friendly HMI Control

module, the Ridgway NCT provides the end user with a simple, reliable coil taping solution. For manufacturers of wind turbine generator stator coils, taping productivity and quality will be increased on all narrow coil requirements.



Mobile/Travelling Head Coil Taping Machine

The MTM Mobile/Travelling Head Coil Taping Machine provides a unique solution to maximise the productivity of applying insulation tapes to larger size electrical coils or bars, with a typical slot length capacity of up to 4000mm.

Ridgway's MTM is specifically designed for handling these larger size coils/bars using a combination of retractable pneumatic coil supports, adjustable rear clamp stands and coil eye supports. The taping head is mounted on a mobile carriage which seats the operator and travels along the straight bar or straight leg of coil to be taped, in both directions.

As the carriage approaches the pneumatic coil supports, the clamps open automatically and the support arm moves away to the rear of the machine. The MTM machine can be operated continuously in both directions.

Taping Head

The taping head rotates around the coil applying a pair of tapes simultaneously with the tensions between 0.5kg and 7.0kg. Tape reel carriers automatically follow the natural angle of the tape being applied to the coil in relation to the coil axis. The MTM head can apply tapes at a rotational speed of up to 250 rpm.

Drive System

The MTM uses twin variable speed motors to provide and synchronise the taping head drive and carriage traverse functions. These are controlled by a foot pedal mounted on the taping head carriage, with reversing selection by joystick control.

Coil Support

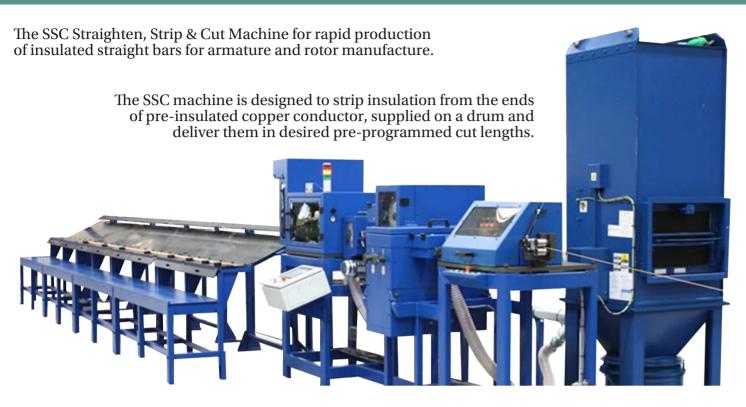
Pneumatically assisted coil support and clamping system with 3 retractable arms, fully adjustable rear clamp stands and coil eve clamps/supports.

SPECIFICATION	
250 rpm maximum	
25mm / 30mm	
1040mm	
Two Spools ID 55mm/ OD 200mm	
0.5kg to 7.0kg	
мах. 4000тт	
міп. 50mm x 10mm	
мах. 125mm x 60mm	
Max. 6 bar	

Safe Guarding

▼ The MTM is equipped with fixed mesh screen fencing on 3 sides for operator safety. On the open side of the machine enclosure an electronic light sensor guard automatically detects any intrusion and activates the safety circuit, cutting power to stop the machine.





Straighten, Strip & Cut Machine

The SSC Machine compromises the following modules:

- Pay-off Drum Stand
- Straightening Unit
- **V** Brush Stripping & Clean Unit
- **V** Extractor
- **▼** Caterpillar
- **▼** Guillotine Cut Station
- ▼ Delivery Chute/Collection Bench
- ▼ HMI/Control System

SPECIFICATION	
COPPER CONDUCTOR SECTION	Min. 4mm x 1mm Max. 18mm x 4mm
INSULATION STRIPPED LENGTH	30mm to 200mm
CONDUCTOR CUT LENGTH	500mm to 8000mm
ACCURACY OF CUT LENGTH CONDUCTORS	+/-2mm
ACCURACY OF STRIPPED LENGTH OF ENDS	
COMPRESSED AIR SUPPLY	Clean and dry at 5.5 bar min. pressure



Straightening Unit



Stripping Unit



Band Tension Unit

The BTU100 is a self contained unit used to apply controlled tension to wire or tape when banding armatures.

The BTU100 accepts glass fibre tape up to 30mm wide and both round and flat steel wire.

Tension control

Tension is monitored continuously by a hydraulic sensing head fitted with a calibrated manual dial display. Variable tape tensions can be set and a "quick release" is actuated to release tension at the end of the banding cycle.

Flexible mounting

The BTU100 can be simply floor mounted, fitted to the saddle of an existing winding machine or incorporated with the Ridgway TS traversing saddle to offer a complete solution.

Up to 680kg (1500 lbs)

30mm

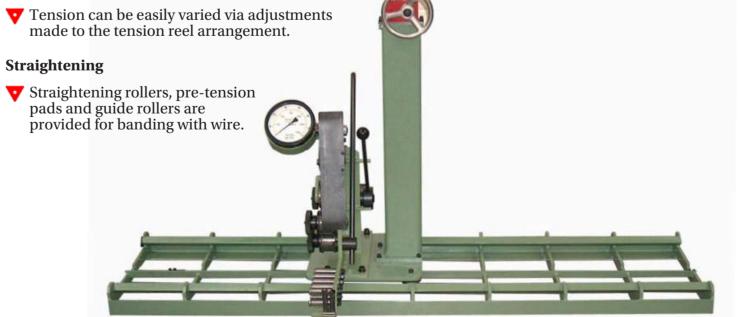
3mm

1500mm standard

TS Traversing saddle

The TS Traversing Saddle consists of a pair of rails suitably braced for floor mounting. The traversing saddle is easily moved smoothly along the horizontal axis via a manually operated gear and chain driven rack and pinion. The standard traverse length is 1500mm however other lengths can be made to order.









Other Solutions



Wire & Cable Taping Machinery



Coil Taping Machinery



Superconductor Cable & Coil Machinery



Coil Manufacturing Machinery



RTP & TCP Taping Machinery



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