



COIL – WINDING TECHNOLOGY LINE

Advanced High-Tech Solutions
for Coil – Winding Process Control



building the future



TOP QUALITY
& PRODUCTIVITY

HIGH FLEXIBILITY

USER-FRIENDLY



COIL – WINDING TECHNOLOGY LINE

The Ultimate Innovation in Wire Constant Tension Feeding.

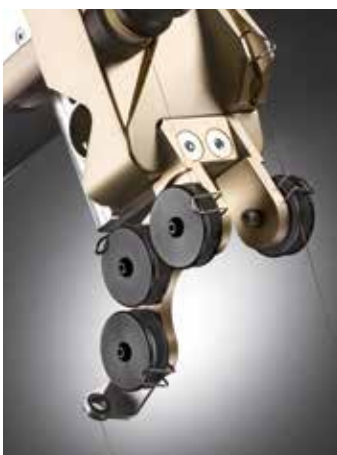
CWF (Coil - Winding Feeder), is one the latest results from B TSR INTERNATIONAL, a worldwide leading company in the design of high tech solutions and innovation development in a wide variety of industrial sectors.

CWF represents a revolutionary new generation Wire Constant Tension Feeding device, unique in terms of functionality and performance, capable of adjusting with utmost accuracy the tension of the finest wire range in coil winding processes.

An innovative Solution based on the B TSR Dual-Drive Feeding System, Tension Profiler Function and Double Loop Control System bringing new and unique measurable benefits in terms of TOP Quality Control and Production Efficiency in coil winding processes.

WHY 'CWF'

- TOP Quality Standards Goal is ensured by the highest coil winding quality and repeatability, thanks to B TSR 'Double Closed Loop' Technology guaranteeing the most accurate and precise wire tension control.
- TOP Versatility is guaranteed by Fully programmable parameters according to the wire requirements and possibility to dynamically modify the wire control tension according to the operating stage ('Tension Profiler' Function).
- TOP Process Production Efficiency is enhanced by dramatic reduction of wire breakages.
- TOP Productivity is guaranteed by the capability to work at the maximum possible process speed.
- Minimized Labour Costs is possible thanks to the user-friendly programming options.
- A wide application range is possible thanks to the wide wire tension and diameter range of CWF.
- Centralized programming and monitoring is possible thanks to MATRIX TOUCH COIL controller which will allow you to program and control CWF units and monitoring the whole process production status also in graphical form.

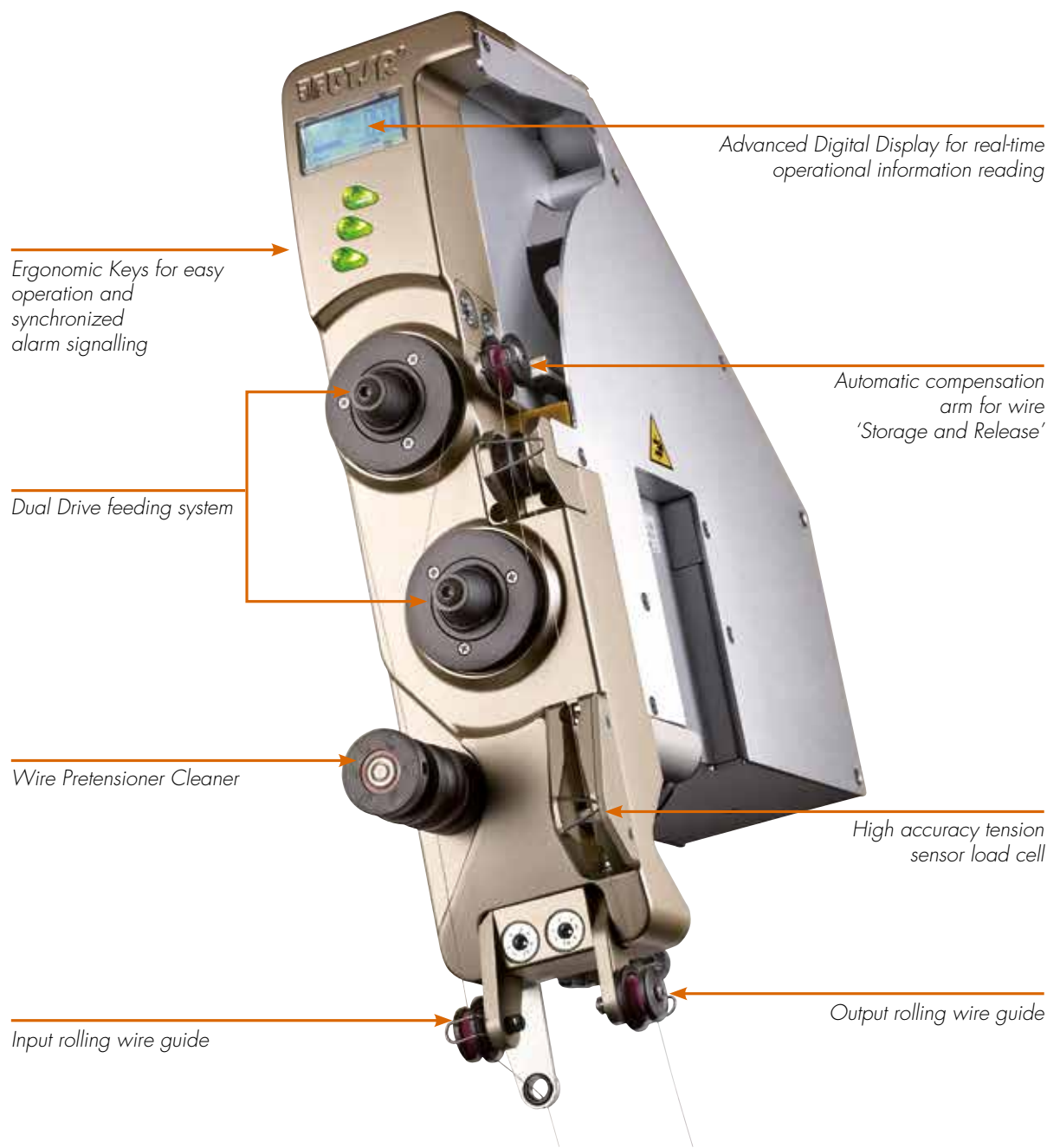


FEATURES

- **Tension profiler function (BTSR patent)**
Possibility to program up to 3 different wire feeding tension values without any interface/ connection to the coil winding machine or up to 4 different wire feeding tension values during winding cycle, utilizing two digital coil winding machine output.
- **Double closed control loop system (BTSR patent)**
Featuring simultaneous dual control on both wire feeding tension and wire running speed for a complete tension feeding control along the whole wire path (from the feeding bobbins to the final coil)
- **Programmable wire 'storage and release capability (BTSR patent)**
Able to manage sudden wire absorption or release during the working process and simultaneously keeping the wire feeding tension at the set value.
- **Full input digital motor torque control (BTSR patent)**
Detect and adjust input feeding tension anomaly, warning and stopping process before wire could be damaged thus avoiding any bad quality production.
- **Pc link web coil software for Industry 4.0 (BTSR new technology)**
Collect uniform data to monitor the entire production, ensuring a homogenous data collection also in case of new and old coil winding machines fleet.
- **App easy coil (BTSR Patent)**
A unique Analysis & Forecast Solution for cost evaluation and forecast support in production planning.

BENEFITS

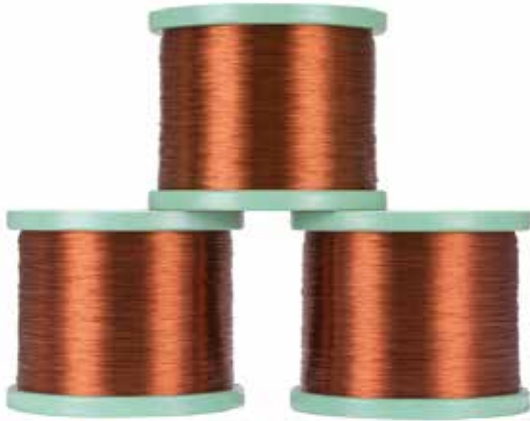
- **Production process efficiency maximization**
Able to maximize the working ramps, machine speed, thus dramatically reducing at the same time wire breakages, scraps, therefore granting fast Return On Investment (ROI).
- **A wide application range**
CWF2000 is a single device capable to cover a wide wire tension and diameter range from 0,01 mm up to 0,6 mm (58 – 23 AWG) - From 0,5 grams up to 2000 grams.
- **Labour costs minimized**
Thanks to the user-friendly programming options and easy and quick machine setup.
- **Maintenance costs minimized**
Complete absence of wearing out of mechanical parts due to the feeding technology which guarantee absence of parts frictioning / breaking.
- **Advanced graphic display**
Real-time working parameters monitoring, such as:
Wire Speed (LWA) – Wire Tension – Motor Torque – Working phase.
- **A compact solution**
Easy plug & play installation.
- **A wide range of smart input accessories**
PFD (Pre Feeder Devices)
CRF (Coil Rolling Feeder)



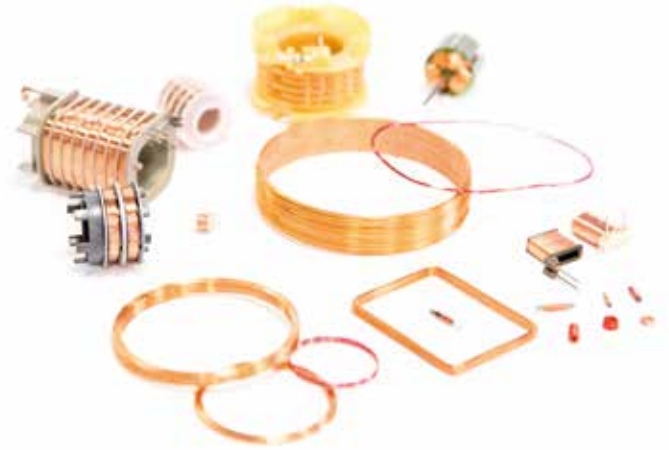
Technical Features

- Programmable tension range 5 g ÷ 2000 g (cN) with resolution 1g - 0,5 g ÷ 200 g (cN) with resolution 0,1 g.
- Wire diameter range from 0,01 mm up to 0,6 mm (58 – 23 AWG).
- Wire tension set-up resolution 0,1/1 g.
- Feeding speed range 0,1 ÷ 25 m/s - 6 ÷ 1500 mt/min.
- LWA function: exact wire consumption measuring (Length Wire Absorption) with resolution of 0,1 mm.
- AUTO-LWA and alarm range setting - Tension LWA±1% upto±25% - Meter LWA ±0,1 mt up to ±20mt.
- OEM machine computer interface, standard RS485, Canbus / optional Ethernet, Profinet / Others on demand.
- Ergonomic and small dimensions (325x251x70 mm).
- Power supply voltage 24VDC ± 10% - 24 VAC ± 20%.
- Special universal fixing support for easy and quick installation.

WIRE BOBBIN



FINAL COIL



DOUBLE CLOSED CONTROL LOOP Solution (BTSR Patent) Operated by means of multiple motor controls

MOTOR TORQUE (BTSR Patent)

1st closed loop

Total Input Controls

Operated by the motor control force (Torque). Detects and adjust any input wire tension variation caused by:

- Input balloon tension variation (full/empty feeding bobbin).
- Input wire entanglement.
- Input wire friction/tension abnormal variation.

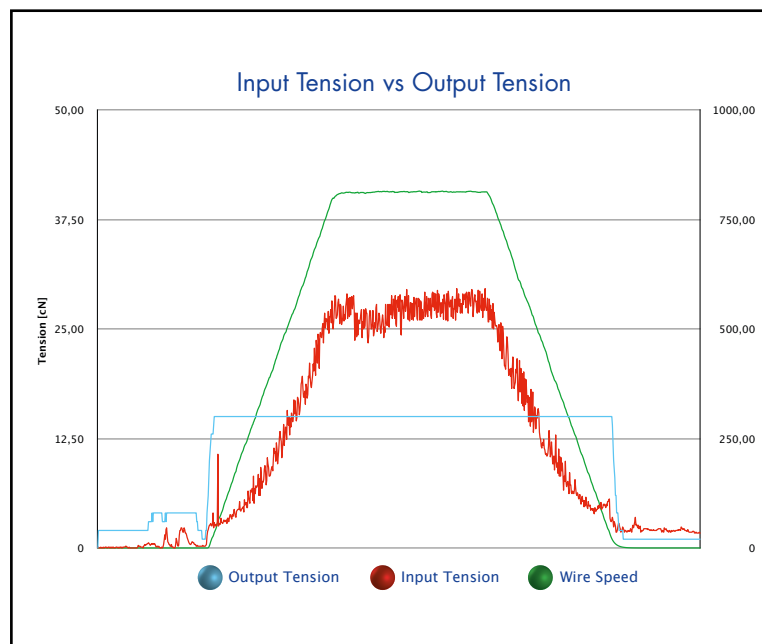
LWA Length of Wire Absorbed (BTSR Patent)

2nd closed loop

Total Output Controls

Operated by means of multiple motor controls, Speed/Wire consumption. Detects and monitor:

- Any dimensional variation of coil formers.
- A wrong wire dimension (diameter/AWG).
- Coil winding machine toothed driving belt out of order (core slippage).
- Accumulation of dirtiness inside the wire guide.
- Damage of the wire guide.
- Any mechanical variation or friction on the contact points after the CWF feeder.
- Wire passing through the wire guides with different angles and frictions (wrong thread-up).



CONSTANT TENSION VALUE GUARANTEED

Tension [cN]

Output Wire Tension (LIGHT BLUE color) is kept constant at the set value, despite of input wire feeding tension variations (RED colour) and/or wire speed variations (GREEN colour) during the working process.

INDUSTRY 4.0

PC LINK STUDIO - Suitable to update CWF 2000 software and quality analysis of the coil process and machine development.

PC LINK WEB COIL - Suitable to monitor the whole department. CWF 2000 can be installed on any type and model of new or old coil winding machine. CWF 2000 + PC LINK SOFTWARE allow monitoring and programming the whole coil winding machines park (which can be not necessary homogenous).



PC LINK WEB COIL

Creation, storage and 'Article' loading

The system allows to create different 'Articles' which can be easily stored and instantaneously loaded on coil winding machine for an easy production's planning.

Production Data Storage and Efficiency Analysis

All data can be stored either on a Local (stand-alone PC, through Access database) or on Distributed (SQL Server – SAP etc) Database for a post analysis of production quality and efficiency.

EASY COIL APP

App easy coil

It is a unique INDUSTRY 4.0 remote programming monitoring & evaluation tool. This smart WIRE Feeding Control App allows to easily manage CWF coil winding feeders by means of a portable tablet. APP EASY COIL has been created to ease the programming of CWF by means of a very intuitive interface, thus allowing on site monitoring, quality check, production monitoring and forecast analysis. APP EASY COIL solution easily identify weak points in the production line and is a powerful support for machine operators and managers.

General features

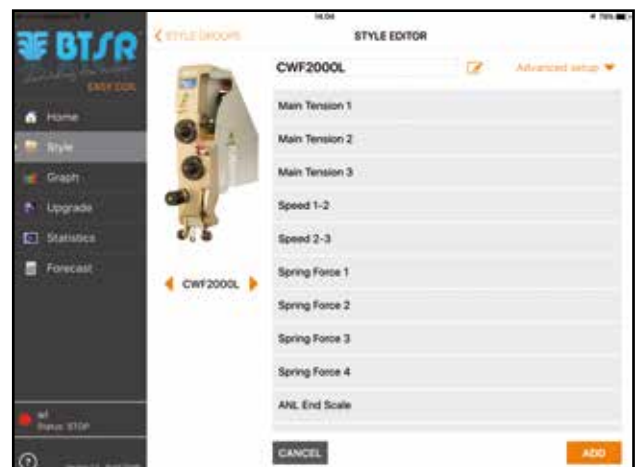
- Compatible with IOS and Android devices.
- Functions: Programming – Graphic – Statistic – Software Upgrade – Forecast.



MATRIX TOUCH COIL

Centralized programming and monitoring

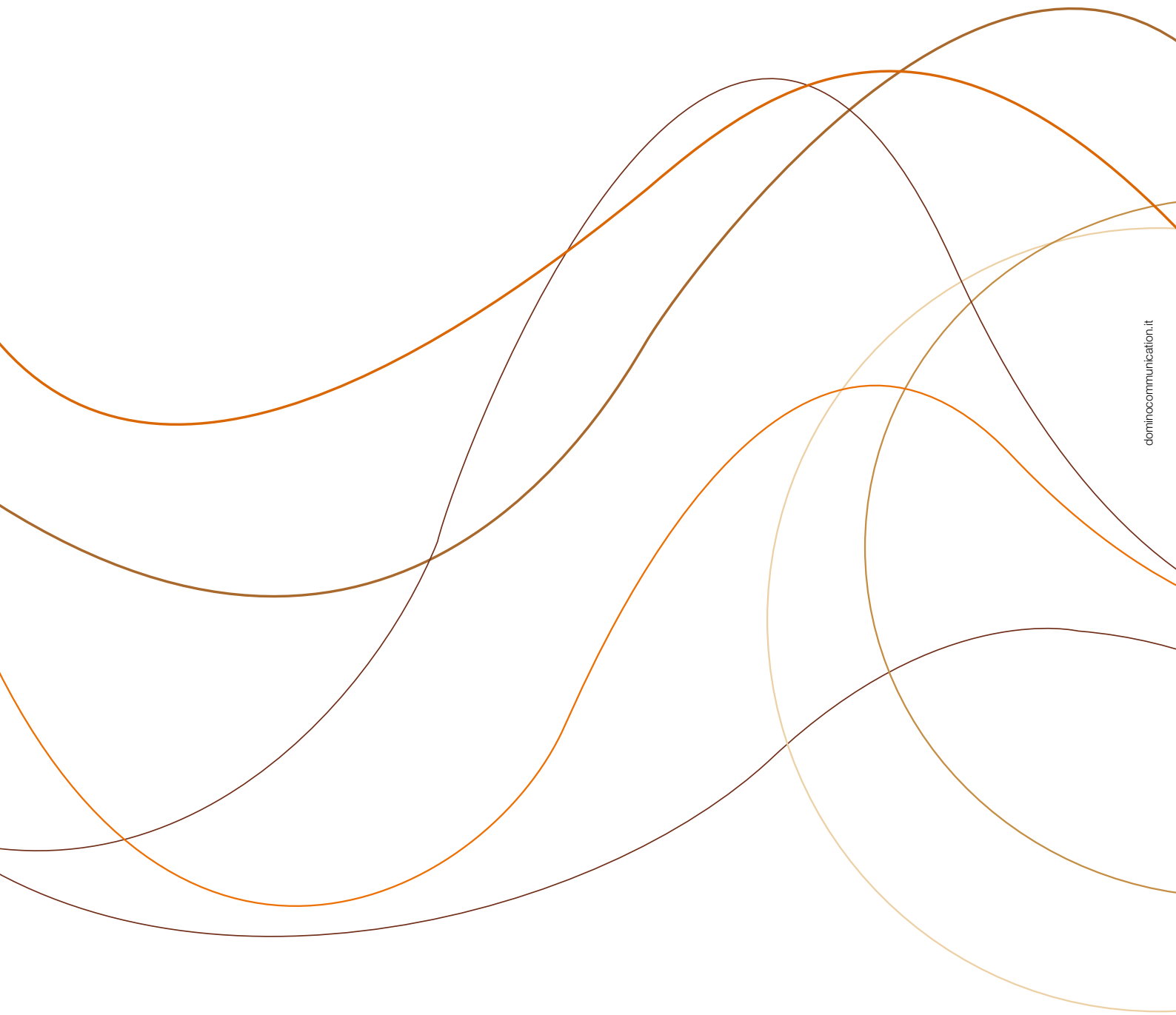
MATRIX TOUCH COIL controller and allows programming CWF and monitoring in real time the whole process production status in graphical form.



APP EASY COIL

It is a unique Industry 4.0 tool for operators and managers.





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