

**VK**

Machinery that never sleeps.

# Supreme Bonnell Machine

VTC 100 - Automatic Bonnell  
Transfer Machine



# VK Mattress Machinery

For the past 54 years, VK Mattress Machinery has been consistently providing the mattress and furniture industry with high-quality solutions and tools to help producers all over the world elevate their production quality and efficiency. Today, one of our most advanced machines on the market is the VTC 100 – Automatic Bonnell Transfer Machine, which was developed more than 10 years ago with the aspiration to provide

Since 1968  
— Since 1968 —



a robust machine that not only can serve you for many years but can also immensely impact your production in ways that no other machine on the market can.

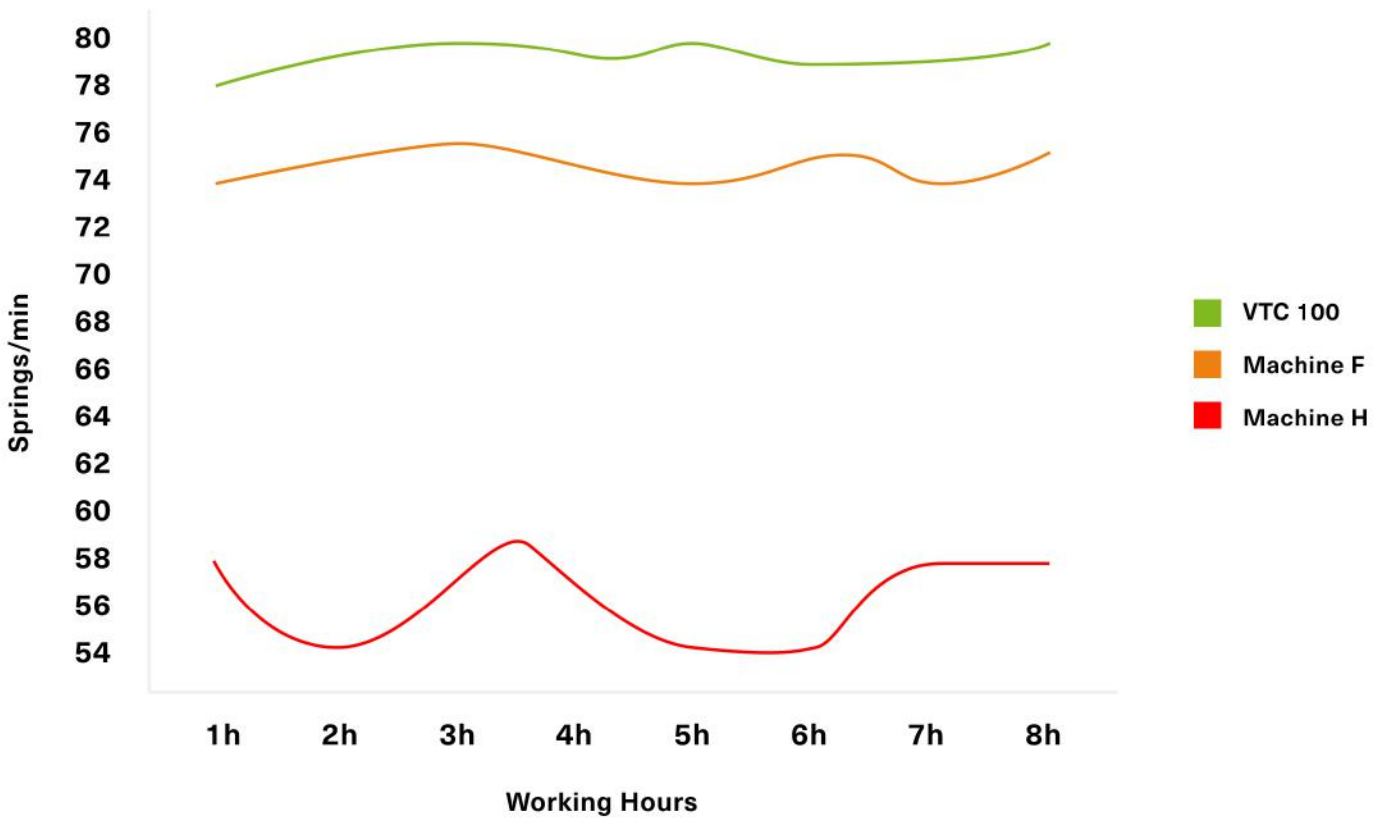
**Unmatched  
Speed.**

**80**

**Springs/min**

— Coiling

# Huge Leap in Bonnell Spring Production.



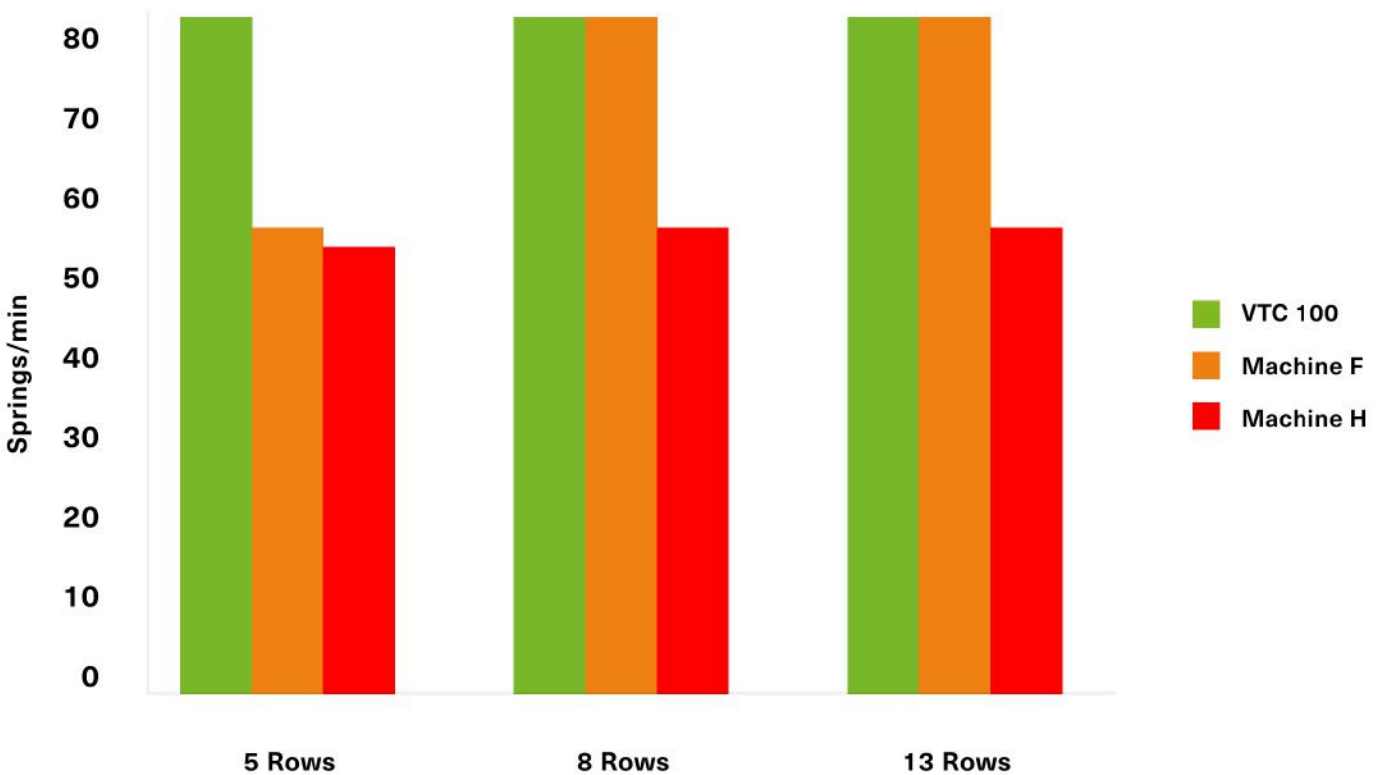
— General Performance Graph

At VK, we thrive for consistency and high performance, that's the reason behind our steady and stable production performance of our VTC 100. With 80 springs/min our machine has the highest produced spring rate of any machine on the market, with an unmatched consistency.

— Coiling

# Unparalleled Performance.

Our VTC 100 performance is miles ahead of the competition. Whether you are working with 5, 8 or 13 rows, the machine works at a maximum speed from the start, with no deceleration or declines.



— Furniture Spring Units Performance Graph

The graph above showcase a test results done on different machines from different competitors using different row settings with similar working conditions. The number of springs produced per minute is very consistent on the VTC 100 at 80 springs per minute.

**Tons of  
Features  
Behind Every  
Bonnell Spring.**

# Exceptional Quality.

## × Servo Motors

8 independently working servo motors from Mitsubishi with a high degree of usability, functionality, and energy savings, as well as a setting dial that enables an easy and fast operation. The motors are also up to date with safety standards and environmentally friendly.

## × Wire Feeding Rollers

Using strong materials, our wire feeding rollers are proudly made in-house by our engineers to make sure they have a long lasting lifetime, up to 10x more than normal wire feed rollers.

## × Wire Cutting System

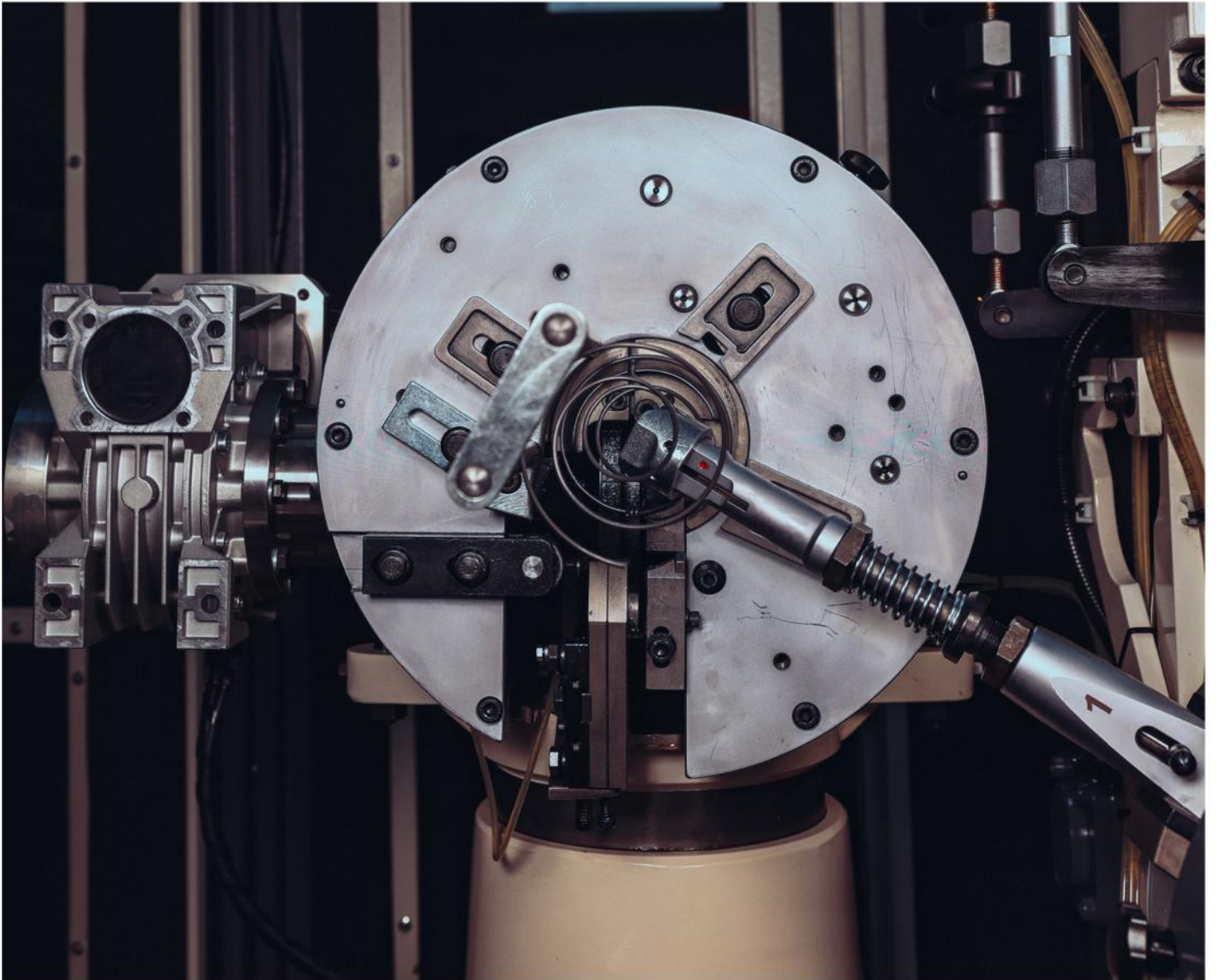
Wire cutting system with durable carbide cutting tools. These tools are acclaimed for their quality performance, sturdy body and are free from abrasion or any other defects.



## Coiling

### × Machine Drums

The drums used on our VTC 100 are robustly built with servo motors that are working very precise to ensure a smooth working production. The drums are also adjustable thanks to the flexible base position that our machine base offer, which allows an easy spring diameter change without the need to change the Cam unit setting.



— Machine Drums

# Meticulous Accuracy.

## Coiling

### × Heat Treatment

Our heat treatment unit is one of the most advanced technologies on these type of machines, it provides maximum durability to the bonnell springs and ensures that every spring is stress-relieved and strengthened. The flexibility of the heat treatment unit offers a multi-degree treatment options, ranging from 1° to 100° degrees.

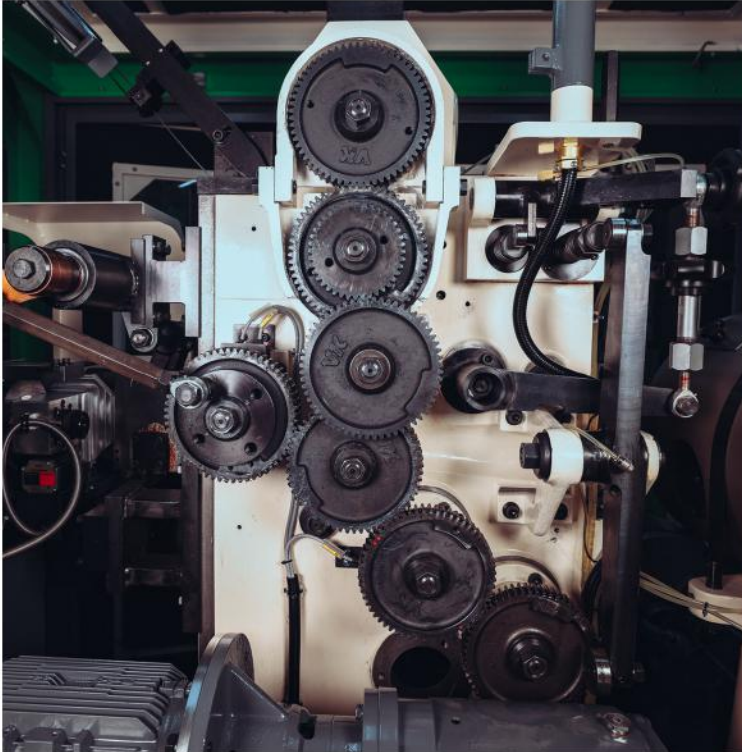
### × Cam Unit

The machine comes with a standard 5 turns cam unit that can be changed to 4 or 6 turns depending on your desired bonnell spring production.

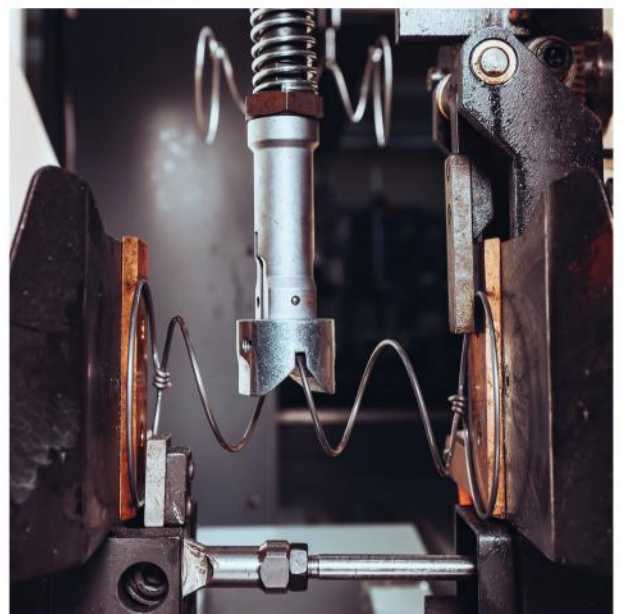
*\*The cam unit have to be replaced together with two gears in case of any requested change.*

### × Gear System

A robust gear system that can be easily adjusted and replaced. Located on the back of the coiling section of the machine. Using only high quality materials, we made sure our gear system can stand tough against gear failure or wear and tear.



— Gear System



— Heat Treatment System

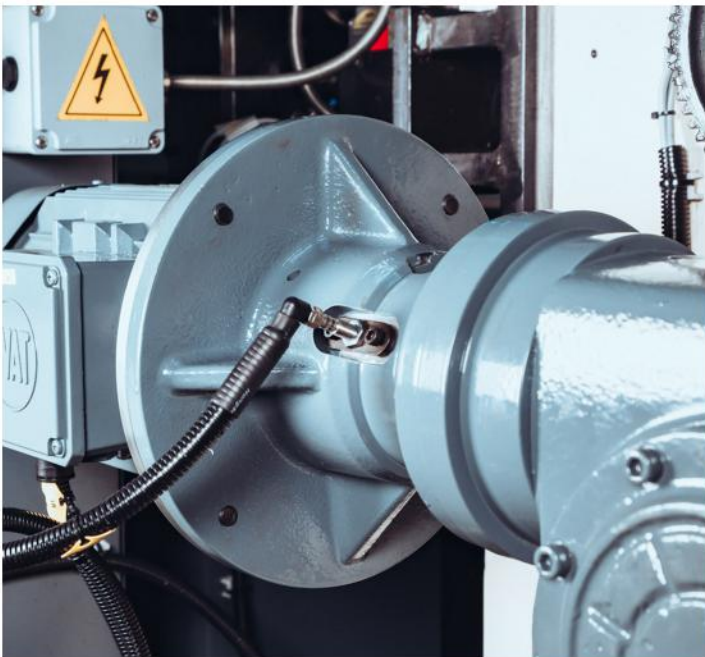
## Coiling

### × Lubrication System

The automatic lubrication system ensures a periodic oiling of 22 points on the machine with the option to set the desired time frame for each lubrication through the touch screen display.



— Lubrication System



— Arm Security System

### × Arm Security System

Our Arm Security System ensures a safe working environment by making sure the machine is stopped if anything comes in between the arms, or block them from moving.

# Impressive Features.

## Coiling



— Control Panel & Touchscreen Display

### × Touchscreen & Control Panel

The machine offers multiple control panels to change the coiling settings, one is located inside the coiling area and the other is located outside the machine, both are easy to use and offer features like touchscreen usability, cooling fans and much more.

### × Soundproofing & Ventilation

The coiler unit is equipped with soundproofing panels that help reduce the production noise drastically as well as a sound-insulated ventilation system that helps clear smoke, dust and small particles which keeps the coiler unit neat and clean.

### × Door Lock Safety System

Another safety feature that the VTC 100 offers is something that is being ignored on other machines: Door Lock Safety System that prevents the machine from working in case the coiler unit door is open, only after closing that the machine resumes its work without the need of any intervention from the operator.

## — Coiling

### × Spring Stabilizer

During the spring forming process the spring stabilizer ensures a smooth and stable bonnell spring forming.

### × Floor Leveling System

During the VTC 100 installation the floor leveling system helps us level the different part of the machine to ensure a very stable and steady production.

### × Wire Measuring Tool

The VTC 100 offers a high precision wire diameter measuring tool provided by SIKORA as an option.

### × Security Lambs

Safety light system on the top of the coiler unit that helps indicate the status of the machine (Red = Not Working, Green = Working)



— Door Lock Safety System



— Security Lambs

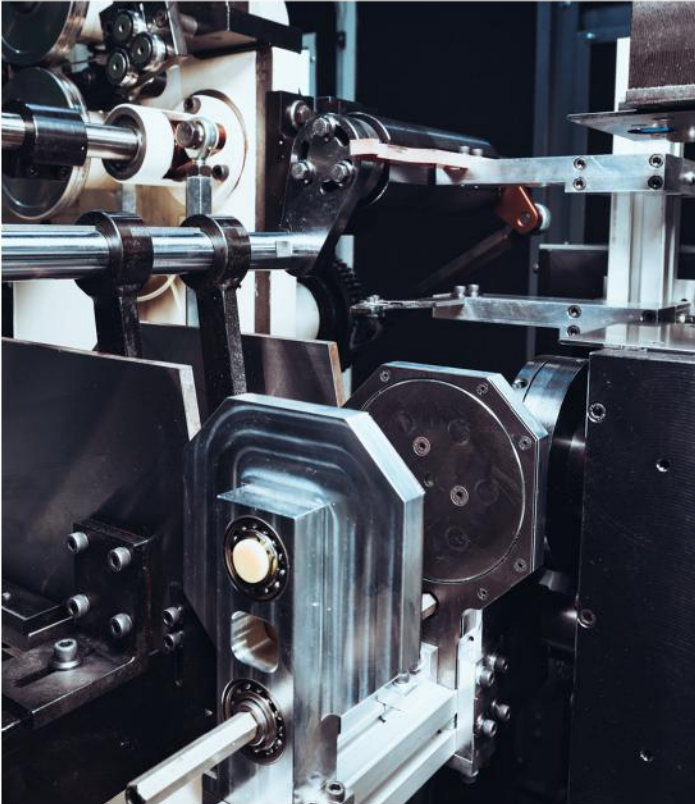
# Next Level Bonnell Spring Production.

The coiler unit isn't the only part that enjoys the many features we offer, the transfer unit of the VTC 100 packs a lot of features as well.

## — Transfer

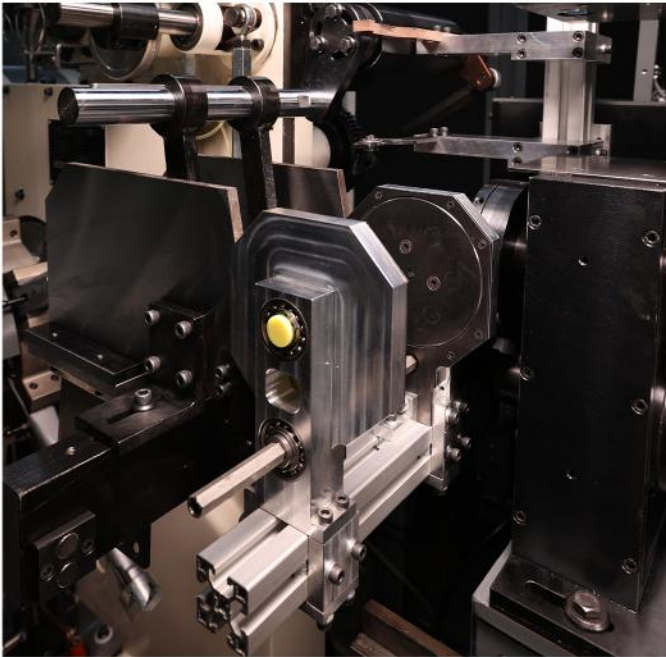
### × Transfer Technology

The VTC 100 is designed to achieve the highest productivity for the production of bonnell spring units. The improved and patented transfer mechanism, the updated software with new automation program and the new options for furniture spring units ensures the best experience for the production of any type of bonnell spring units.



# Transfer Brilliance.

## Transfer



— Spring Turning System



— Heat Resistant Belt

### × Spring Turning System

Our spring turning system makes sure that the first jaw in the assembly area is receiving a 180° turned bonnell spring, which is the standard for bonnell spring unit production.

### × Heat Resistant Belt

One of the most important part of the transfer unit are the conveyor belts, they are responsible of transferring the bonnell springs produced in the coiling unit to the transfer unit for them to be assembled, so we had to use a double layered, heat resistant belts that can make sure this course of action is done smoothly and efficiently.

### × Spring Pusher System

Strong and sturdy spring pushers that pushes a row of springs into position to be assembled. The spring pusher can be easily adjusted using the already installed measuring tool.



— Spring Pushers

## —— Transfer

### × Back-Door Access

Two back-door access doors that gives the operator an entry into the transfer and assembly unit to make any manual changes required.

### × Spring Conveyor Exit Door

Located on the right side of the machine, the springs conveyor exit door acts as an exit for the defected/damaged springs that shouldn't be used in production, the springs go directly into a basket for them to then be recycled or thrown away.

# Flexibility Like Never Before.

Knowing the huge challenge during the production of different bonnell spring unit sizes, we needed to make sure that the changeover between all different production settings is done in a seamless manner. To set the desired size for your bonnell spring unit production you only need to change the positioning of the jaw systems, which only takes couple of minutes.

## Assembly

### × Machine Opening System

The machine opening system stands on a robust gear system that can be opened or closed using the main touchscreen or the small control panel located on the right side of the machine.



— Machine in Closed Position



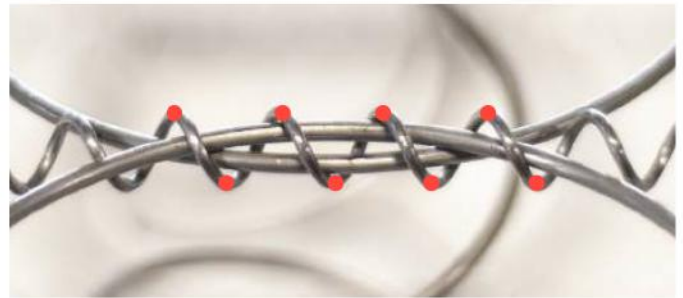
— Machine in Open Position

### × Spiral Knotting Options

With excellent spiral knotting options there is a possibility to change the firmness of the springs units, the options are as follows:



— 4-5 Knotting System



— 4-4 Knotting System

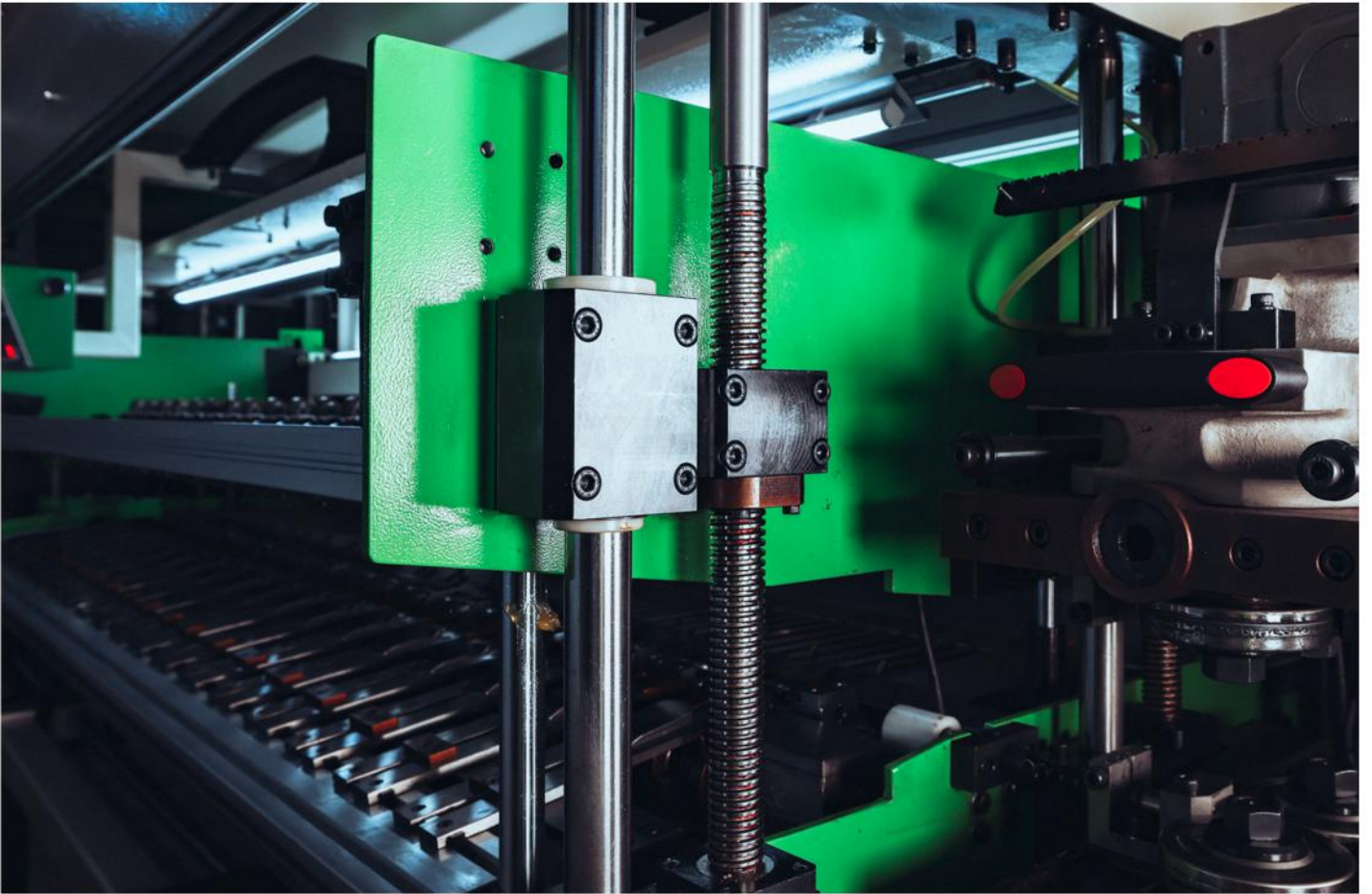


— 4-3 Knotting System

### × Wire Inputs

Wire input positioning options for the assembly section of the machine can be in 3 areas depending on the desired position by the purchasing company, either left, front or in the back.

## Assembly



— Height Adjustment System

### × Height Adjustment System

The VTC 100 offers the easiest height setting technology which can be adjusted through the touchscreen display. This feature enables the complete adjustment of the spring height automatically and accurately.

### × Spring Unit Diameter Setting

This feature makes it easy to change the spring unit diameter setting using the front touchscreen display.

## — Assembly

### × Spiral Encoder

The spiral encoder on the VTC 100 gives you a very precise and accurate measurement.

### × Assembly Slider Control Panel

Of the many control panels we have in the machine, the assembly control panel is located inside the assembly area on a sliding mechanism that allows the use in any position of the machine, whether you are on the left end of the machine or the right end, the control panel can be reached in both positions.

### × Spring Height Measuring Tool - ReeR

The spring height measuring tool provided by OPKON is located on the right side of the assembly area. Its a very precise measuring tool that helps set the exact height of the spring for the desired bonnell spring unit production.



— Assembly Slider Control Panel

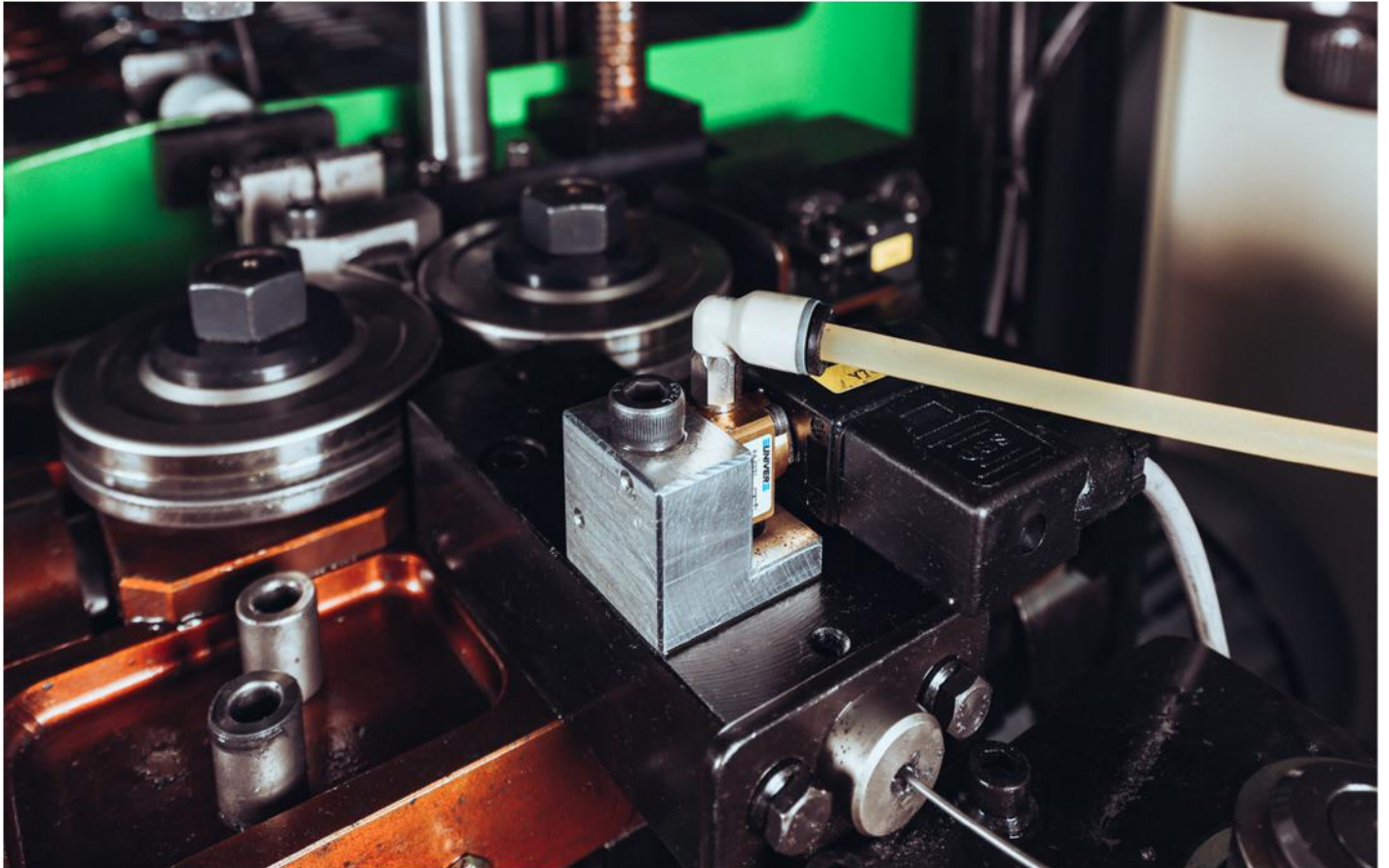


— Spring Height Measuring Tool - OPKON

## — Assembly

### × Spiral Wire Lubrication

The automatic spiral wire lubrication makes sure the wire is properly lubricated to avoid any friction and allow a smooth assembly process throughout the whole bonnell spring unit.



— Spiral Wire Lubrication

### × Spiral Testing Tool

The spiral testing tool helps determine the pitch of the spiral wire and makes sure it's going through the jaw system and the bonnell springs fluidly.

— Assembly

# Sturdy Jaws.

The VTC 100 - Automatic Bonnell Transfer Machine comes equipped with a standard 18 solidly built Jaws with the option of adding 7 more upon request to make the maximum total of jaws that can be added at 25 Jaws.



## — Assembly

### × Spring Unit Exit Table

Stainless steel spring unit exit table where the fully finished spring unit lays waiting to be collected. We made sure to use a strong base and material that can withstand different weights of different bonnell spring units.

### × Light Safety System

One of the most important safety and security system on the machine is located inside the assembly section of the VTC 100. The light safety system prevents the machine from closing if it detects any presence of an operator inside.



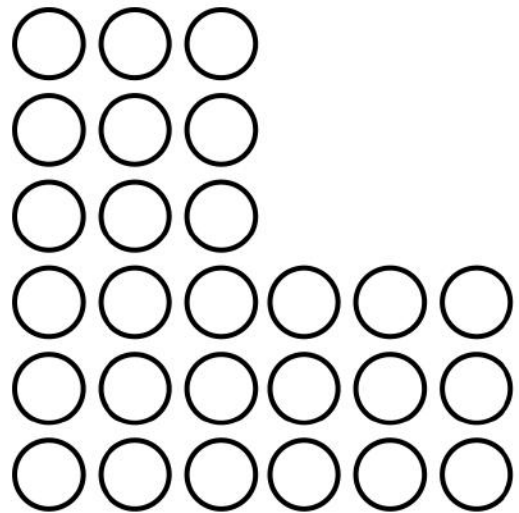
— Light Safety System

# **All-round Bonnell Production.**

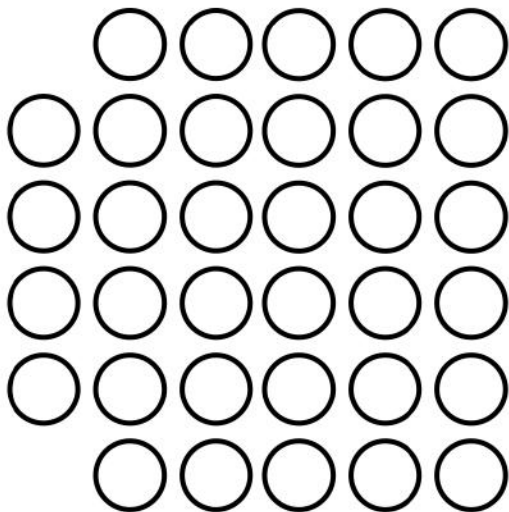
# Diverse. Production.

## × L-Type

The optimized design for the furniture spring units on the VTC 100 allows you to produce L-Type bonnell spring units that are widely used in furniture production.



— L-Type Bonnell Spring Unit



## × Corner Type

Our flexible production system also allows you to produce bonnell spring unit with no corners in certain positions that can be specified through our touchscreen display.

— Corner Type Bonnell Spring Unit

## Product

Bed Type	Spring Unit Size (cm)	Spring Row	8h Output (Pcs.)	24h Output (Pcs.)
Single Size	90x190	8x23	208	624
Double Size	140x190	13x23	128	384
Twin Size	92x186	9x24	177	531
Full Size	130x186	12x24	133	399
Queen Size	148x198	15x26	98	294
King Size	189x198	19x26	78	234

— 8h-24h Output Table

# +3500 More Single Size Mattresses

$$\begin{aligned} & \mathbf{80} \times \mathbf{60} \times \mathbf{24} \times \mathbf{20} \\ & \text{springs} \quad \text{minutes} \quad \text{hours} \quad \text{days} \\ & = \mathbf{2.304.000} \text{ springs} / \mathbf{184}^* \\ & = \mathbf{12.521} \text{ single size mattresses} \end{aligned}$$

Doing a quick calculation of the amount of potentially produced single size mattresses in a month results a +3500\*\* more mattresses being produced by our VTC 100 in comparison to other machines on the market.

\*Number of springs in a single size mattress (90x190 | 8x23).

\*\*Calculation results are compared to machines with 50 springs/min speed.

— 1 Month Output Table

**Electrical  
Excellence**

— Electrical

# Why Mitsubishi?

To ensure our machine has only the best of the best, we made sure our electrical parts are provided by industry-leading Mitsubishi, their expertise allowed us to add great features to the electrical system of our VTC 100.



— Mitsubishi Electric

## — Electrical

### × Cable System (LAPP)

A moveable cable system that is resilient to motion and is able to handle tight bending, abrasion, flexing and possibly even torsional movements.

### × Cooling System

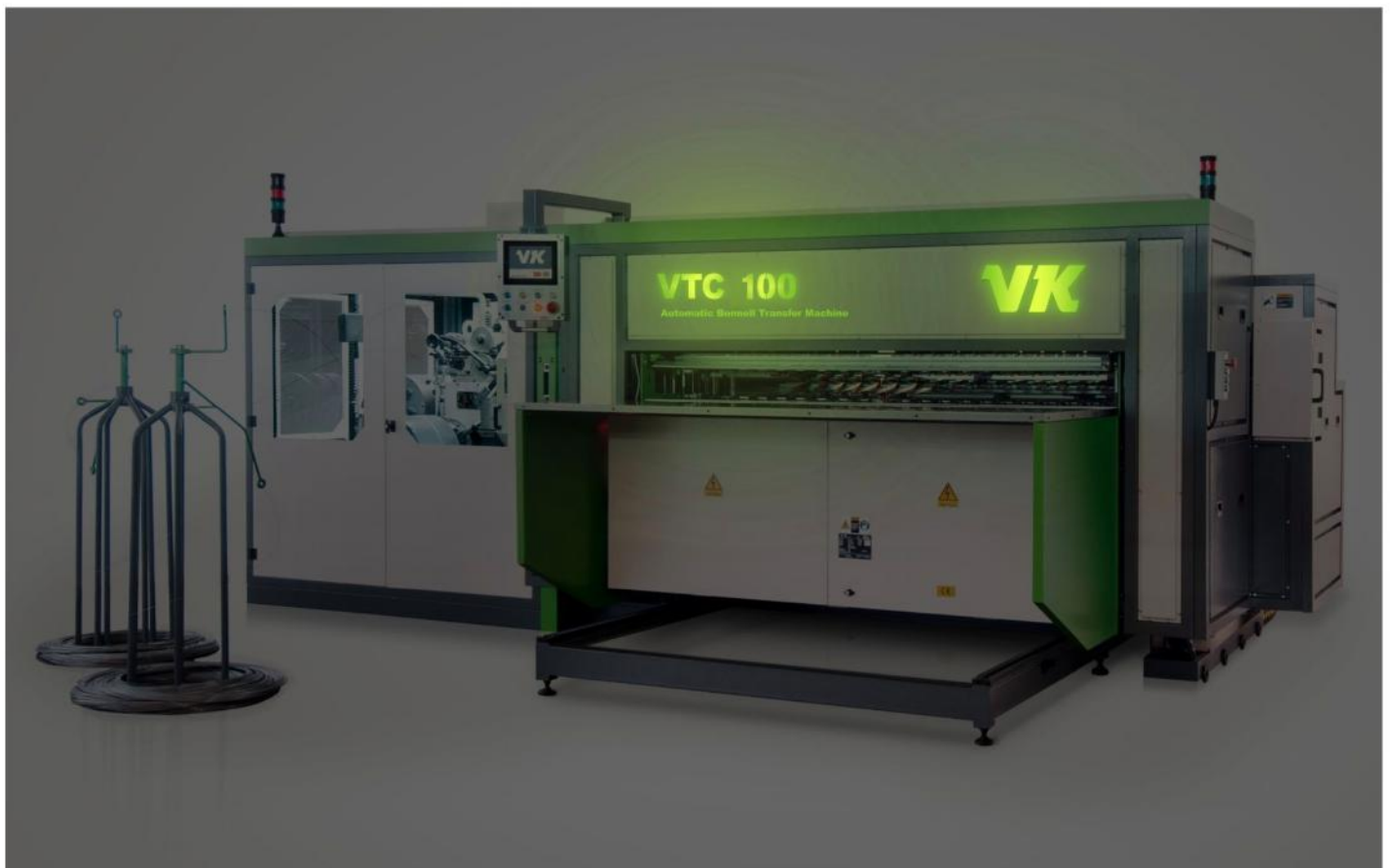
Having the electrical housing consistently cooled is a key factor in the machine performance, so we made sure we use the best cooling system on the market for that.

### × Socket System

During the installation of the machine the socket system allows for an easy dismantle of the machine and for a flexible machine positioning according to the desired position.

### × Machine Brand Lighting

The VTC 100 has one of the best looking machine body on the market, with some breathtaking and glowing lighting system that can't be found on other machines.



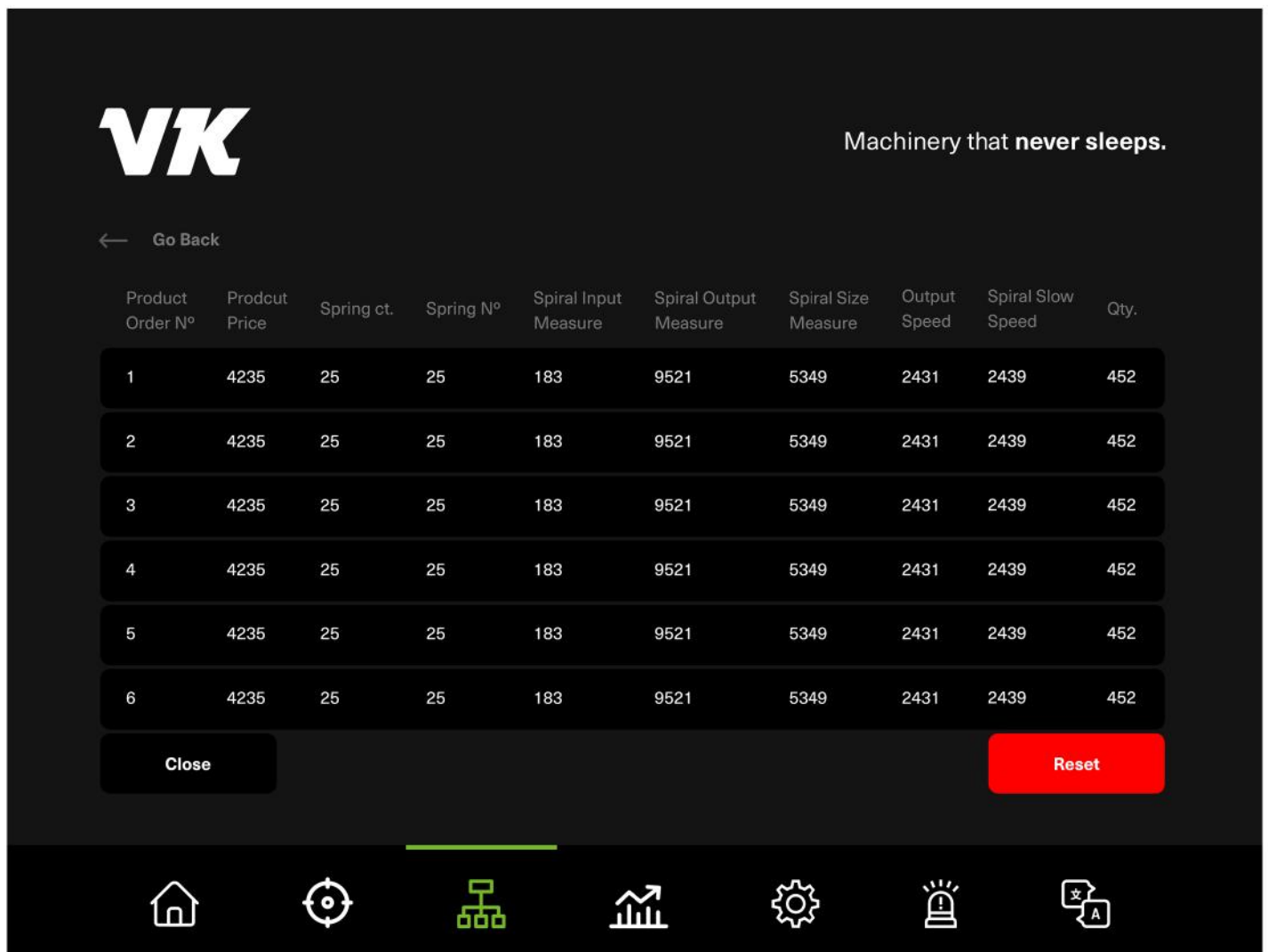
— Machine Brand Lighting

## —— Electrical - Optional

### **× Transformer**

Depending on where the machine will be installed, the total voltage required for the VTC 100 to properly work needs to be stable, it's why we are offering an electrical transformer as an option upon purchaser's request.

**The Software  
You Need.**



— Screenshot from our User Interface

### × Automated Software

The VTC 100 has an automation program that ensures the production of different spring unit types without any intervention, the number of the needed spring units can be easily set on the touchscreen display. This automation program helps increase the productivity for the spring unit producers.

### × Remote Control System

Our remote control system grant access to error reports by our service agents, this feature allows remote controlled software updates on machines with an internet connection by our service team.

### × User Experience

The goal was to make the connection between the operator and the machine as intuitive as possible, it is why the user experience of the VTC 100 offers a high level of control while increasing the comfort level of usability and reducing the cognitive load.

## — Software

### × Scada System

The VTC 100 comes with a Supervisory control and data acquisition (SCADA) system that allows companies using our machines to control their production process locally or remotely monitor, gather and process real time data, which results in a better production optimization.

# Wire Baskets.

### × Basket Cage

Built using only strong materials, the basket cage offer great security and stability.

### × Wire Basket/Feeders Positioning

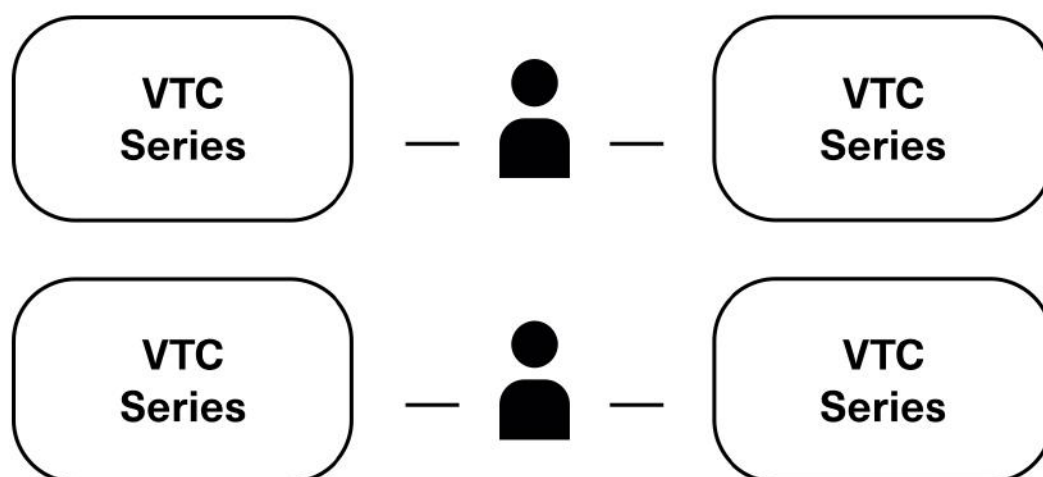
Upon request, the positioning of the wire basket and wire feeders can be placed according to your floor plans and organization, it is possible to place them in all 4 sides of the machines.

## Technical Specifications

Spring Type	Bonnell
Performance	80 springs/min.
Production Capacity	38.400 springs/8 hours Approx. 210 Spring Units for Single Size Bed/8 hours (90x190cm, 8x23 springs) Approx. 130 Spring Units for Double Size Bed/8 hours (140x190cm, 13x23 springs)
Spring Outside Diameter	70 mm - 96 mm <b>Standard</b> Ø 80-92 mm, Max. 18 Jaws, 1.9-2.4 mm <b>Optional</b> Ø 80-96 mm, Max. 18 Jaws, 1.9-2.4 mm Ø 70-78 mm, Max. 23 Jaws, 1.9-2.2 mm Ø 70-75 mm, Max. 25 Jaws, 1.9-2.2 mm
Spring Center Diameter	40 mm - 55 mm 75 mm - 160 mm <b>Standard</b> 120 mm - 140 mm (5 turns) <b>Optional</b> 75 mm - 120 mm (4 turns) 140 mm - 160 mm (6 turns)
Spring Height Diameter	
Spring Wire Diameter	1.9 mm - 2.4 mm
Spiral Wire Diameter	1.3 mm - 1.4 mm
Working Width	2000 mm
Power Consumption	approx. 18 kW
Power Requirements	Three Phase 380V Frequency: 50-60 Hz, Input Fuse: 63 A Cable: 4 x 10mm <sup>2</sup>
Working Temperature	0° C - 40° C
Weight	approx. 4.800 kg
Wire Basket Capacity	1.000 kg
Spiral Wire Basket Capacity	2 x 850 kg
Control System	Mitsubishi Motion Control System

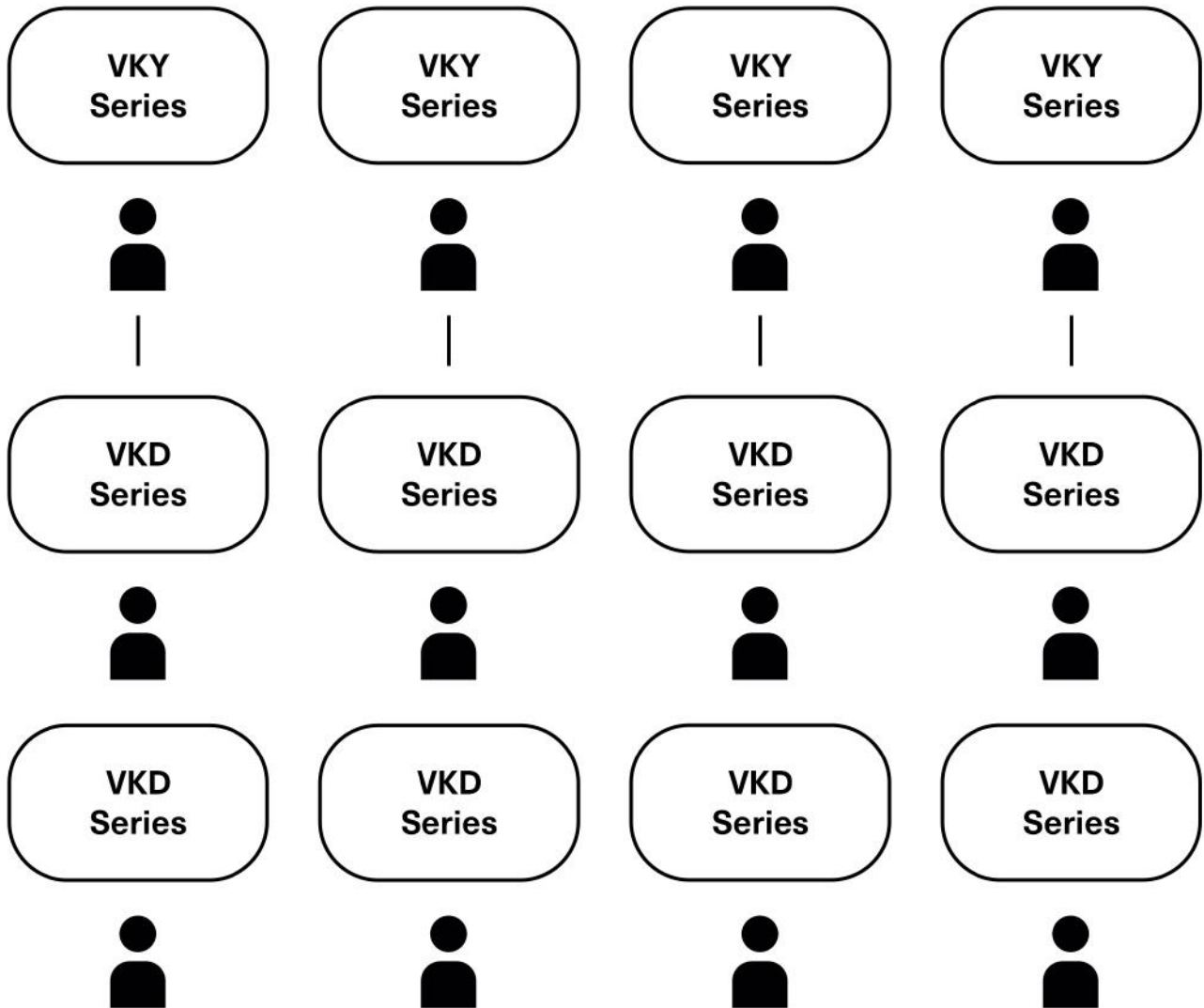
# Automatic vs Conventional

Often called the Fourth Industrial Revolution, Industry 4.0 technologies enable businesses to create smart factories that are more efficient, productive, flexible and responsive to the customers. Our Automatic Bonnell Transfer Machine - VTC 100 plays a huge role in reducing manufacturing as well as labour cost.



To produce 128.000 bonnell springs in 8 hours, you will need 12 machines in total (8 Bonnell Assembly Machine & 4 Bonnell Coiling Machines). Whilst if you are using an automatic production with our VTC 100 Series, the needed machines number drops down to only 4.

Not the mention that the man power needed to operate these machines varies significantly, as shown in the illustration above, only 2 operators are needed to operate the 4 VTC 100 machines.



As the illustration showcases, to produce 128.000 bonnell springs using a conventional method you will need 12 operators.

In conclusion, the VTC 100 not only saves you time, material waste, but helps you produce in a much higher efficiency while saving on labor cost which has a direct influence on the manufacturing cost of your bonnell spring production.

# Worldwide Presence

The VTC 100 - Automatic Bonnell Transfer Machine has a worldwide presence, places like Europe, Asia, Africa, South America and North America all have machines working daily in order to provide their markets with top-class bonnell spring mattresses and furniture.



# Finest Quality

## × Components & Raw Materials

Although we have been producing all own mechanical parts in our factory since 1968, we do have other partners that we work with in order to provide our customers with the best quality possible, and make an even better machine for the mattress and furniture industry.



Japan



Germany



Italy



Germany



Germany



Italy



Denmark



Italy



Austria



Germany



Germany



Germany



Italy

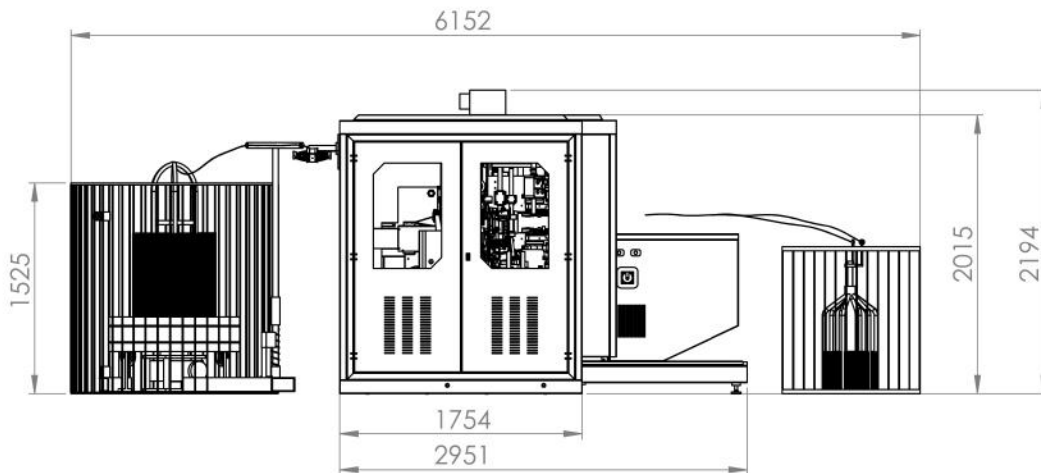
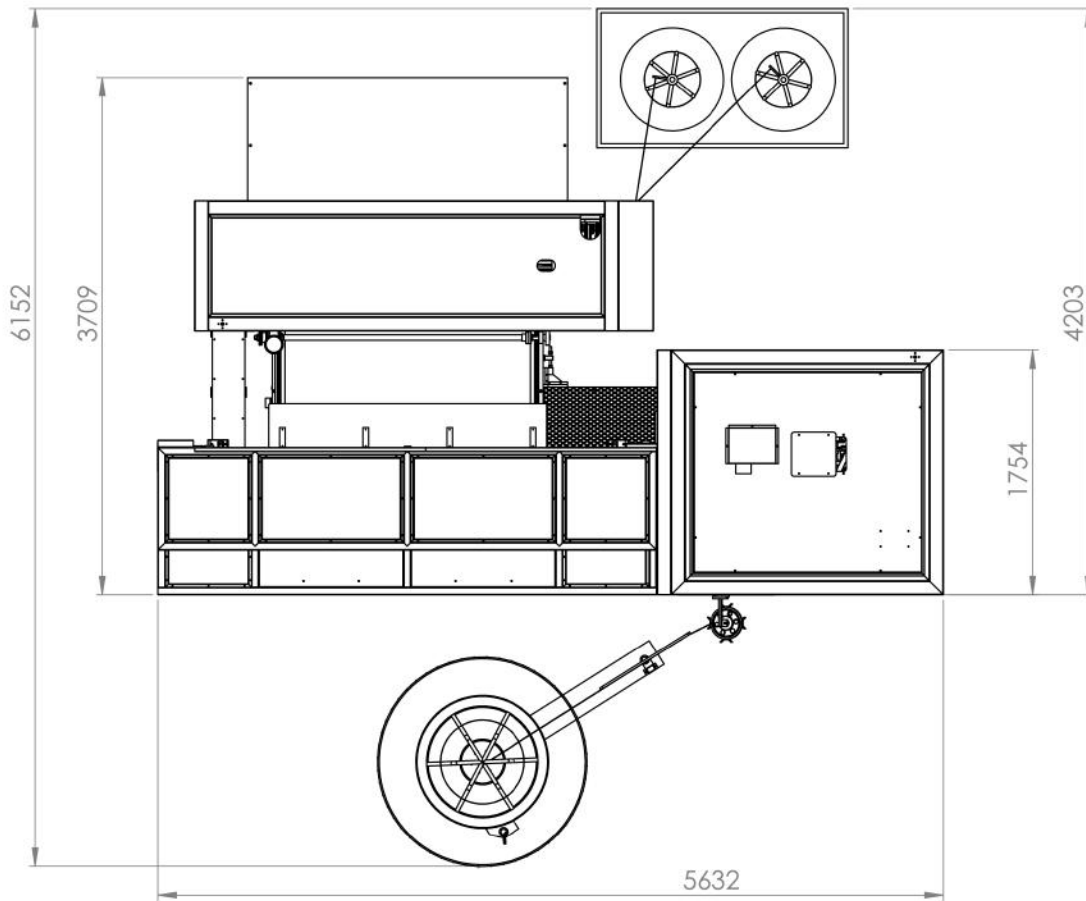


Germany



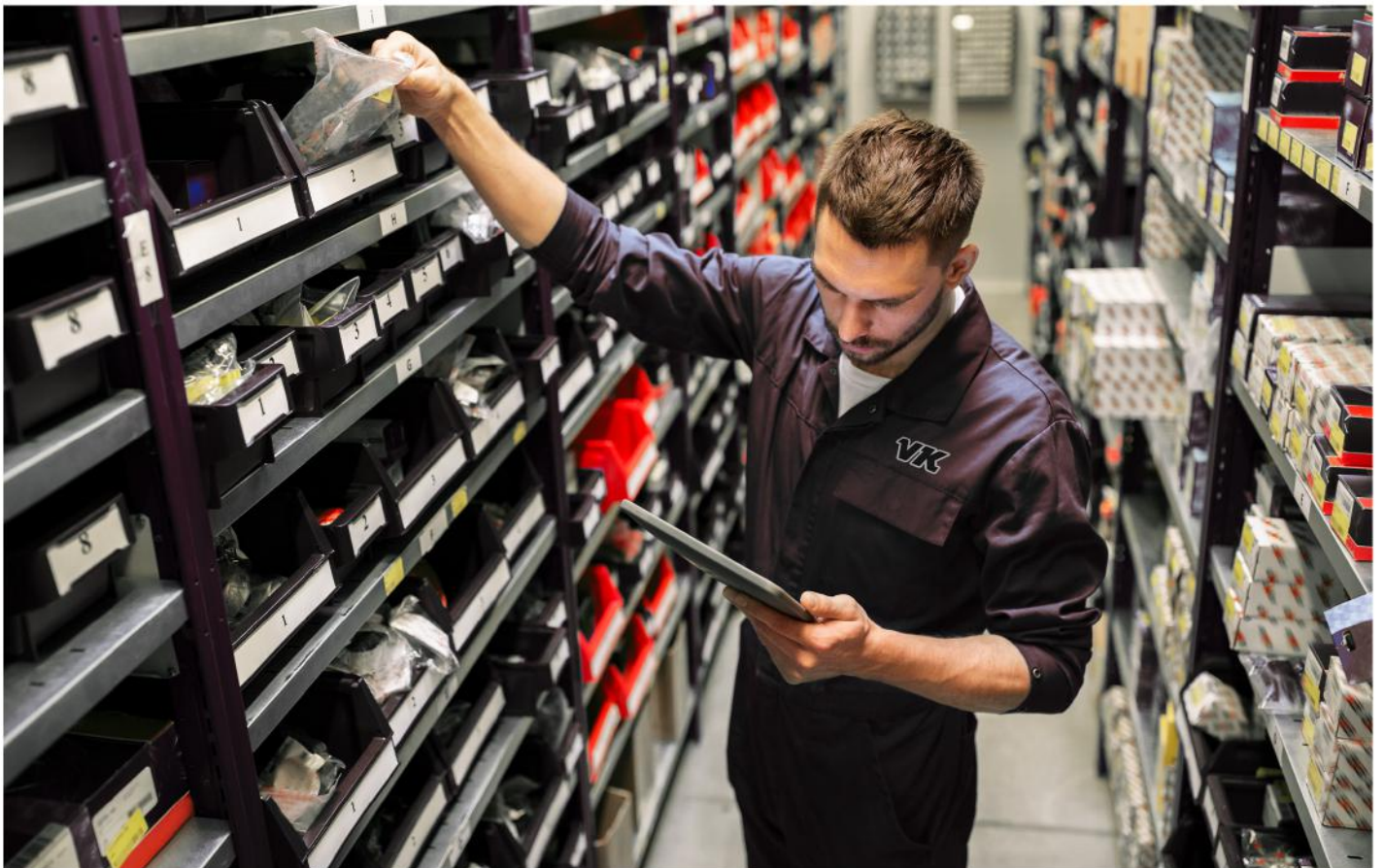
Austria

# Space Requirements



## × Service & Spare Parts

VK Mattress Machinery's sole purpose after every machine sale is to make sure we provide our customers with the best after-sale service, whether it's machine installation, training for the company's operators or spare parts, when it comes to the latter, we make sure we possess an extensive inventory that can serve manufacturers around the world as a supply for any replacement part needed for the VTC 100, on top of that we gladly offer convenient and fast delivery options to reduce the time it takes to get your goods. Even if you need a part and it's not in stock, we will make it especially for you.



— Service & Spare Parts

## × Remote Support Service

In case all our talented technicians are out on missions to support our customers with the needed mechanical or electrical work around the world, we do offer remote support for situations that doesn't require any presence from our technicians by providing a remote access solution that allows us to dig deep into any issue and solve it in the quickest timeframe possible.

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The machines complies with CE safety standards.

**VK**

The information in this brochure contains only general descriptions and performance characteristics that may not always be as described or illustrated in a particular application. In addition, the products may have changed through further development. The desired performance features are only binding if they have been expressly agreed in writing upon conclusion of the contract.