

VETRON

POKA YOKE · SEWING

SUPPORTING OPERATORS - PREVENTING ERRORS

POKA YOKE

The Japanese term Poka Yoke stands for the concept of continuous quality improvement through the avoidance (yoke) of unintentional errors (poka).

The starting point for Poka Yoke is the realisation that no human being and no system is capable of completely avoiding unintentional errors. With Poka Yoke, simple and effective systems are usually used to ensure that incorrect actions in the manufacturing process do not lead to errors in the end product.



VETRON POKA YOKE · SEWING

Process requirements are defined and continuously monitored by the POKA YOKE SYSTEM. If deviations between the target state and the actual state are detected, the SYSTEM stops the process and communicates an error message to the operator.

For process steps to be enabled by the POKA YOKE SYSTEM, all relevant requirements must be met.

VETRON POKA YOKE · SEWING
... GROWING WITH THE TASKS
MODULES KIT PLUG & PLAY



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 To recognize the colour and material surface

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 Software controlled sewing machine series inter-operable with VETRON POKA YOKE SYSTEM

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 For the authorization of users or parts with identification label

1 // VETRON TOUCH 4.0

...BASE OF POKA YOKE · SEWING

MORE CONTROL - SIMPLE OPERATION

VETRON TOUCH 4.0 represents the digital addition to your VETRON sewing machine. The original sewing machine control panel with keys and rotary wheel is replaced by a clear and intuitive touch display that is connected directly to the machine control.

The VETRON TOUCH 4.0 takes over all previous functions of sewing machine operation and additionally enables the integration of digital content to support the user (for example operating instructions with photos / videos).

The seam designer supports the definition of chain programs. It visualizes the programs in the display field. Additional events can be integrated between seam sections. The current seam section is highlighted in the display field during sewing.

User access management enables the assignment of rights to different user groups.

The system history records data that can later be used for precise production analysis or accurate trouble shooting.

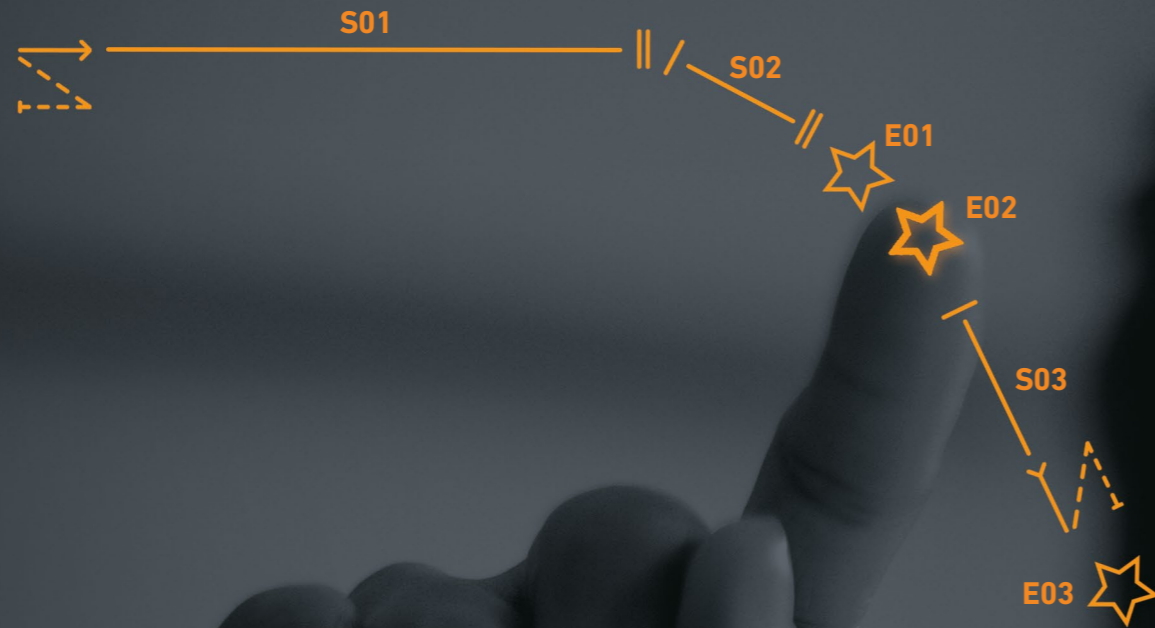
Service personnel are supported in their work by digital content and setup wizard. Predictive maintenance functions help to minimize down time and prevent failures.

We have thus created the basis for executing various applications with only one control panel at the sewing workstation.



1 // VETRON TOUCH 4.0

...BASE OF POKA YOKE · SEWING



UNIQUE 2D SEAM DESIGNER

The innovative VETRON Seam Designer is unique in the sewing industry. Handling, administration and creation of seam programs and seam chains are innovative and self-explanatory. The VETRON Seam Designer offers a 2D graphic view in which the seam properties can be assigned easily.

Special functions for POKA YOKE applications are marked as so-called EVENTS. With a simple assignment, they can be part of complex seam chains - clearly arranged and easy to update.

POKA YOKE FUNCTIONS INTEGRATED INTO SEWING PROGRAMS

The TOUCH 4.0 offers an intuitive 2D seam designer for programming seams and chain programs. POKA YOKE functions can be assigned as „EVENT“ in between the chain segments.

The POKA YOKE functions offer the user the highest level of safety to avoid unintentional errors.

The respective POKA YOKE feature is shown on the display; if it is not executed correctly, the machine is stopped.

In this way, unintentional errors can be avoided, thus saving costs and resources.



VETRON 5000 SERIES

VETRON 5000 series - The base of POKA YOKE SEWING is an innovative, digitally controlled VETRON 5000 series sewing machine.

Through the consistent use of state-of-the-art electronic and software control, it became possible for all machine settings to be programmable.

This allows the process parameters to be free from operators influence and identical every time the program is recalled.

The innovative dynamic machine parameters, which adapt sewing parameters based on the actual speed and the permanent measurement of the material thickness, open new possibilities of production quality, process security and the reduction of cycle times.

User access management enables the assignment of access rights to different user groups.

FEATURES

PROGRAMMABLE SETUP

All machine settings are programmable and storable: stitch length, sewing feet pressure, top feed stroke, needle thread tension, clearance under the sewing feet ...

Fast and precise setup of the machine by recall of a stored machine program.

User identification via USB-dongle to avoid access on machine settings - on demand.

Easy to understand and intuitive programming concept.

Program chain function to combine different production steps directly on one machine. Stitch-in-stitch backtacking

DYNAMIC PROCESS

Permanent measurement of material thickness.

Constant sewing feet pressure reacting on material thickness.

Sewing feet pressure reacting on sewing speed.

Thread tension correction reacting on material thickness.

Top feed stroke management via sewing speed with automatic „cross seam function“.

PROCESS RELIABILITY

User identification via USB dongle (activated via parameter).

Operator does not have access to basic parameters.

Various access codes for Operator / Line Supervisor / Technician / Technical Supervisor (Administrator).

Operator can change sewing programs via barcode scanner (option). The machine automatically adjusts to the preset sewing parameters (Stitch length, speed, thread tension, upper transport stroke, edge guide distance ... etc.).



PLUG & PLAY MODULE

Our VETRON PLUG & PLAY MODULE is the connection between POKA YOKE sensors/cameras and activators and the VETRON TOUCH 4.0.

Up to 4 sensors/cameras can be connected with one module/input. 4 outputs are available for controlling activators, for example, LED lights to illuminate the operating area.

No additional devices are required for the connection of the PLUG & PLAY MODULE. After definition inside the POKA YOKE SYSTEM, all types of sensors can be used.

- » 4 inputs for sensors
- » 4 outputs for activators
- » Connection for to machine control system
- » Connection to VETRON TOUCH 4.0





The label has been positioned incorrectly, the process is stopped.



An incorrect label was used, the process is stopped.



CAMERA FOR SHAPE AND POSITION RECOGNITION

During the sewing process, the IFM camera ensures that the correct labels / parts are used with the correct orientation at the correct position.

- » For presence, completeness, position and quality control
- » Contour detection independent of rotational position
- » Stand-alone unit with integrated illumination
- » Intuitive, user-friendly operation
- » Powerful Ethernet interface for data transmission



SENSOR TO DETECT THE COLOUR AND STRUCTURE

The colour sensor is a photoelectric sensor that emits a light beam by means of a transmitter and then evaluates the light reflected from the detection object by means of a receiver.

The received light intensity/colour values for red, green and blue can be used to evaluate the colours and structure of the detection object. When detecting the structure, it can be recognized, for example, whether the upper material and lower material (in the case of different materials) have been positioned correctly.

- » For the recognition of colours
- » Detects structures of the materials (conditionally)
- » Distance to the material can vary

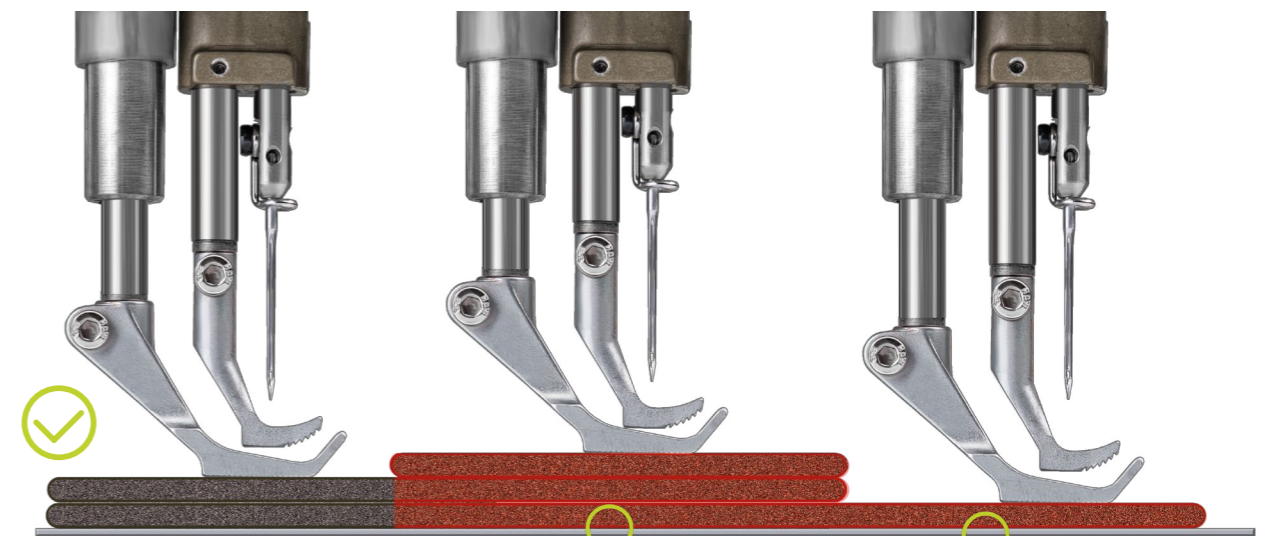


PERMANENT MEASUREMENT OF MATERIAL THICKNESS

The continuous material height thickness measurement is a standard feature of the VETRON 5000 series. This existing functionality can be used for various Poka Yoke functions, for example, to check if a necessary attachment is present and inserted at the correct position or if an additional layer of material has entered the sewing line.

This prevents the unintentional error of wrong attachment insertion or bottom side material misplacement.

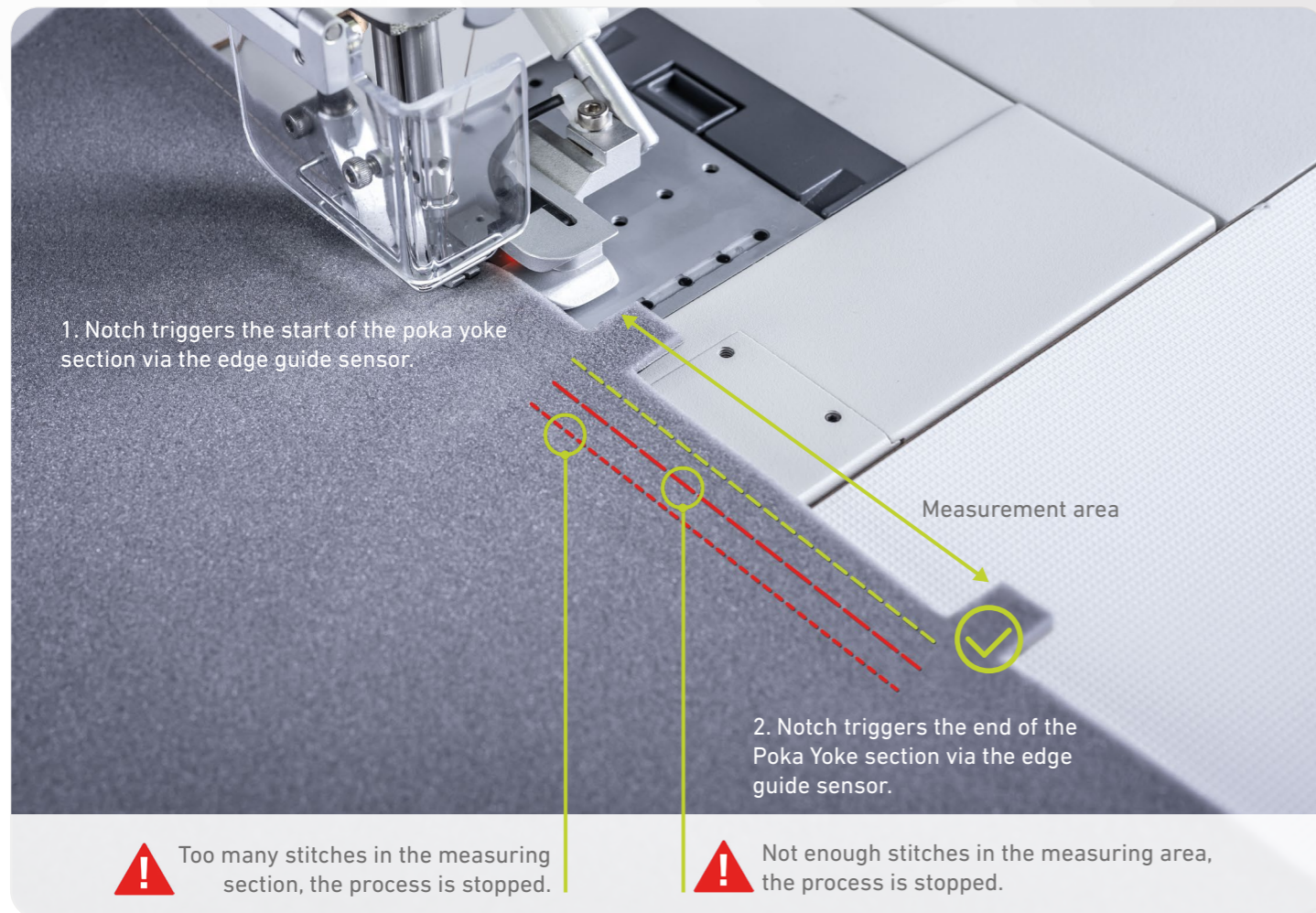
- » Standard sensor in the 5000 series
- » Continuous measurement of the material thickness



! Material thickness is above the target, the process is stopped.

! Material thickness is below the target, the process is stopped.





EDGE GUIDE WITH NOTCH DETECTION

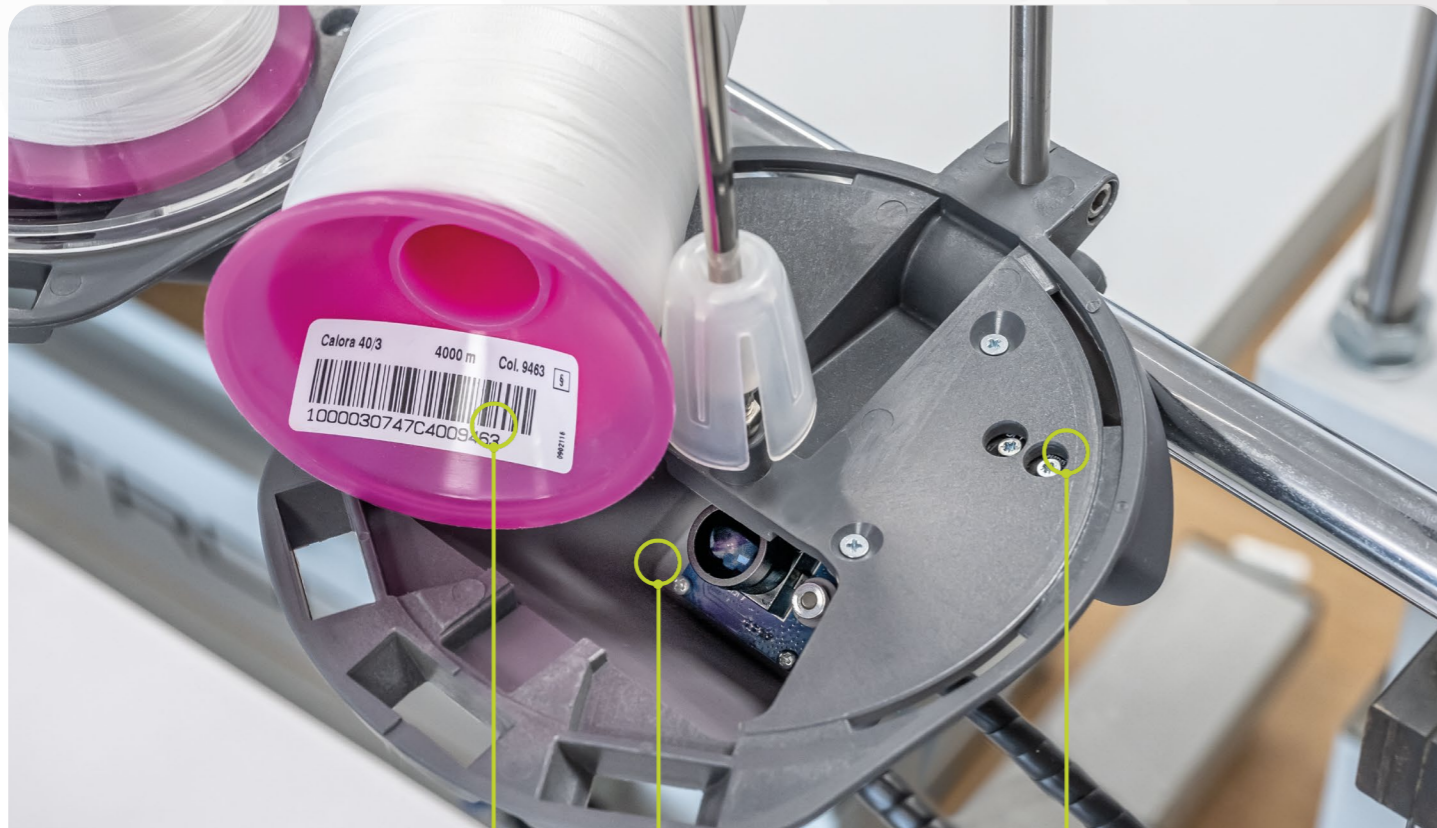
Various POKA YOKE functions can be triggered by the notch detection. For example, a stitch length measurement with stitch counting, a measurement of the thread tension or the material thickness measurement via the presser foot height sensor. Furthermore, the printer functions for labels can be activated by notches.

- » Edge guide
- » Notch detection
- » Trigger and stop functions
- » Swing out

If the preset values are not matched adhered to, the machine is stopped and the process is aborted.

Thanks to the latest technology of the VETRON 5000 series, machine parameters such as stitch length, top feed stroke, tension or sewing speed can be digitally adjusted.





A bottom side label with barcode can contain information like thread type and thread colour.

Camera for reading the thread cone barcode label. If the readout is not matching the defined code, the process will not start.

Monitoring of access to the protective cover. The process is not started when the protective cover has been opened after the last thread cone label scan.

THREAD CONE ACCESS CONTROL

8 // THREAD CONE MONITORING

The thread cone monitoring checks the yarn used (type/colour) and checks it against the specifications.

If the thread is not correct or the thread cone is not detected, the process cannot be started. Intervention during the process is also reported as an error.

9 // PROTECTIVE COVER OPENING SENSOR

The protective switch for monitoring the closed yarn guard is another tool for preventing unauthorised manipulation of the process.





Start release only takes place with an authorized barcode readout. If the result is a code that is not registered for the process, the sewing operation cannot be started.

BARCODE SCANNER

VETRON POKA YOKE provides a USB interface to connect various type of barcode scanners.

Thus, information from both 1D and 2D barcodes can be read and used in the production process. Barcodes can be used, for example, to identify parts, or for the authentication of users.

- » Wireless device
- » Excellent recognition of poor-quality codes
- » Ergonomic design
- » Easy to install
- » Connection via USB directly to VETRON TOUCH 4.0





RFID READER

The RFID reader enables the reading of various RFID tags such as cards or chips.

The function can be used to authorize a user or to confirm a part to be sewn. If the RFID tag is not authorized, the process is not started.

An RFID tag can also be stored with a serial number, which is attached to the product after reading. In this way, the product can be clearly identified during its lifetime.

- » Various 3rd party RFID readers possible
- » Verification of users „Check in“
- » Product verification
- » Different RFID tag types possible
- » Easy to install
- » Connection via USB directly to VETRON TOUCH 4.0





SMART INTEROPERATING NETWORK

INDUSTRY 4.0

Industry 4.0 is all about networking – networking between several system components on one hand, and networking between machines and operators working in the production line on the other.

This is exactly where VETRONs new industry 4.0 solution v_sion comes in to connect production and operating data with the analysis and process know-how of the engineers. The resulting smart interoperating network offers genuine added value to the facility.

FUNCTIONALITY

v_sion links every workplace to a network, whether it's a fully equipped sewing workplace or a manual workplace. It is monitoring and analyzing the process, like the efficiency of line and workplace, parts per time, the scrap level, repair time, or the machine downtime. As a result, it provides the best possible detection of optimizing potentials for the process.

The display of video tutorials, process instructions or software updates is provided by the v_sion data base.

In case of troubleshooting, alarms are sent to supervisors or technicians.

V_SION DIFFERENT MODULES

RAMP-UP

Visual Assistance

Work step instructions

Supervisor call

Operator guidance

Individual performance tracking

Quality check-points

EFFICIENCY

Operator performance

Live production line status

Live overview per station

Line KPI Reporting

Line Balancing

History of problems

MAINTENANCE

Predictive maintenance

Corrective maintenance

Technician call

Downtime measuring

Machines stock monitoring

Machine error declaration

POKA YOKE

Control amounts of layer

Control presence and orientation of label/parts

Control upper/bottom thread

Control dynamic thread tension

Visual detection of parts

Pick to light

Traceability

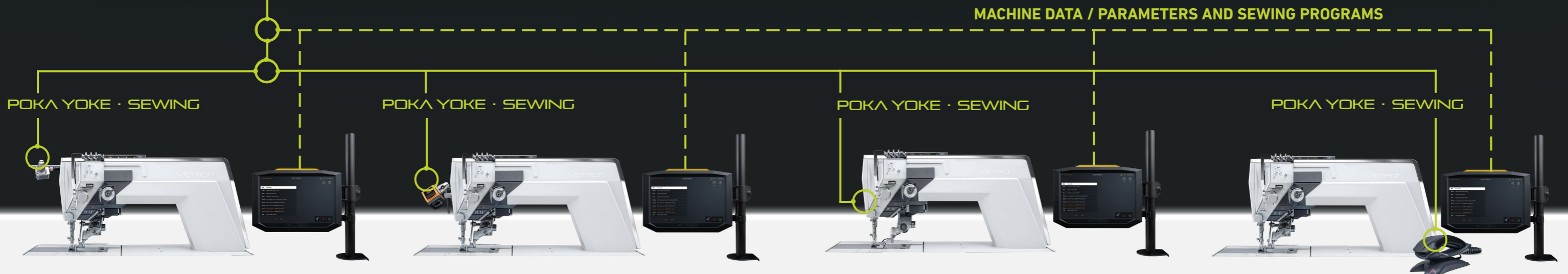
ERP/SAP

Pulling / pushing production run relevant data



POKA YOKE WITH V_SION

Integration of the Poka Yoke stations into the v_sion network environment to manage the production centralized and collect performance data in a database





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