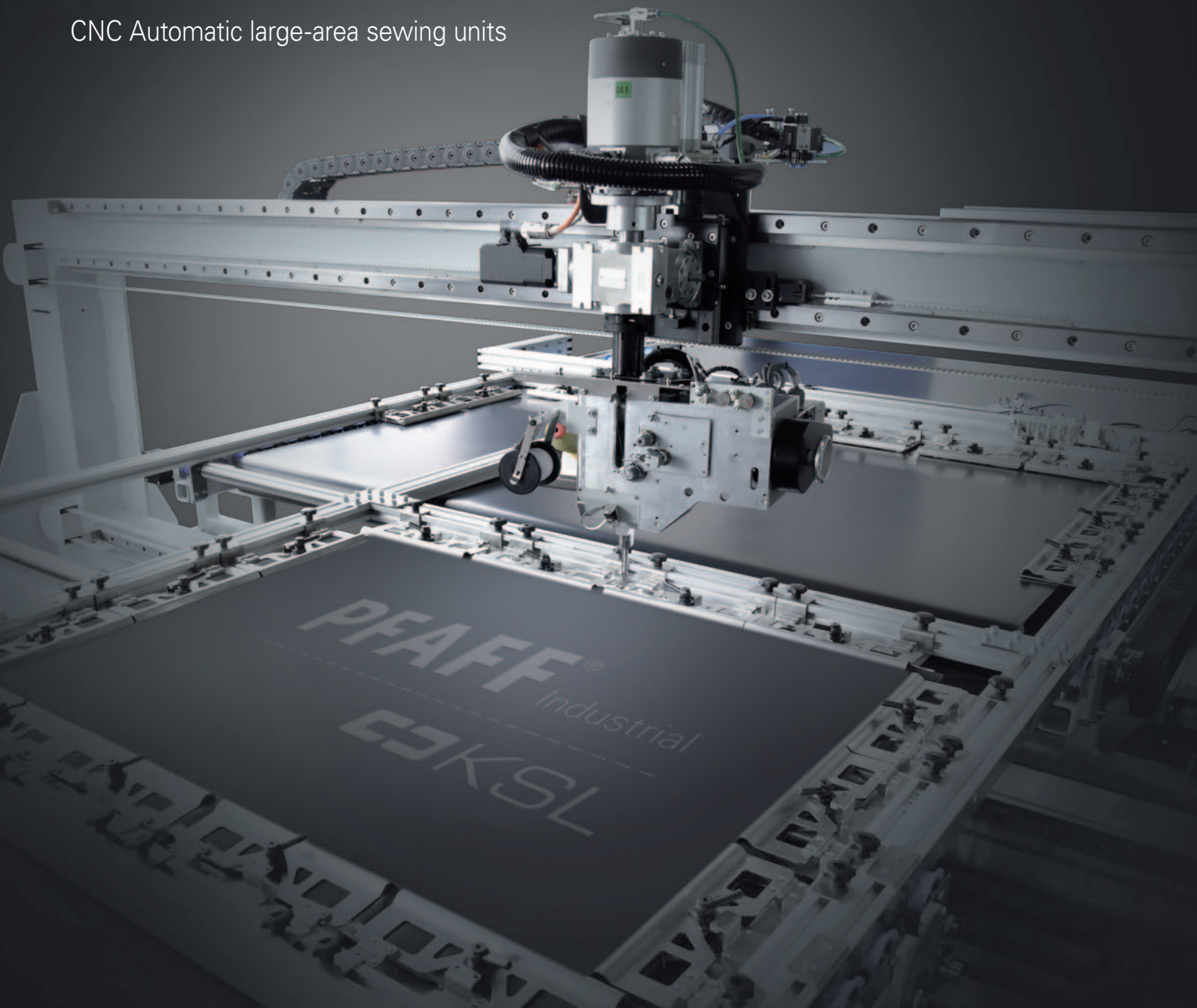
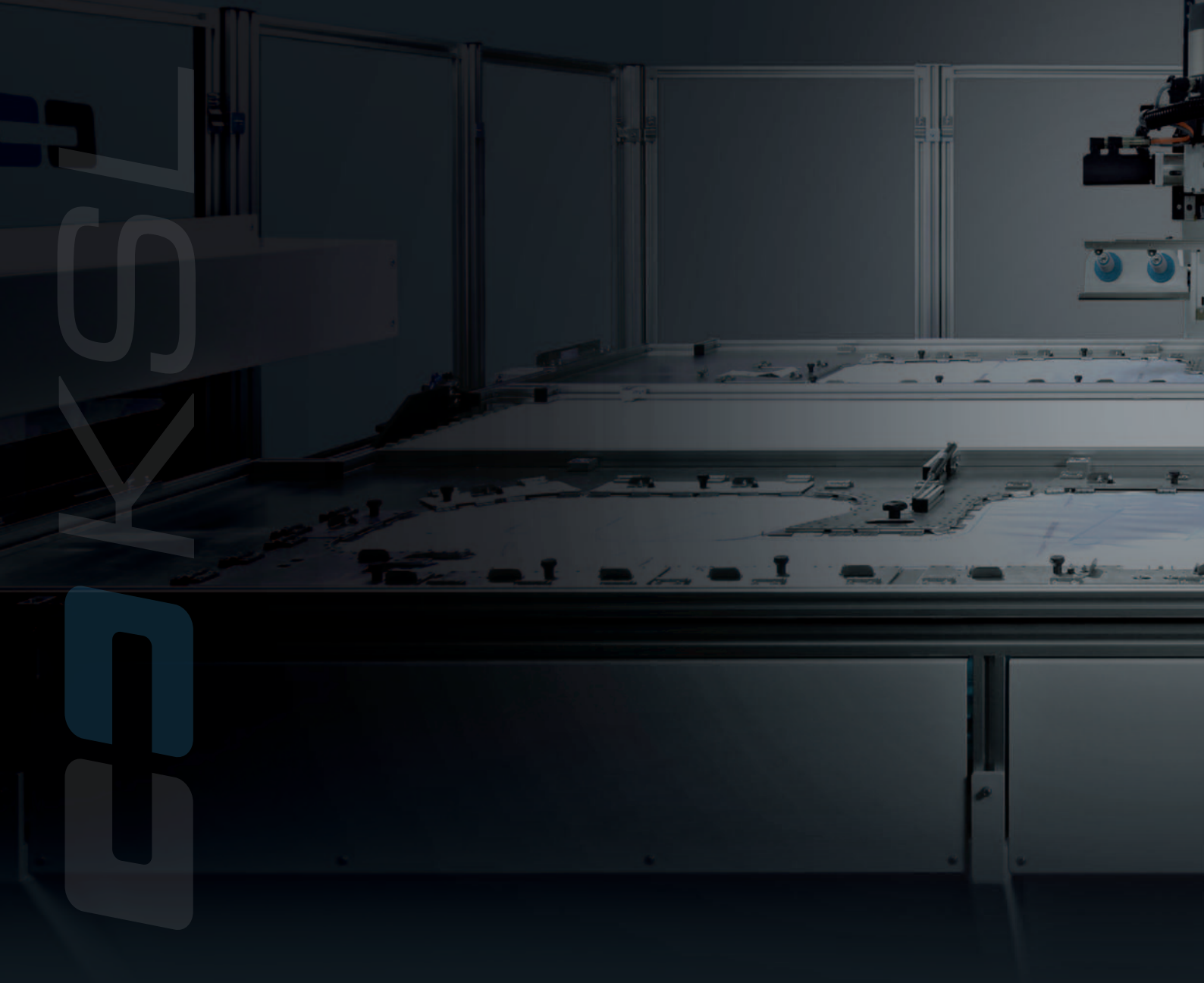


PFAFF[®] Industrial

CSKSL

CNC Automatic large-area sewing units



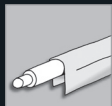
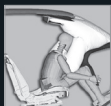


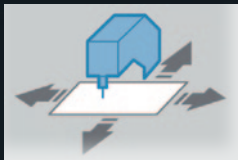
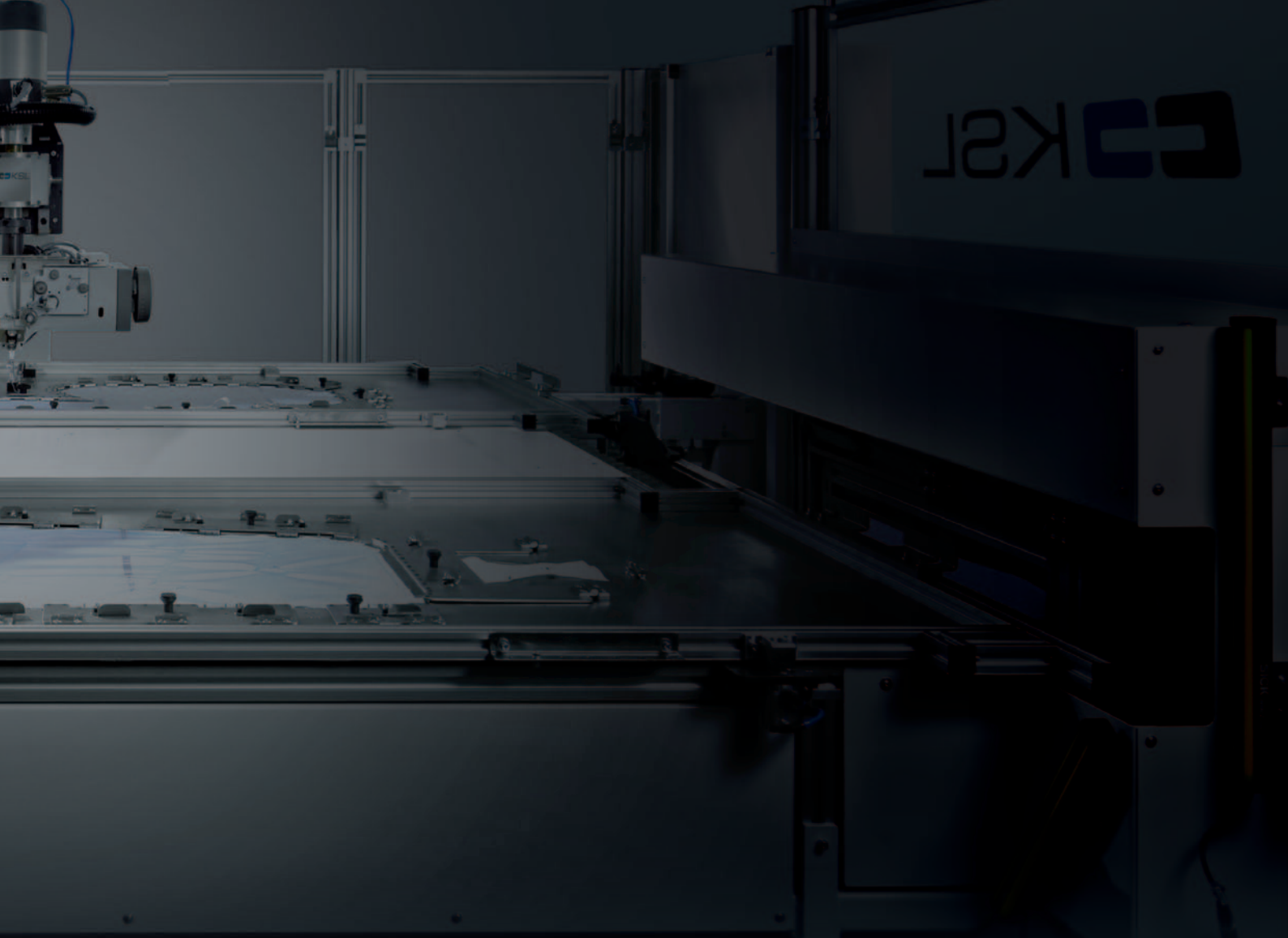
Highest process reliability + maximum performance. This is what the KSL CNC sewing units with for servo-controlled continuous or intermittent free programmable sewing stands for. With KSL large area sewing machines, the customer's individual requirements (material, application, output, product size, etc.) are already recorded in the project phase and consistently implemented to the finished production solution.

The customer has a unique variety of CNC machines at his disposal for selecting the right machine. This is defined not only by the size of the sewing field, but also by:

- Type of the sewing head (KSL turning-head, M-Type head, H-Type head, Powerline head, etc.)
- Set-up of the sewing unit (standard or portal)
- Movement of the template (stationary, X- and/or Y-axis driven)
- Movement of the sewing unit (stationary, X- and/or Y-axis driven)
- Type and set-up of the template
- Possibility of overlapped work (second template, template changer system)

The aim is to achieve maximum process reliability and maximum output, in combination with the best sewing result. This can be achieved in a unique way with KSL solutions.





KL 300

- CNC-Sewing unit
- Sewing machine, stationary
- Template X- and Y-axis driven



KL 301

- CNC-Rotating head
- Sewing machine, stationary
- Template X- and Y-axis driven



KL 310

- CNC-Sewing head
- Sewing machine X-axis driven
- Template Y-axis driven



KL 110 / KL 311

- CNC-Rotating head
- Sewing machine X-axis driven
- Template Y-axis driven



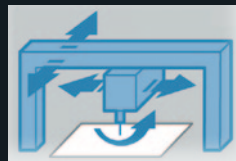
KL 351

- CNC-Rotating head
- Sewing machine, stationary
- Template X- and Y-axis driven



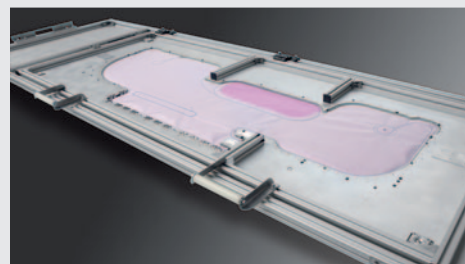
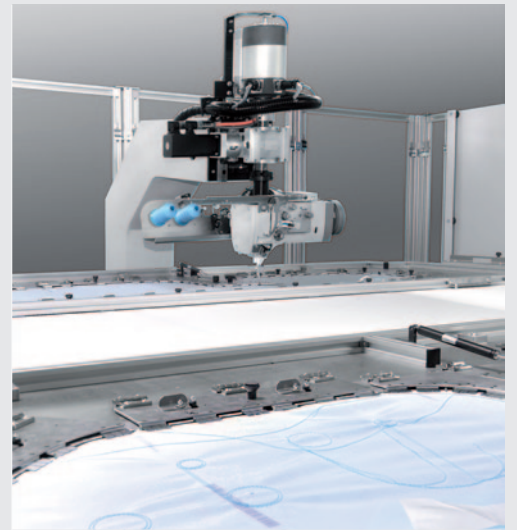
KL 361

- CNC-Rotating head
- Sewing machine X-axis driven
- Template Y-axis driven



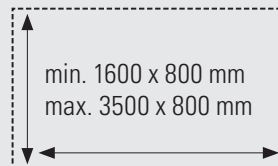
KL 371

- CNC-Rotating head
- Sewing machine X- and Y driven
- Template, stationary



KL 110

CNC sewing unit with template changing system (Sewing areas from 1600 x 800 mm to 3500 x 800 mm)



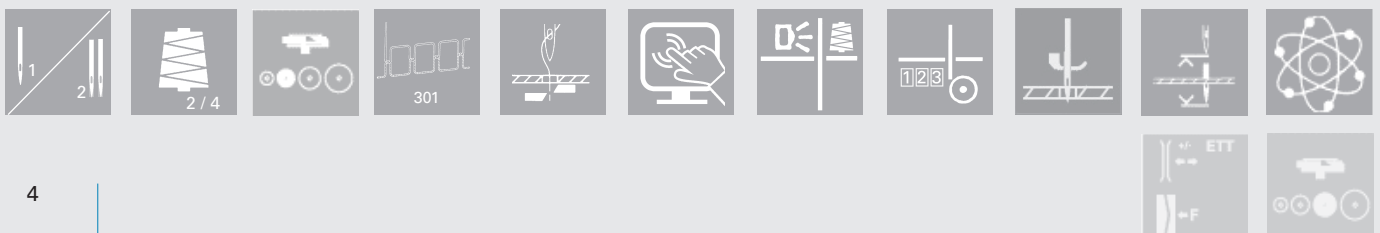
- Sewing machine X-axis driven, template Y-axis driven
- 360° rotating head with alternating double transport for perfect seam results in the multi-directional sewing process
- Excellent sewing properties due to vertical hook system
- Two needle version
- Sewing head, pneumatically liftable (80 mm) for direct access to any seam position
- Electromagnetic thread trimmer for upper and lower thread
- Adjustable thread tension (Option: Thread tension continuous by proportional valve VPPM)
- Upper thread monitor via sensor (The machine stops when the thread tension decreases)
- Lower thread monitoring by stitch count (alternatively by photoelectric thread monitor)
- Clamping device for the fixation of the sewing template in the sewing area
- Template changer system for overlapping workflow
- Automatic template detection
- Various options available to upgrade the machine (RFID sensor, barcode scanner, thread tension monitoring etc.)
- Option: VISION SYSTEM with up to 4 cameras

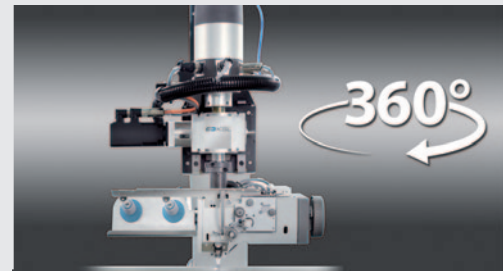
Typical field of application

- Sophisticated security-, functional- and decorative seams
- Special version for sewing headbags

Specifications

- Stitch length: max. 12 mm
- Sewing speed: max. 2,800 stitches/min.

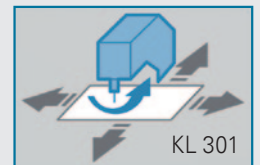
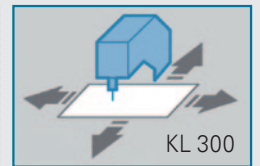
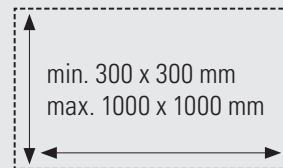




KL 300/301

CNC sewing unit with stationary or rotating sewing head (Sewing areas from 300 x 300 mm to 1000 x 1000 mm)

- KL 300: Stationary sewing head selectable: PFAFF 3590, M-Type, H-Type
- KL 301: 360° rotating KSL head with alternating double transport for perfect seam results in the multi-directional sewing process
- Sewing machine is stationary, template is X- and Y-axis driven
- Excellent sewing properties due to vertical hook system
- Special version with H-Type sewing head for extremely heavy-duty applications
- Sewing head, pneumatically liftable (75 mm) for direct access to any seam position
- Electromagnetic thread trimmer for upper and lower thread
- Adjustable thread tension (Option: Thread tension continuous by proportional valve VPPM)
- Upper thread monitor via sensor (The machine stops when the thread tension decreases)
- Lower thread monitoring by stitch count (alternatively by photoelectric thread monitor)
- Clamping device for the fixation of the sewing template in the sewing area
- Feeding table and second template for a fully-overlapping work process (Option)
- Automatic template detection
- Various options available to upgrade the machine (RFID sensor, barcode scanner, thread tension monitoring etc.)

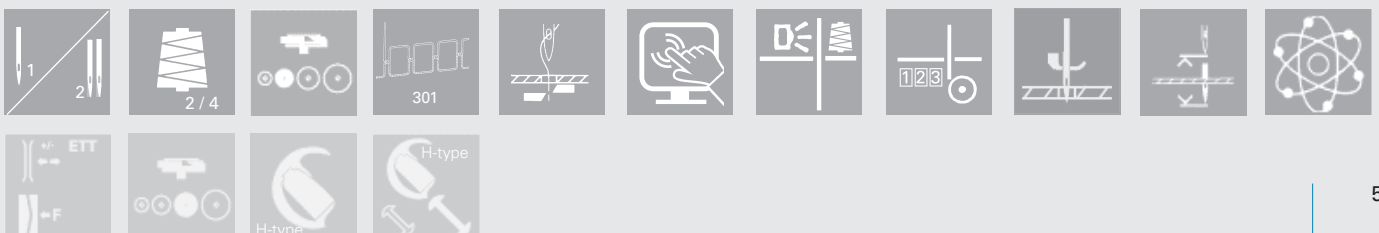


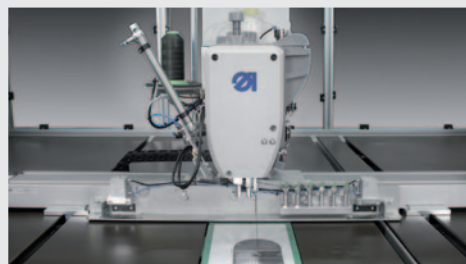
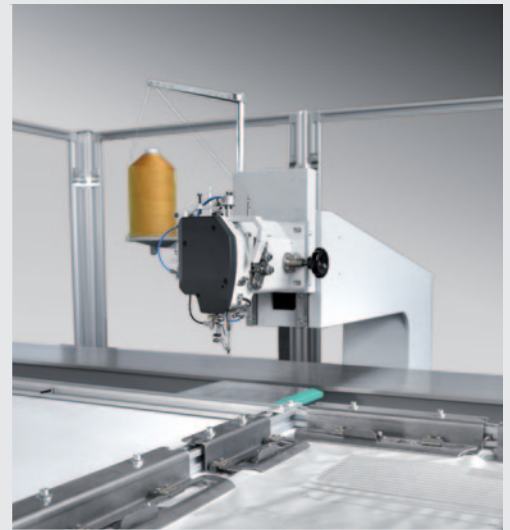
Typical field of application

- Sophisticated security-, functional- and decorative seams

Specifications

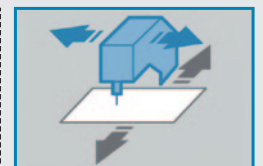
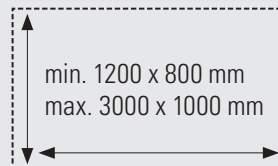
- Stitch length: max. 12 mm
- Sewing speed: max. 2,800 stitches/min.





KL 310

CNC sewing unit with stationary sewing head (Sewing areas from 1200 x 800 mm to 3000 x 1000 mm)



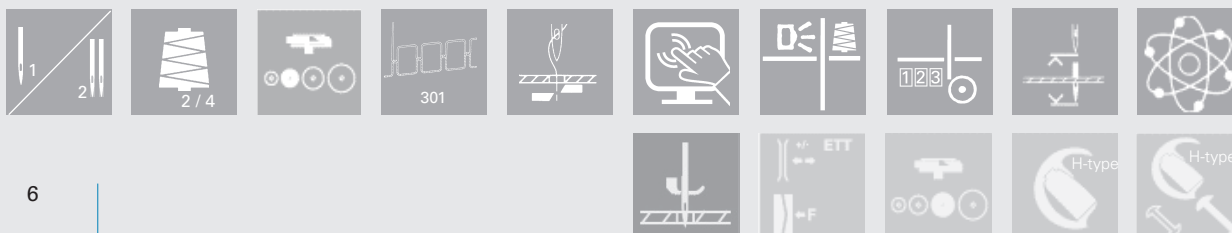
- Sewing head selectable: PFAFF 3590, M-Type, H-Type
- Sewing machine X-axis driven, template Y-axis driven
- Excellent sewing properties due to vertical hook system
- Special version with H-Type sewing head for extremely heavy-duty applications
- Sewing head, pneumatically liftable (75 mm) for direct access to any seam position
- Electromagnetic thread trimmer for upper and lower thread
- Adjustable thread tension (Option: Thread tension continuous by proportional valve VPPM)
- Upper thread monitor via sensor (The machine stops when the thread tension decreases)
- Lower thread monitoring by stitch count (alternatively by photoelectric thread monitor)
- Clamping device for the fixation of the sewing template in the sewing area
- Template changer system for overlapping workflow (Option)
- Automatic template detection
- Various options available to upgrade the machine (RFID sensor, barcode scanner, thread tension monitoring etc.)
- Option: VISION SYSTEM with up to 4 cameras

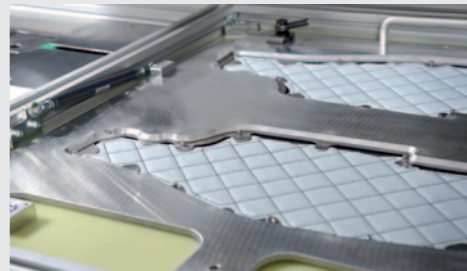
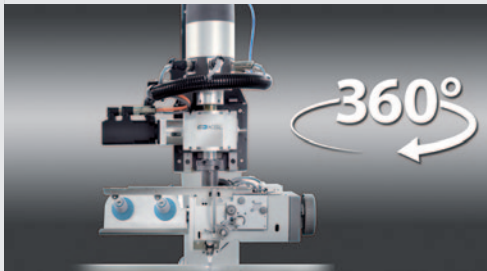
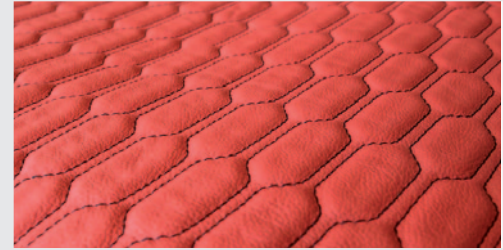
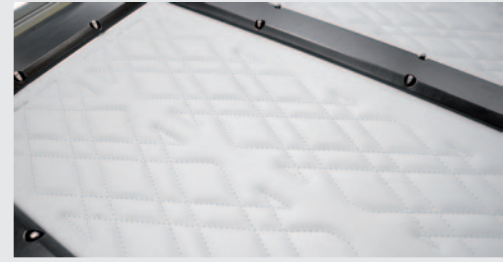
Typical field of application

- Sophisticated security-, functional- and decorative seams

Specifications

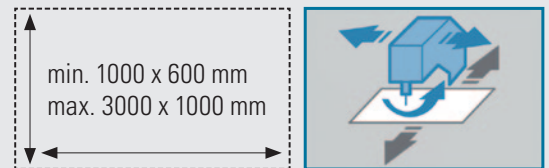
- Stitch length: max. 10 mm
- Sewing speed: max. 2,800 stitches/min.





KL 311

CNC sewing unit rotating with sewing head (Sewing areas from 1000 x 600 mm to 3000 x 1000 mm)



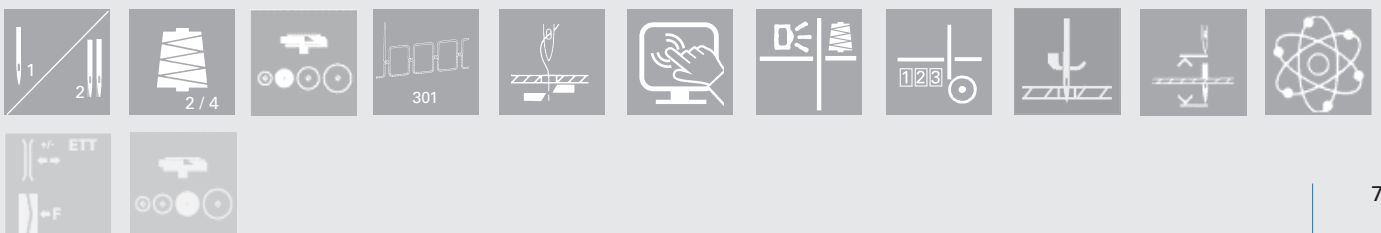
- Sewing machine X-axis driven, template Y-axis driven
- 360° rotating head with alternating double transport for perfect seam results in the multi-directional sewing process
- Excellent sewing properties due to vertical hook system
- Two needle version
- Sewing head, pneumatically liftable (75 mm) for direct access to any seam position
- Electromagnetic thread trimmer for upper and lower thread
- Adjustable thread tension (Option: Thread tension continuous by proportional valve VPPM)
- Upper thread monitor via sensor (The machine stops when the thread tension decreases)
- Lower thread monitoring by stitch count (alternatively by photoelectric thread monitor)
- Clamping device for the fixation of the sewing template in the sewing area
- Feeding table and second template for a fully-overlapping work process (Option)
- Various options available to upgrade the machine (RFID sensor, barcode scanner, thread tension monitoring etc.)
- Option: VISION SYSTEM with up to 4 cameras

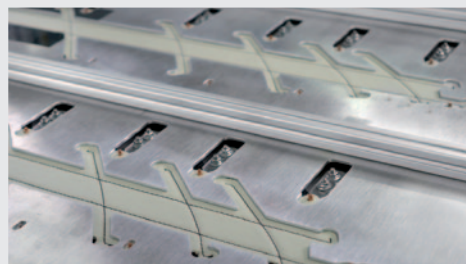
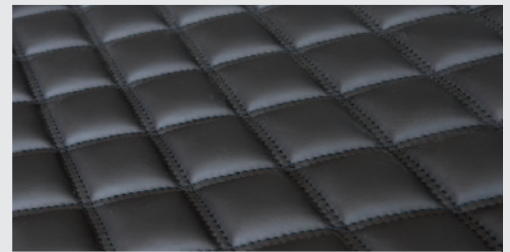
Typical field of application

- Sophisticated security-, functional- and decorative seams

Specifications

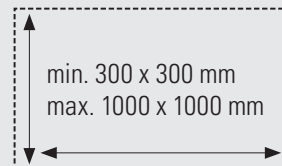
- Stitch length: max. 12 mm
- Sewing speed: max. 2,800 stitches/min.





KL 351

CNC sewing unit (Portal) with rotating sewing head (Sewing areas from 300 x 300 mm to 1000 x 1000 mm)



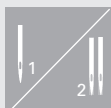
- Sewing machine stationary, template X-axis and Y-axis driven
- 360° rotating head with alternating double transport for perfect seam results in the multi-directional sewing process
- Excellent sewing properties due to vertical hook system
- Sewing head, pneumatically liftable (75 mm) for direct access to any seam position
- Electromagnetic thread trimmer for upper and lower thread
- Adjustable thread tension (Option: Thread tension continuous by proportional valve VPPM)
- Upper thread monitor via sensor (The machine stops when the thread tension decreases)
- Lower thread monitoring by stitch count (alternatively by photoelectric thread monitor)
- Clamping device for the fixation of the sewing template in the sewing area
- Feeding table and second template for a fully-overlapping work process (Option)
- Automatic template detection
- Various options available to upgrade the machine (RFID sensor, barcode scanner, thread tension monitoring etc.)

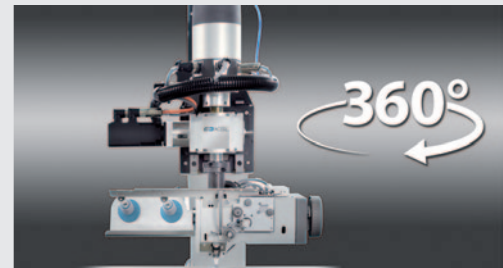
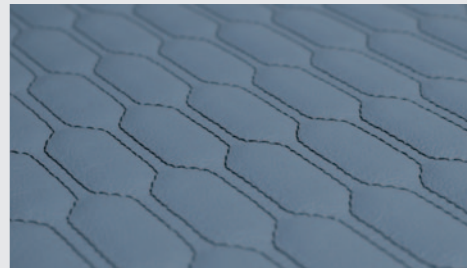
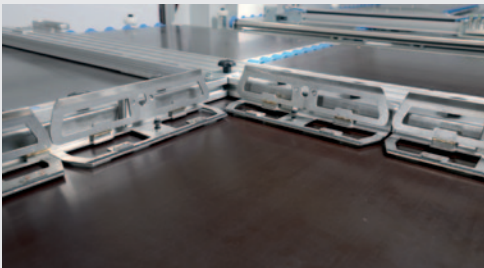
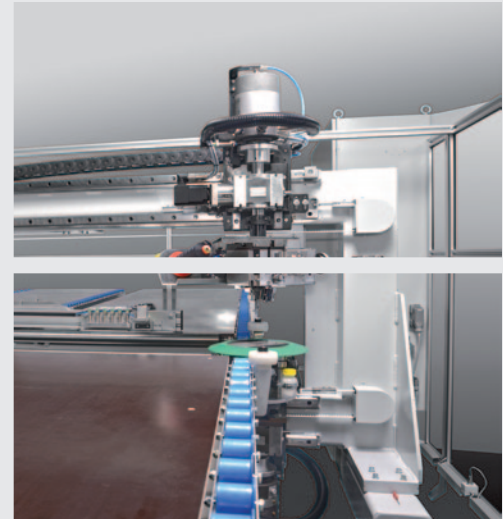
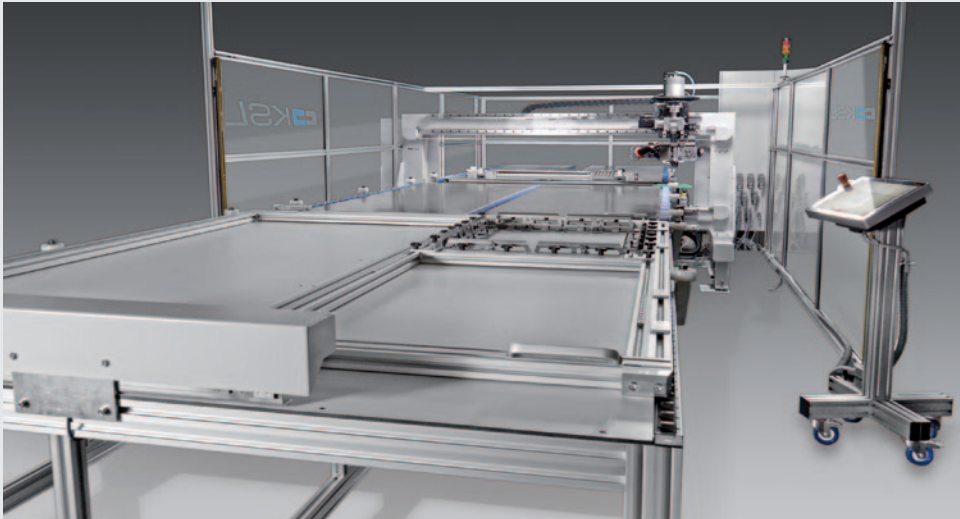
Typical field of application

- Sophisticated security-, functional- and decorative seams

Specifications

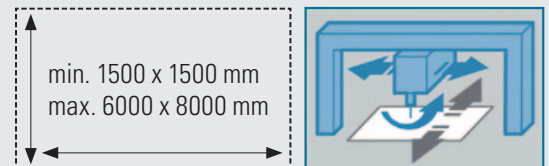
- Stitch length: max. 12 mm
- Sewing speed: max. 2,800 stitches/min.





KL 361

CNC sewing unit (Portal) with rotating sewing head (Sewing areas from 1500 x 1500 mm to 6000 x 8000 mm)



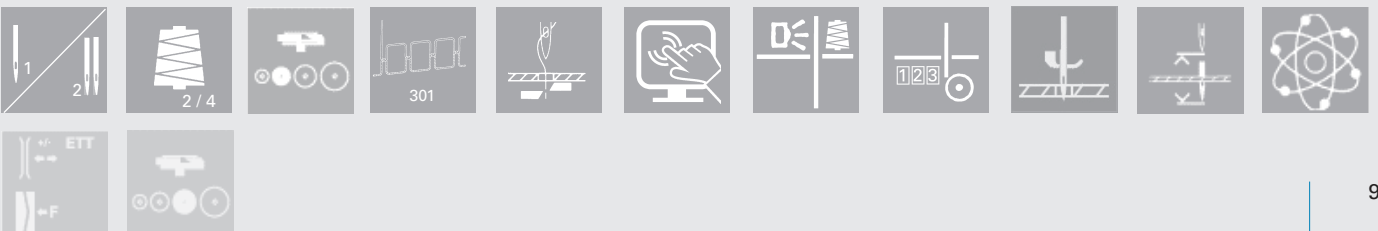
- Sewing machine X-axis driven, template Y-axis driven
- 360° rotating head with alternating double transport for perfect seam results in the multi-directional sewing process
- Excellent sewing properties due to vertical hook system
- Sewing head, pneumatically liftable (75 mm) for direct access to any seam position
- Electromagnetic thread trimmer for upper and lower thread
- Adjustable thread tension (Option: Thread tension continuous by proportional valve VPPM)
- Upper thread monitor via sensor (The machine stops when the thread tension decreases)
- Lower thread monitoring by stitch count (alternatively by photoelectric thread monitor)
- Clamping device for the fixation of the sewing template in the sewing area
- Template changer system for overlapping workflow (Option)
- Automatic template detection
- Various options available to upgrade the machine (RFID sensor, barcode scanner, thread tension monitoring etc.)

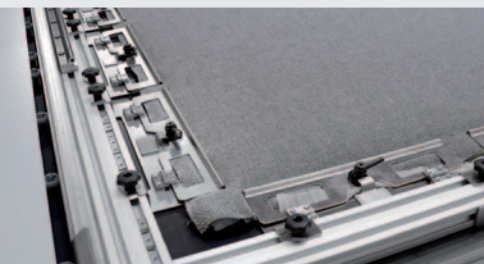
Typical field of application

- Sophisticated security-, functional- and decorative seams

Specifications

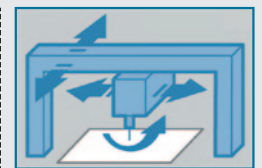
- Stitch length: max. 12 mm
- Sewing speed: max. 2,800 stitches/min.





KL 371

CNC sewing unit (Portal, driven) with rotating sewing head (Sewing areas from 1500 x 1500 mm to 6000 x 8000 mm)



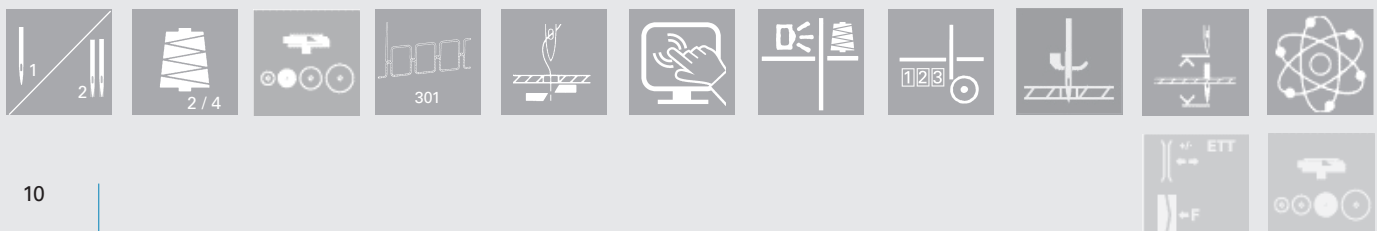
- Sewing machine X-axis and Y-axis driven, template stationary
- 360° rotating head with alternating double transport for perfect seam results in the multi-directional sewing process
- Excellent sewing properties due to vertical hook system
- Two needle version
- Sewing head, pneumatically liftable (75 mm) for direct access to any seam position
- Electromagnetic thread trimmer for upper and lower thread
- Adjustable thread tension (Option: Thread tension continuous by proportional valve VPPM)
- Upper thread monitor via sensor (The machine stops when the thread tension decreases)
- Lower thread monitoring by stitch count (alternatively by photoelectric thread monitor)
- Clamping device for the fixation of the sewing template in the sewing area
- Template changer system for overlapping workflow (Option)
- Automatic template detection
- Various options available to upgrade the machine (RFID sensor, barcode scanner, thread tension monitoring etc.)

Typical field of application

- Sophisticated security-, functional- and decorative seams

Specifications

- Stitch length: max. 12 mm
- Sewing speed: max. 2,800 stitches/min.





The VISION SYSTEM:

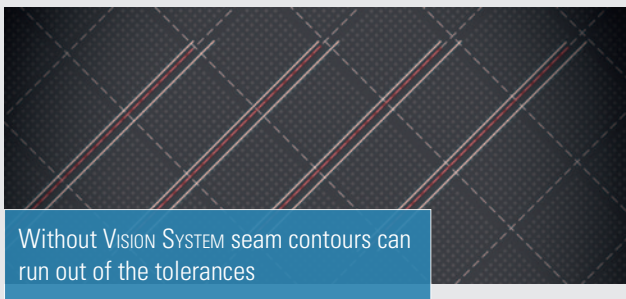
When top-stitching perforated materials made of leather and PVC in the automotive interior sector the VISION SYSTEM is an intelligent solution to increase quality and reduce rejects.

The VISION SYSTEM (equipped with up to 4 cameras) compensates tolerances that arise in the seam contour as a result of material shrinkage and tolerances when punching the perforation, among other things.

Specifically, the VISION SYSTEM compares the image of a master part with the image of a part clamped in the sewing template.

The complete seam design is then automatically corrected in the sewing programme based on the individual measurement points.

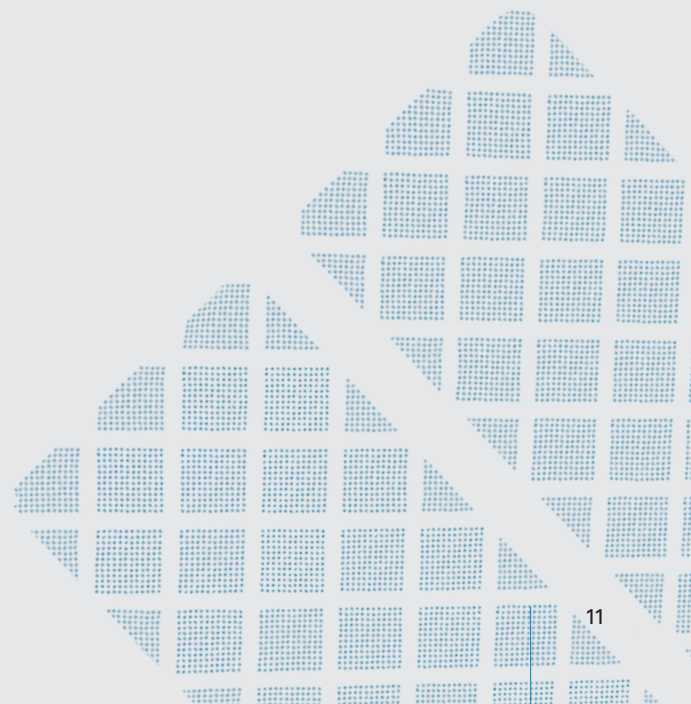
Thus VISION SYSTEM makes it possible to sew between the perforations with millimetre precision and to compensate the resulting tolerances. It is possible to compensate for tolerances of up to 4 mm in the X and Y axes.



Without VISION SYSTEM seam contours can run out of the tolerances



Process reliable seam contours with VISION SYSTEM within the desired tolerances





Automation with robot technology

The KSL robot units combine sewing competence and unique know-how in handling & tooling for the robot-assisted production of application-specific decorative seams and assembly seams.

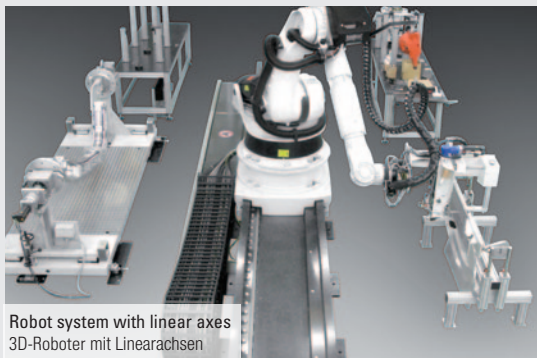
The development and construction of special sewing heads or functional heads, together with the synchronisation of the robot movement form the basis for 3D processing. With these systems, it is possible to achieve a reproducible and consistent stitch length. Operator intervention is reduced to a minimum.

In addition to sewing, other KSL functional heads are available for a wide range of applications such as tape laying, heat-sealing or cutting.

We would be glad to advise you on how you can also promote AUTOMATION and RATIONALISATION combined with maximum PROCESS SAFETY and maximum OUTPUT in your production unit.



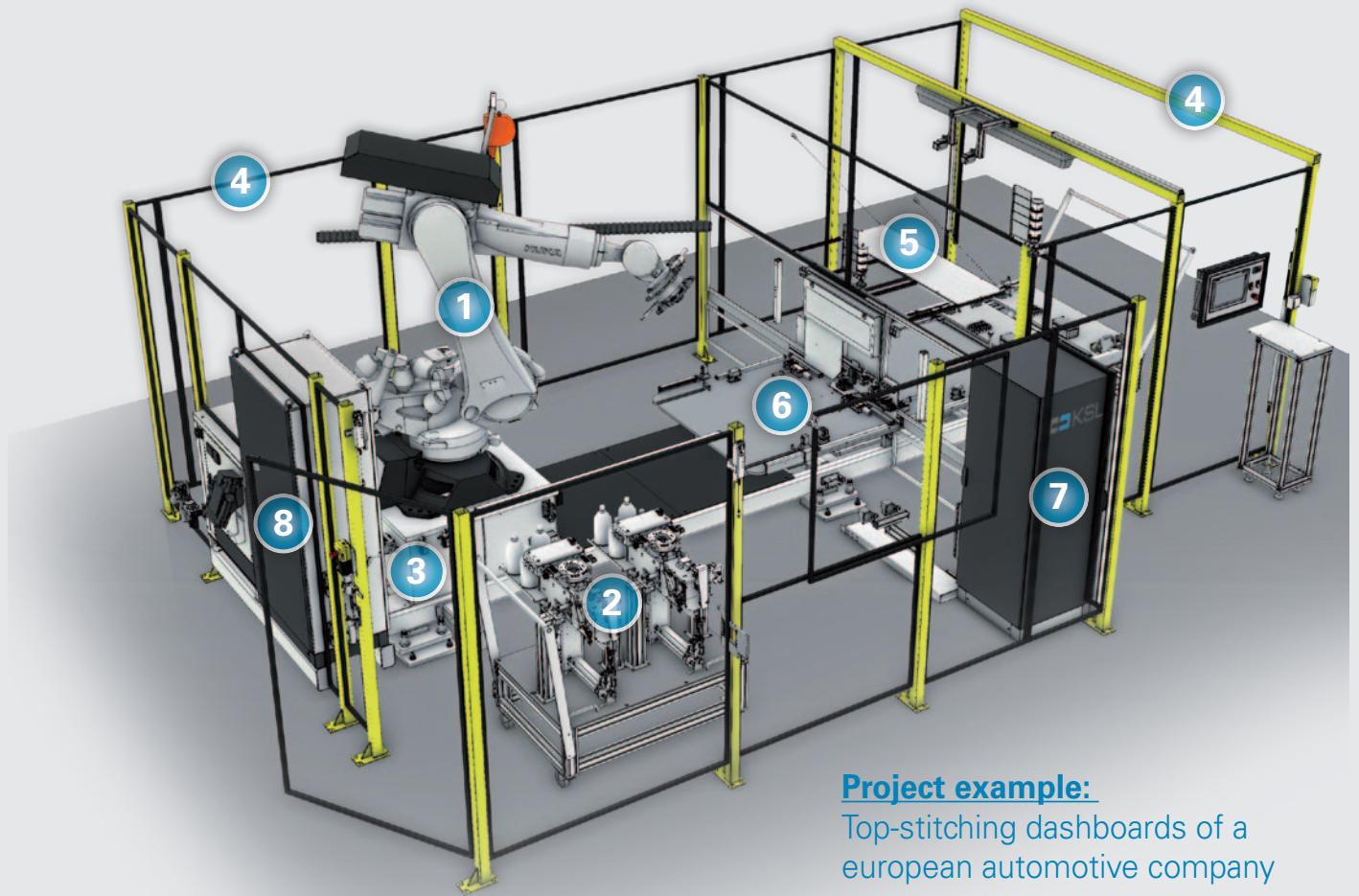
Basic 3D robot system
Basis 3D-Roboter



Robot system with linear axes
3D-Roboter mit Linearachsen



3D robot system with portal
3D-Roboter in Portal-Bauweise



Project example:
Top-stitching dashboards of a
european automotive company

- 1 Robot unit
- 2 Sewing head
- 3 Basic frame
- 4 Protective fence
- 5 Stacking table
- 6 Rotary indexing table
- 7 Vision System
- 8 Switch cabinet



- 3D Robot working cell without turning table
- Robot-guided sewing head



- 3D Robot working cell with turning table
- Robot-guided sewing head



- 3D Robot cell (stationary sewing head)
- Tool/workpiece: robot-guided



The Human Machine Interface (HMI)

- High-performance PC HMI with large number of service functions and freely definable user levels
- 18.5" multi-touch panel PC with USB and LAN interfaces (Windows 10 embedded)
- Visualisation of the sewing contour with progress indicator and direct selection of individual seams
- Detailed status and error messages in local language
- Machine-specific function keys (customisable for the various user levels)
- DIN sewing program editor with syntax highlighting and real-time visualisation of all program modifications
- Comprehensive service functions, customisable for the various user levels:
 - Axis functions (referencing, manual processes, target run, etc.)
 - Teaching the axis positions for the sewing axis
 - Display of internal CNC controller statuses
 - Creation of log and trace files for analysis
 - Detailed configuration of user rights
 - Language management for the entire user interface (currently: German, English, French, Italian, Spanish, Chinese, further possible)
- Remote Access:
 - For maintenance and error analysis, the HMI can be controlled remotely from a PC, laptop or smart device (using TeamViewer® as standard; alternative VPN/remote solutions are available)
 - Depending on the IT infrastructure, remote access to the CNC controller is also available

PFAFF[®] Industrial

KSL

*Be ready for SEWING 4.0!
We are your competent partner for
automated and robot-assisted processing*



Industrienähmaschinen	Industrial sewing machines
CNC-Nähautomaten	CNC sewing units
3D-Nähroboter	3D Sewing robots
Schweißmaschinen	Welding machines
Dokunaht-Systeme	Docu-seam systems
Mehrnadel-Nähanlagen	Multi-needle machines
Vollautom. Produktionsanlagen	Fully-automatic production units
Kundenspezifische Lösungen	Customized solutions

PFAFF INDUSTRIESYSTEME UND MASCHINEN GMBH

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