

ARE YOU LISTENING?





2024 SPESA ADVANCEMENTS IN MANUFACTURING TECHNOLOGIES CONFERENCE

CALIFORNIA MARKET CENTER

APRIL 11, 2024

LOS ANGELES, CALIFORNIA

Shaping

The FUTURE TOGETHER...

How ***AUTOMATION***

TECHNOLOGY and ***INNOVATION***

are ***CHANGING*** our ***INDUSTRY***

Frank Henderson

Robotics, Technology and Automation can Help our industry attain the real objective of ***DRIVING PROFITS, SUSTAINABLE GROWTH, SUSTAINABILITY AND CIRCULARITY*** of Textile Products within the textile value chain.

... Robotics Integration into Sewn Products IS Possible Today

... Shortened Order Lead Times Are Possible

... Over Production is Not Acceptable Today

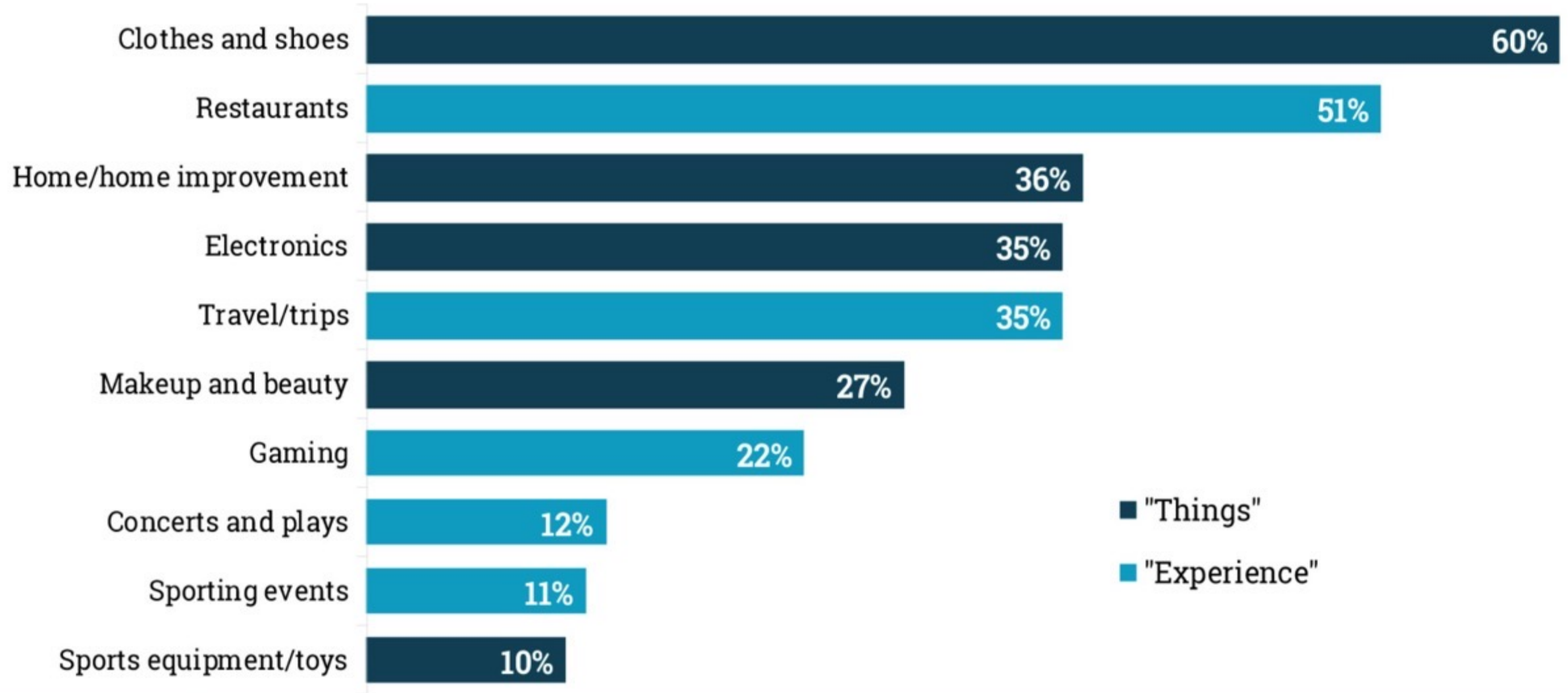
... Sustainability and Circularity of Textile Products IS Attainable

... Finding & Retaining Labor IS an Issue Today

What US Consumers Like to Spend on the Most



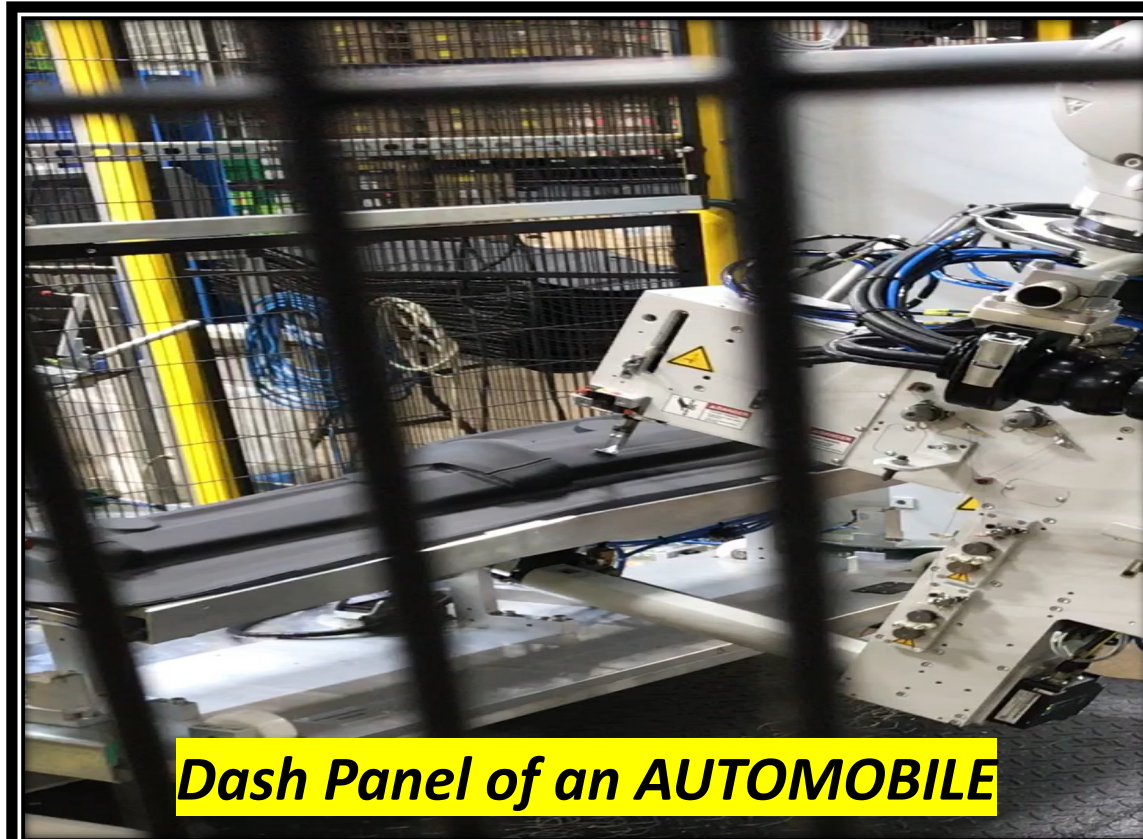
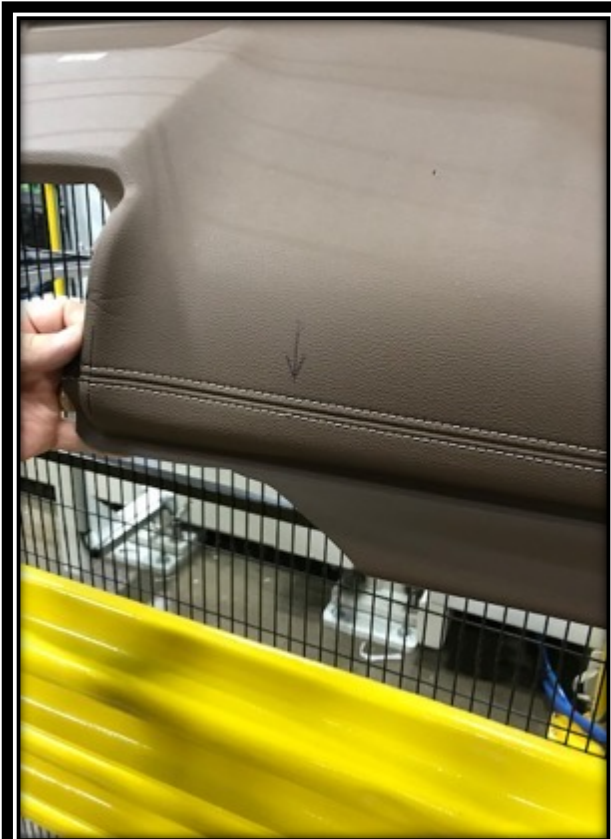
"What do you like to spend on the most? Choose 3."



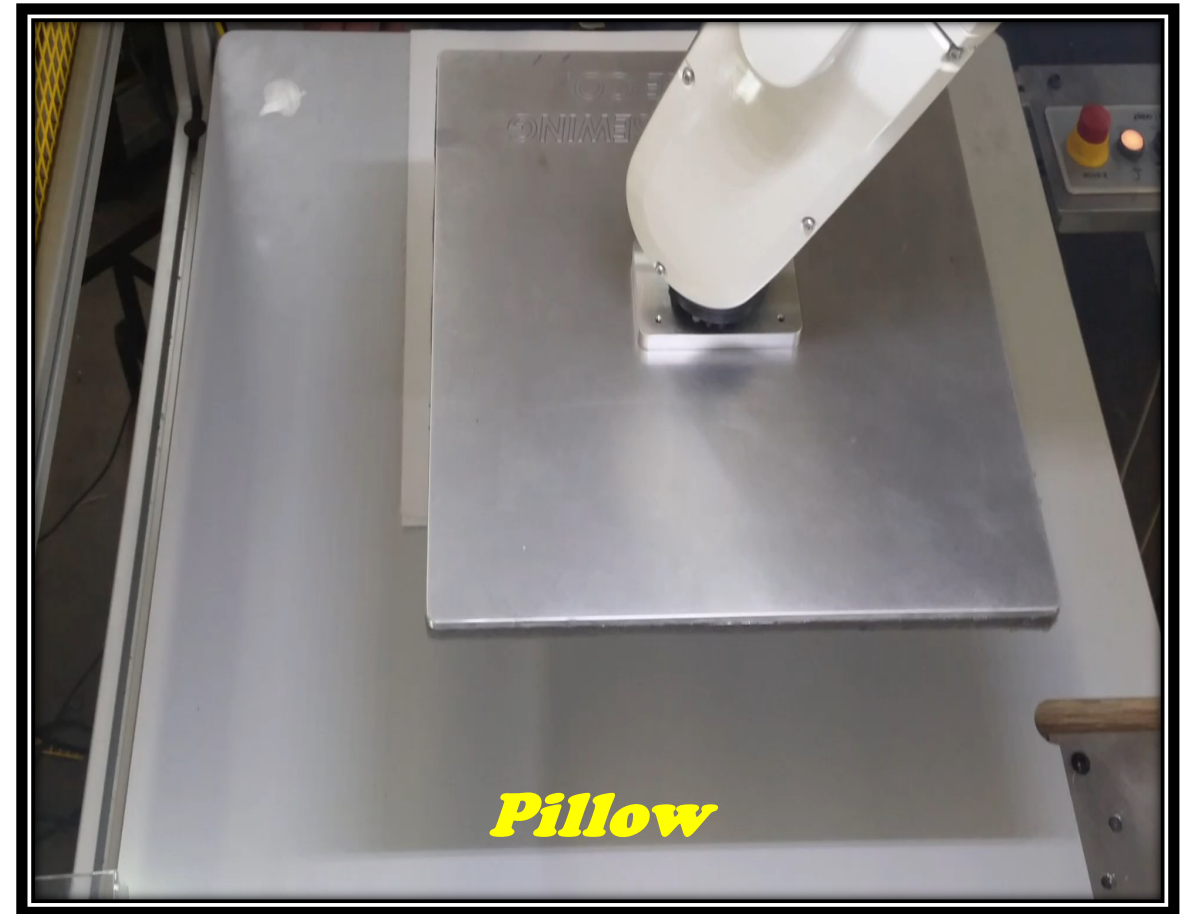
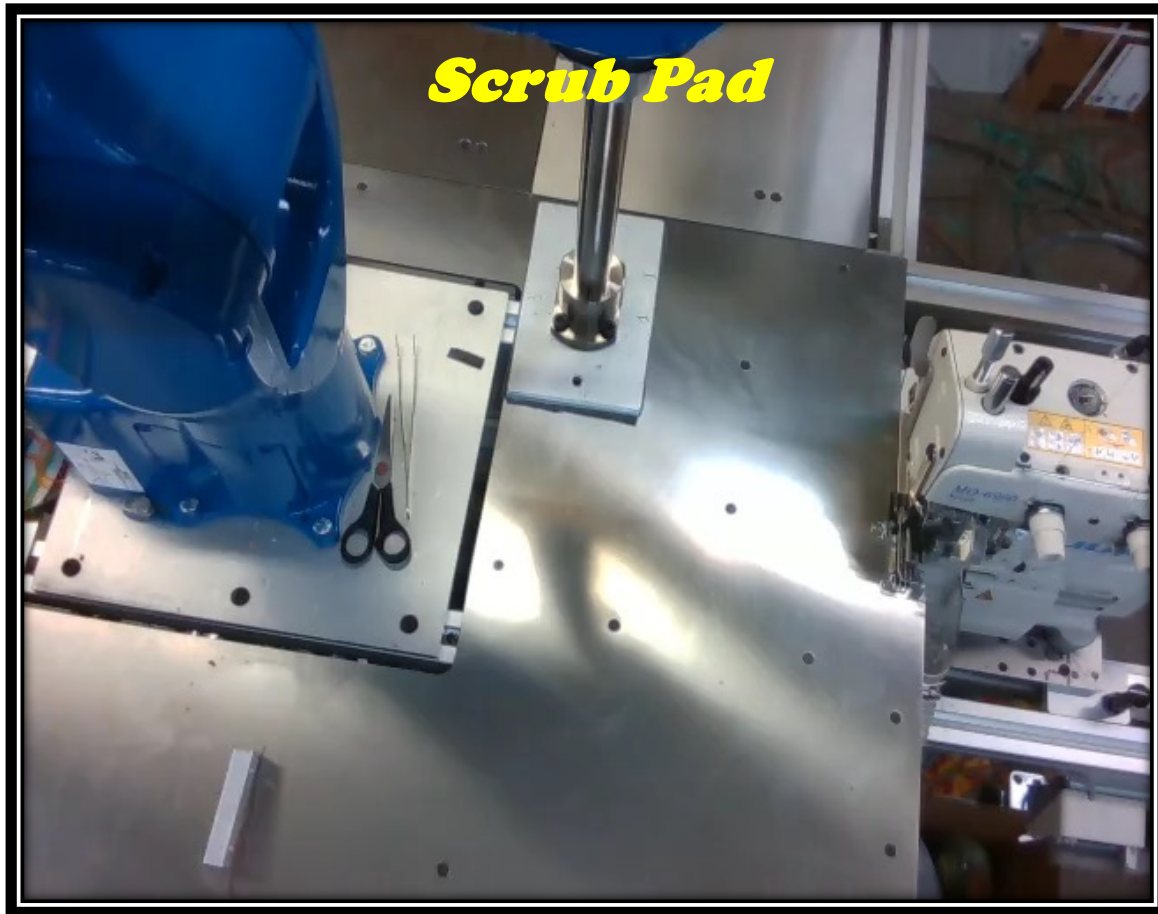
Published on MarketingCharts.com in December 2023 | Data Source: Kearney Consumer Institute

Based on a survey of 1,000 US consumers

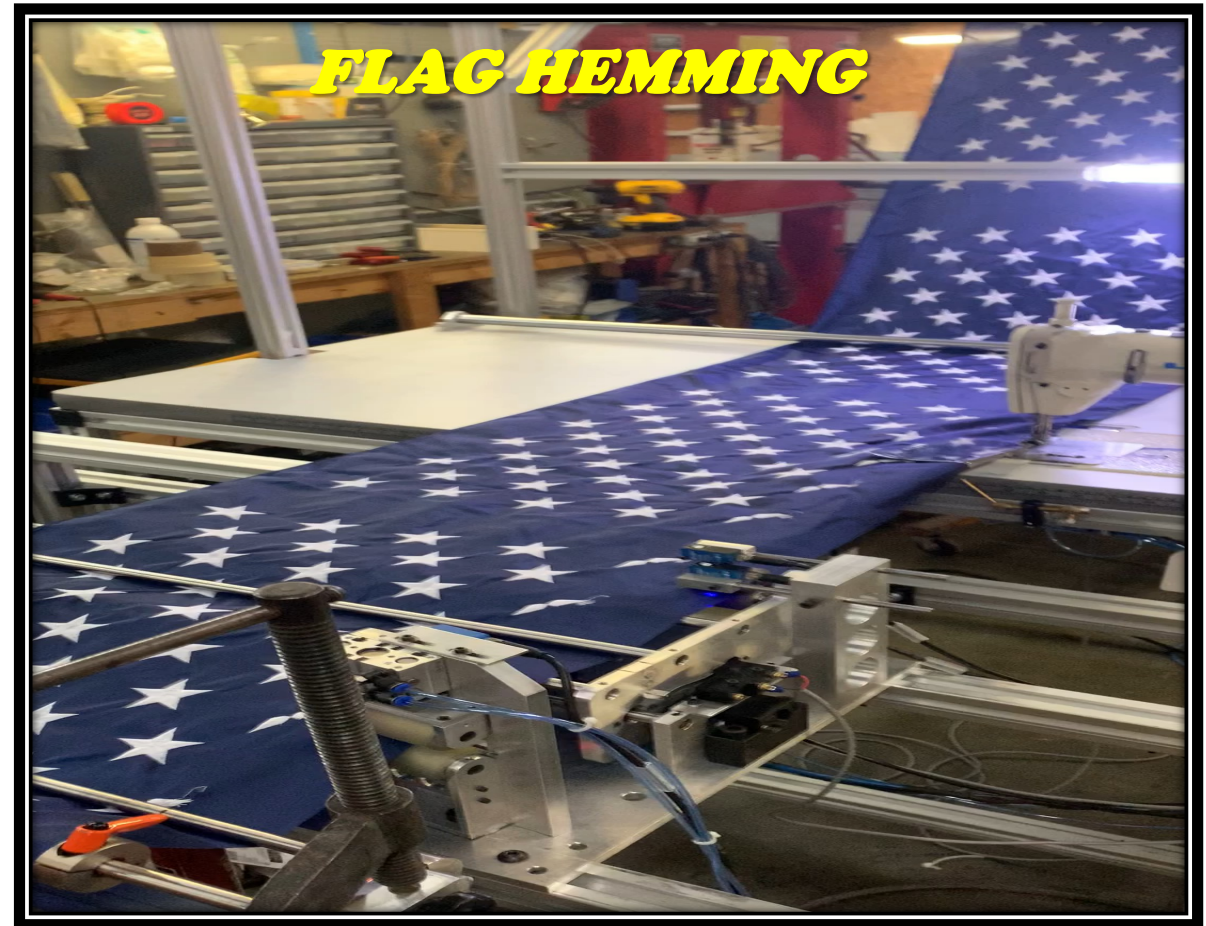
ROBOTS Integrated *into* **SEWING**



ROBOTS Integrated into **SEWING**



ROBOTS Integrated into **SEWING**



Automation to Manufacture Beanies



***Beanie, Feed
Cut & Turn***



**Beanie Robotic
Auto Sew**



**Beanie Robotic
Auto Sew**

ROBOT for T-SHIRT

Shoulders and Side Seams

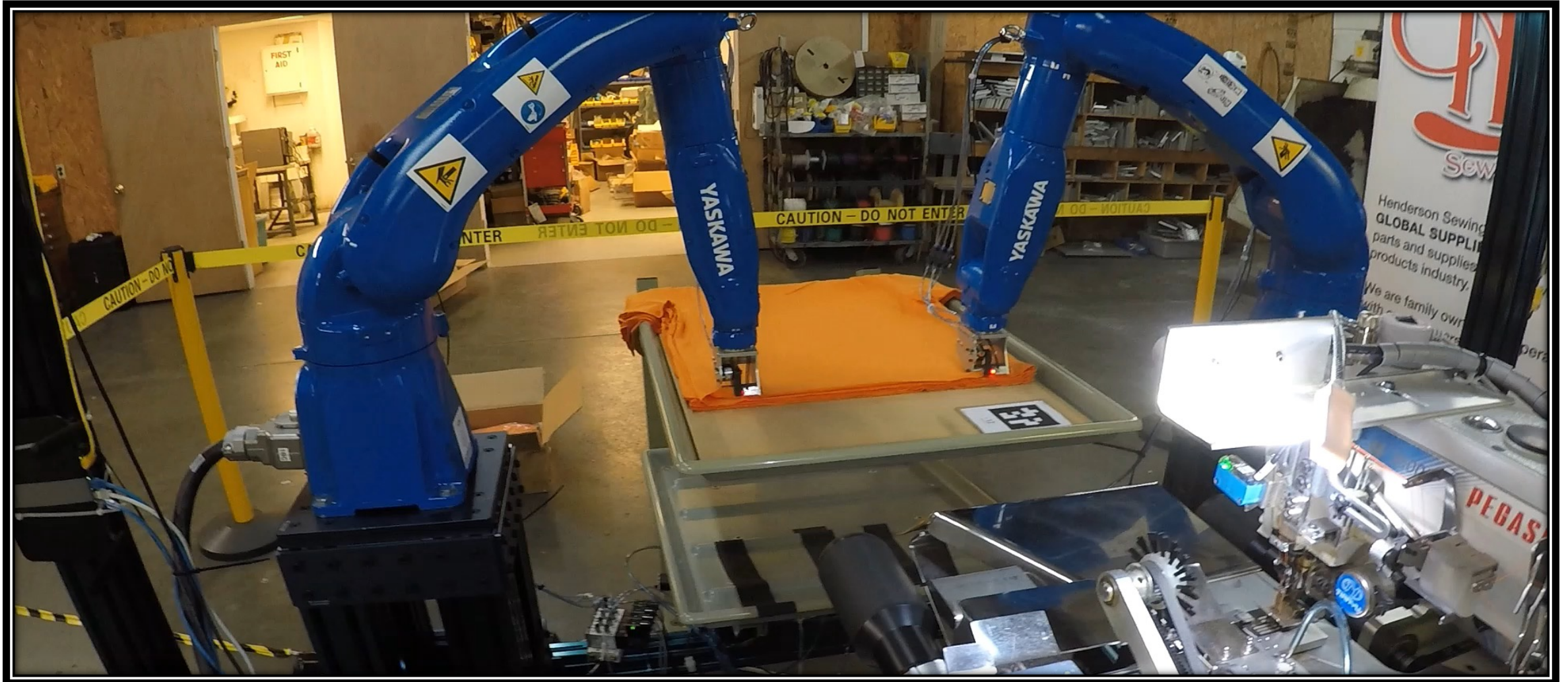


T-SHIRT, SIDE SEAM & SHOULDER SEAMS



ROBOTIC LOADING T-SHIRT

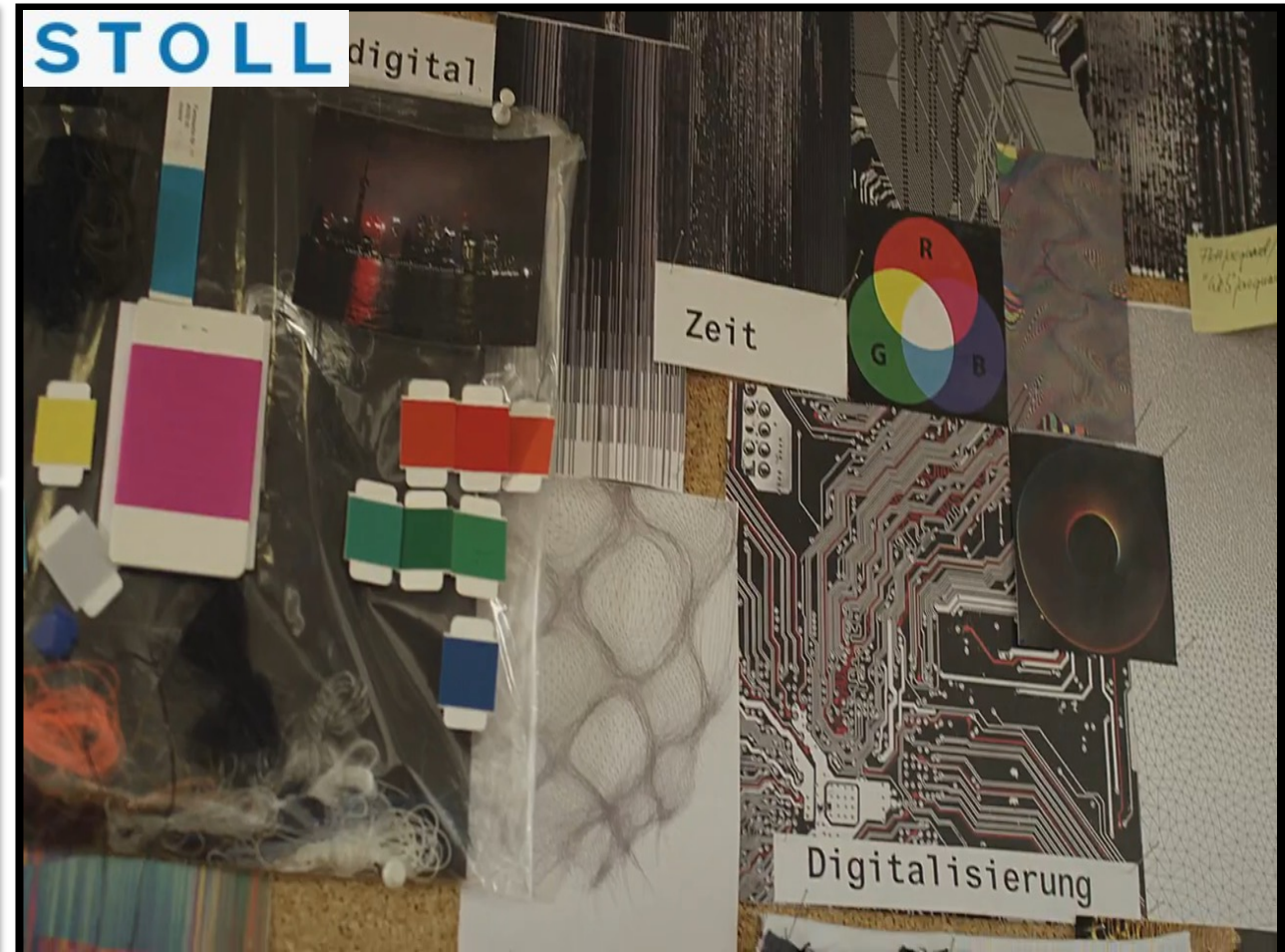
Bottom Hem



YARN *to* Automated Machine FOR *SHOE UPPERS*



YARN *to* Automated Machine *TO* Completed PRODUCT



REVOLUTIONARY HIGHEST SPEED QUILTING TECHNOLOGY TEXTILE CREATIONS FOR THE FUTURE



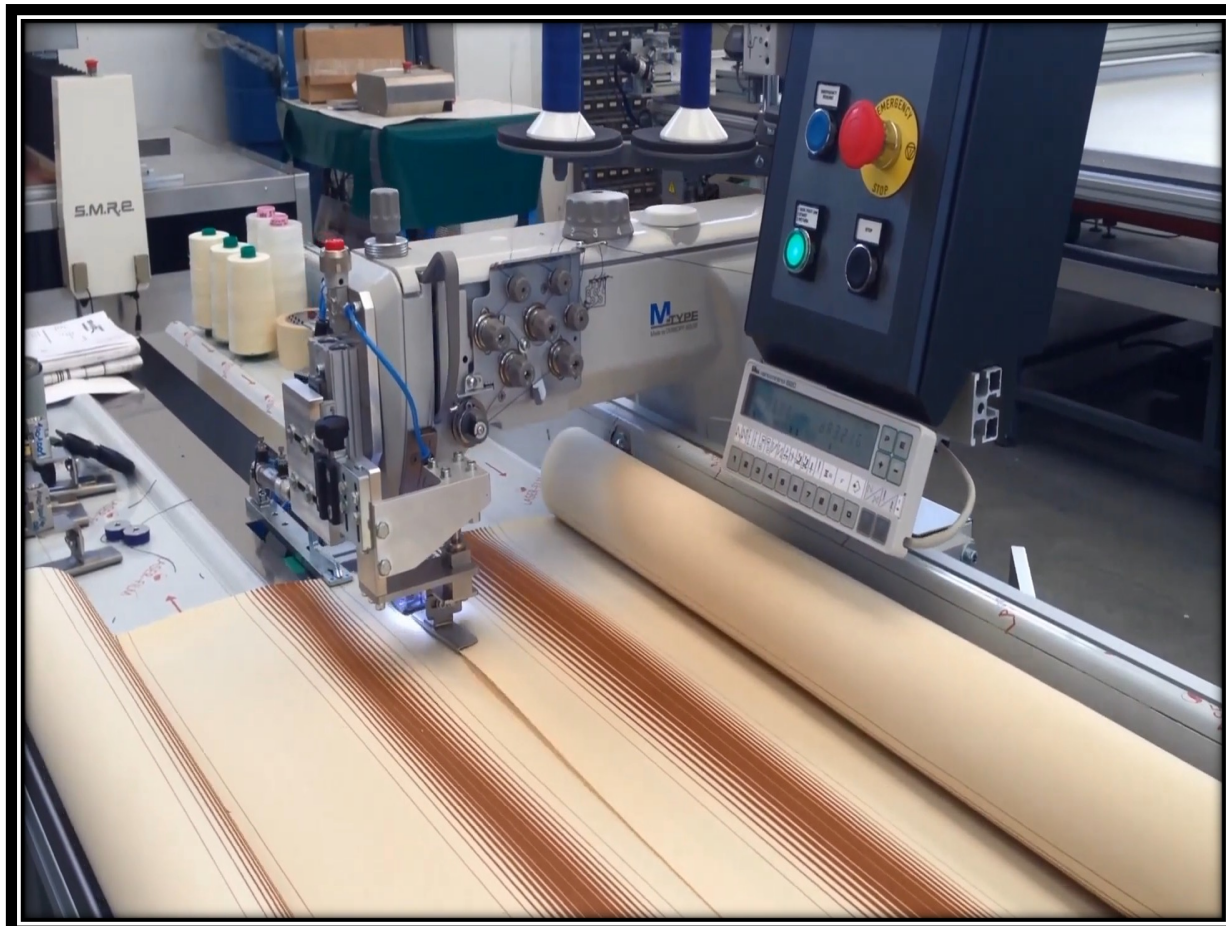
- Unique multi-needle with single-row/double-row quilting machine.
- Triple big rotary hook.
- High speed up to 1500rpm, 2000rpm, 2800rpm.
- Available for both thin and thick material.
- Complete the quilting of various patterns, without changing needle position.
- It can match the fiber carding machine, and automatic quilting production line.

solar**edge**

Automation Machines

***For BANNERS, MATS,
FLAGS ...***

Large Panel JOINING



*for **BANNERS**, **MATS**, **FLAGS** ...*
Large Panel Cutting

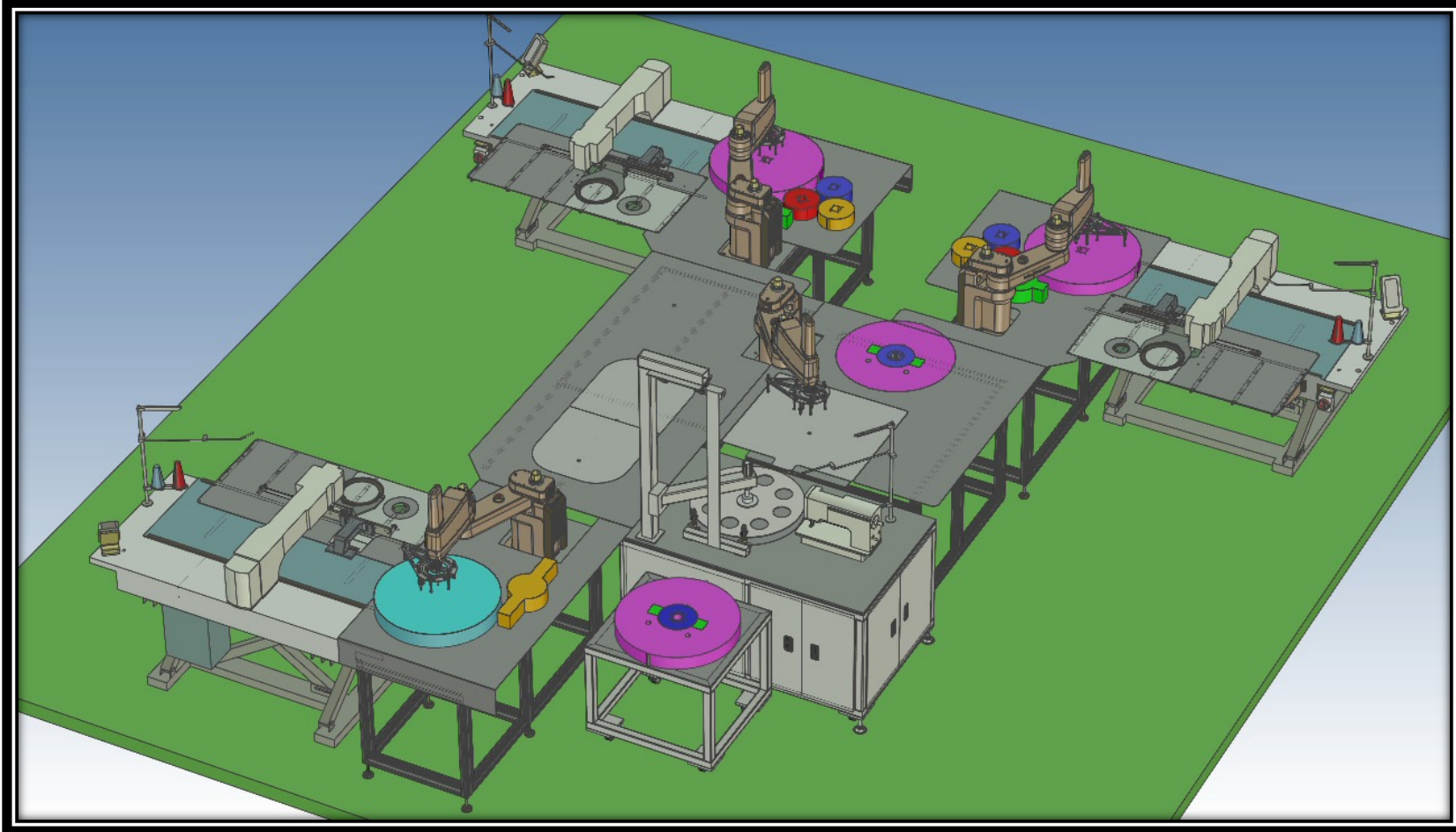


Synchronized Sewing Heads



AIR BAG PRODUCTION

ROBOTIC SIMULATION of AIR BAG PRODUCTION



ROBOTIC MACHINES



FURNITURE GANTRY ROBOT



ULTRASONIC CUT & SEAL

Material Handling ... WITH Automation

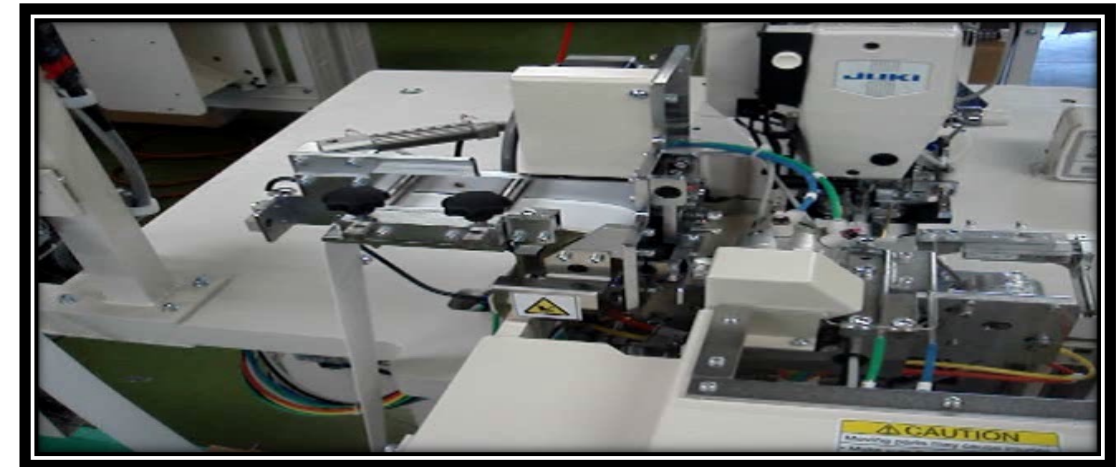
Automated Machines *and* Robots



ROBOT - Ironing Board Covers

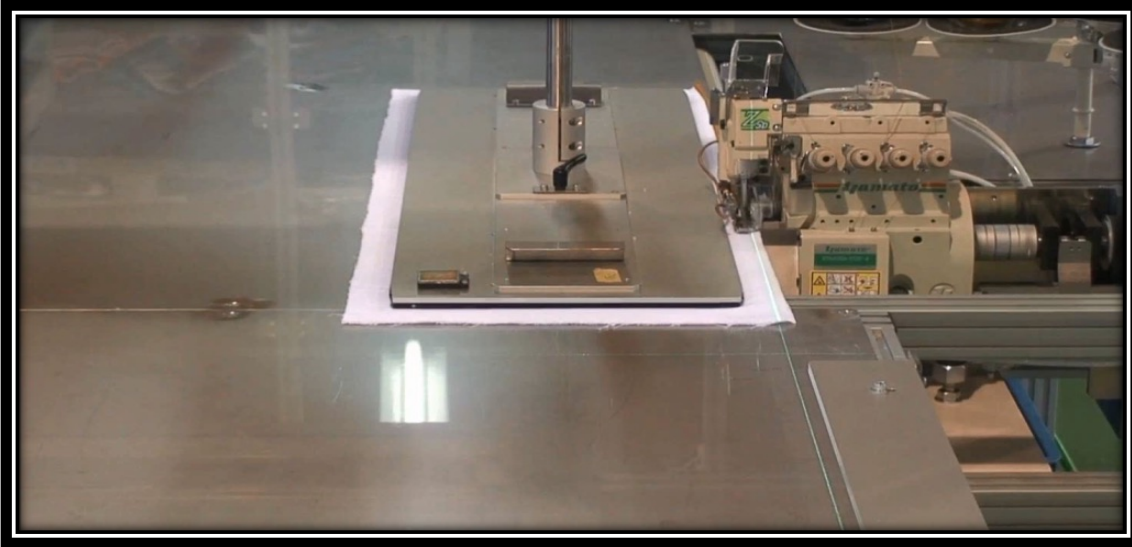


ROBOT - Auto Air Bag Operation

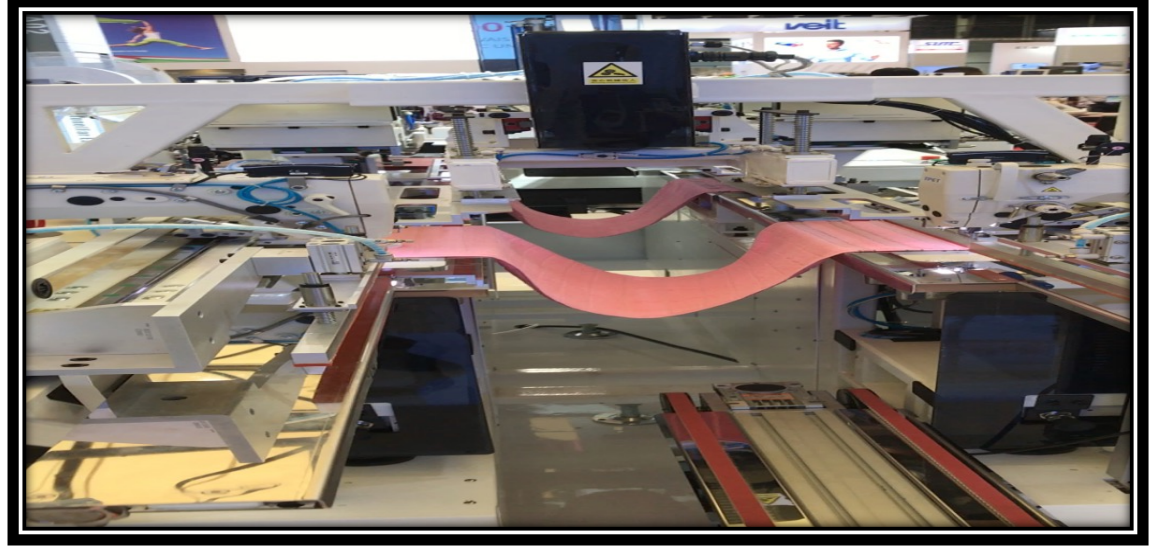


Auto Elastic Ring

Repetitive Motion Manufacturing



Robot Towel Sew



Towel Edge Sew



Robot Auto Head Rest



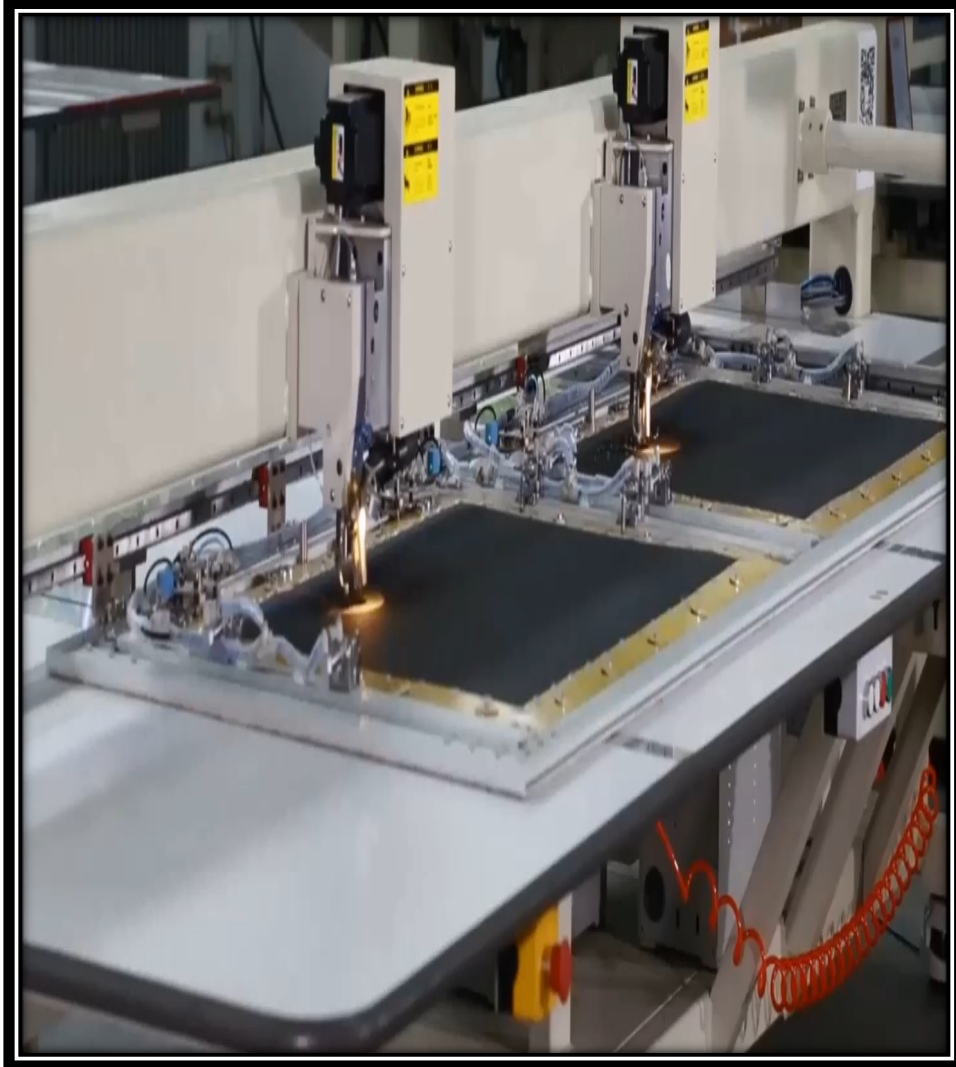
Dual Arm Robot Assembly

XY THETA TURNING HEAD



**Sewing Areas from 600mm X 600mm to
42 Feet Long X 6 Feet Wide**

Automatic Sewing



Perforation & Sewing



CNC Programmable

Say Hello to
Digital Thread Dyeing

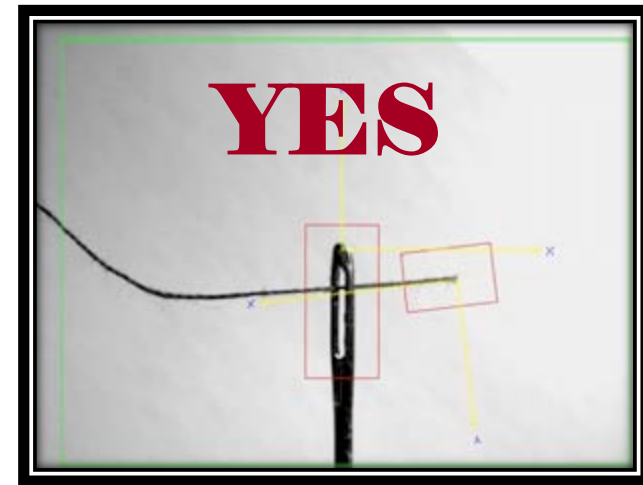
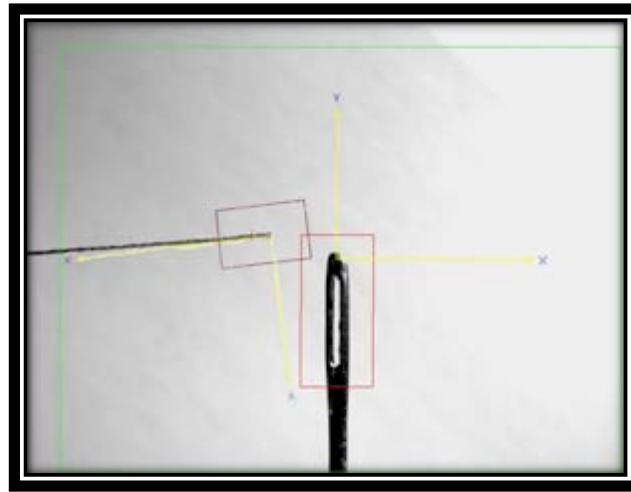
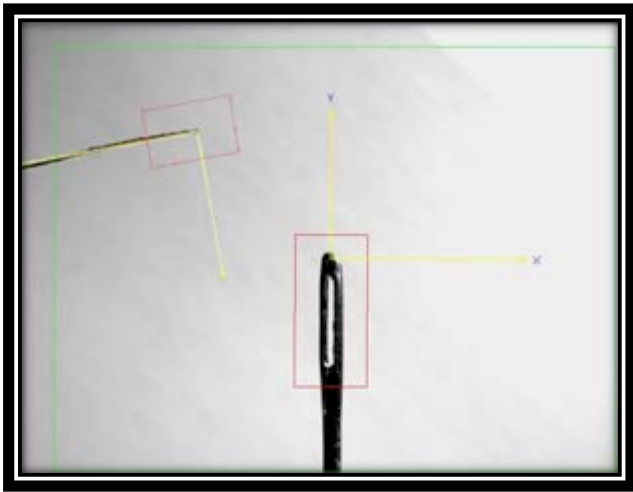


twine
The fiber of digital textile



VISION SYSTEMS INTEGRATION INTO SEWING

Can Vision be Used to Thread a Needle?



Visual Servoing – System Captures Multiple Images and determines the relative distance between the part and the target. A series of incremental motion commands are executed until vision confirms the task is accomplished

VISION SYSTEMS INTEGRATION INTO SEWING



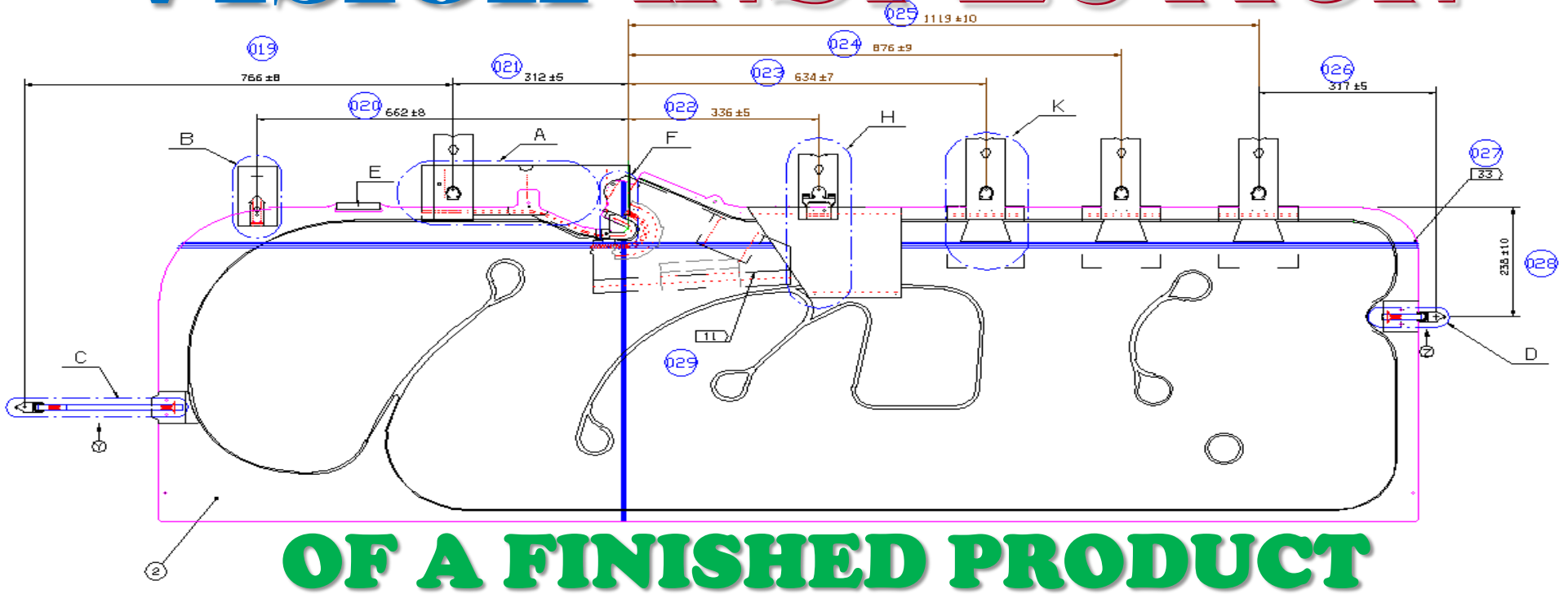
VISION “DIRECTED” SEWING

The **system** is designed using the programmable **PC Custom Camera** and lighting to automatically **Create a Stitch Pattern** around **irregular shaped objects** like Patches, Labels, Appliqués, Letters, Numbers, etc.

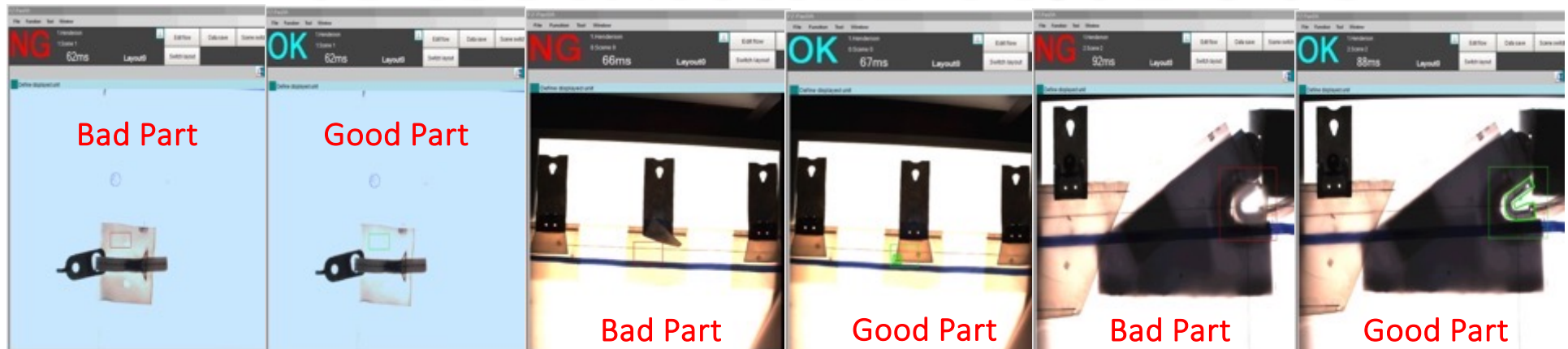
Vision Alignment & Inspection Of Products



Vision INSPECTION



OF A FINISHED PRODUCT

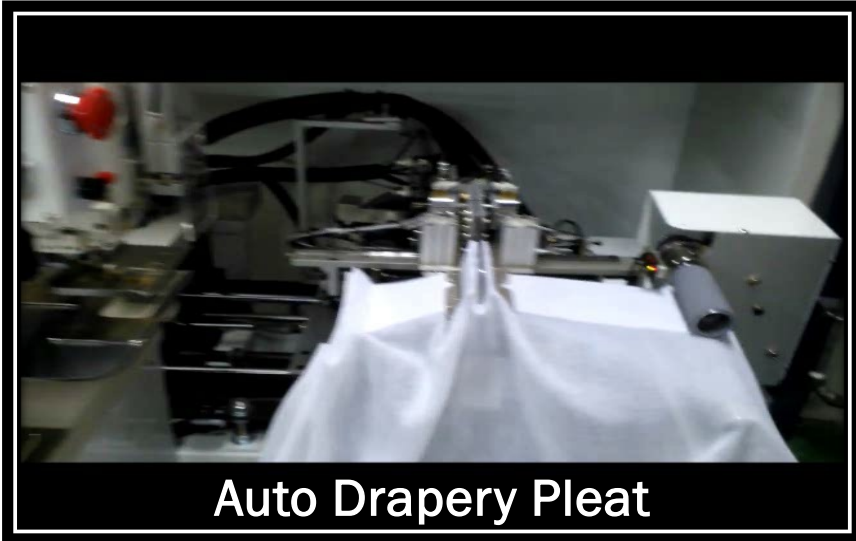


Automated Machines For SPECIFIC OPERATIONS



"Autonomous" Work Cell Sewing

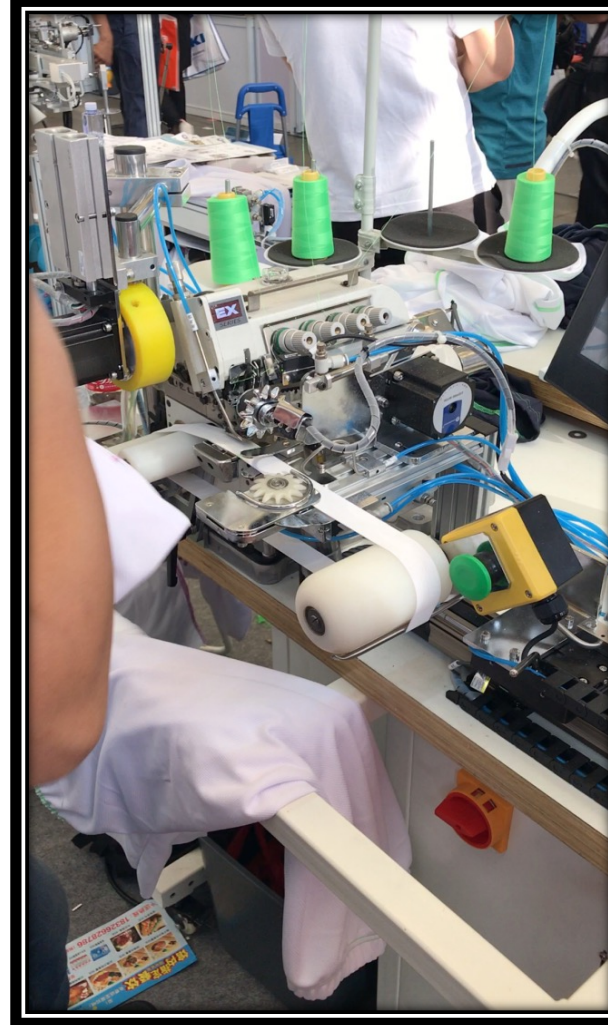
Repetitive Motion Sewing



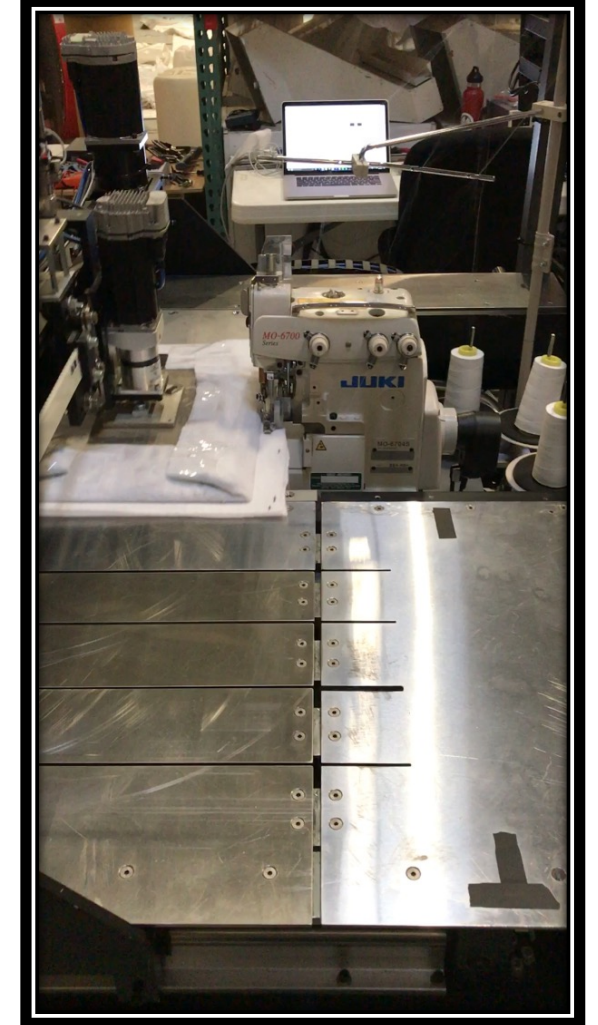
Auto Drapery Pleat



Robot Load-Sew Auto Interior

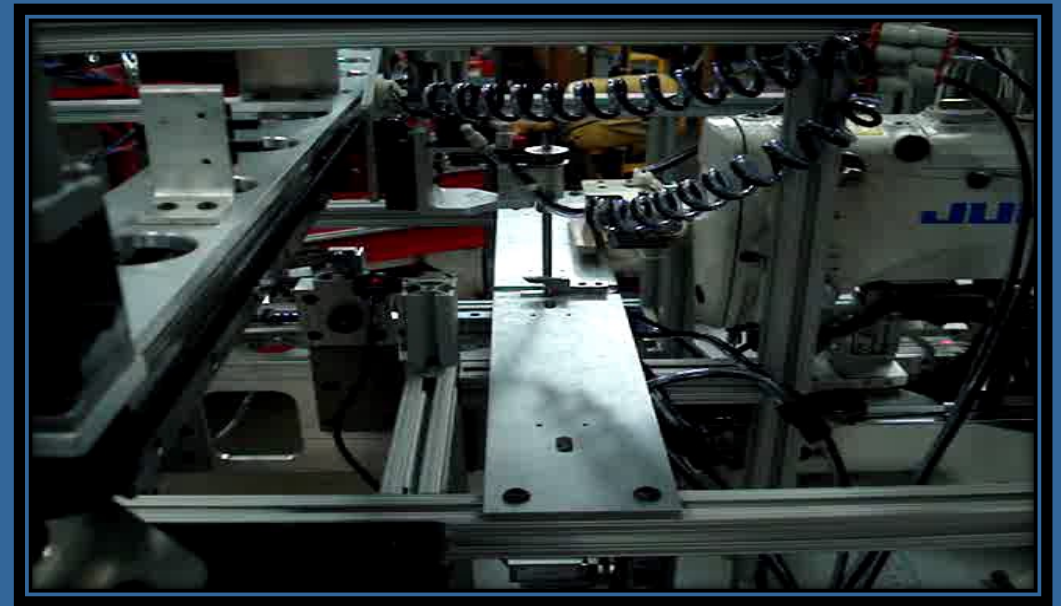


Elastic Attaching on
Bottoms

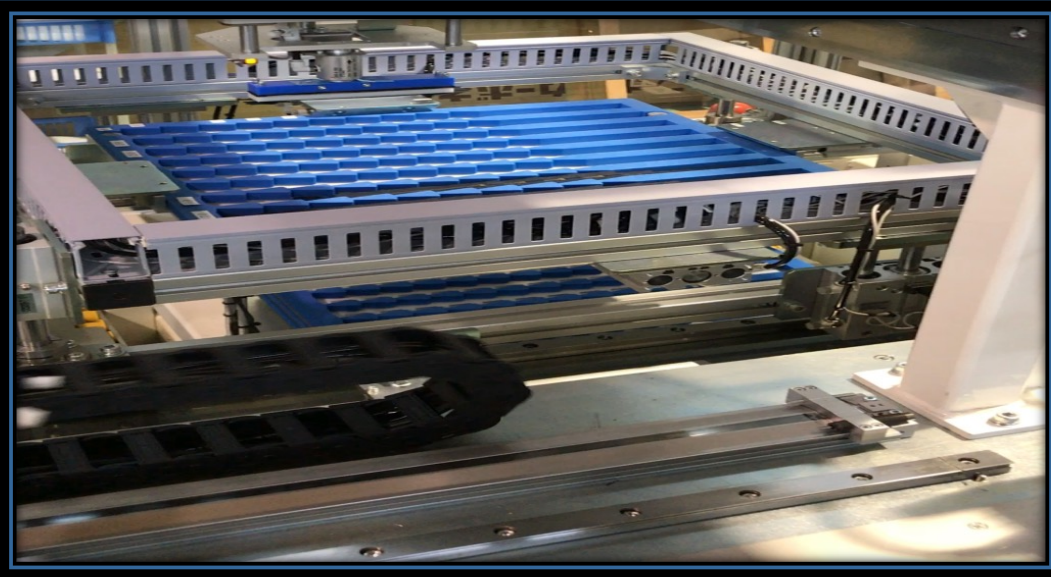


Bath Cloth Seam

AUTOMATION *and* **TECHNOLOGY**



BECKETT LINE CORD Automation

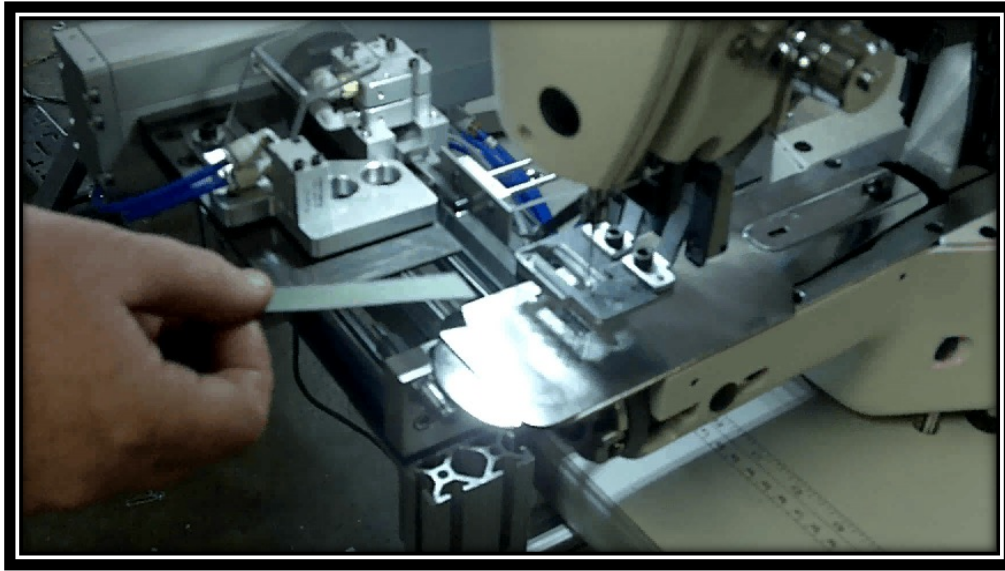


JEANS ZIPPER ATTACH



JEANS INSEAM Automation

Work Cell Automation



Web End, Turn & Tack



Twin Head, Auto Velcro Loading, Medical Unit



Parachute Line Cord Automation

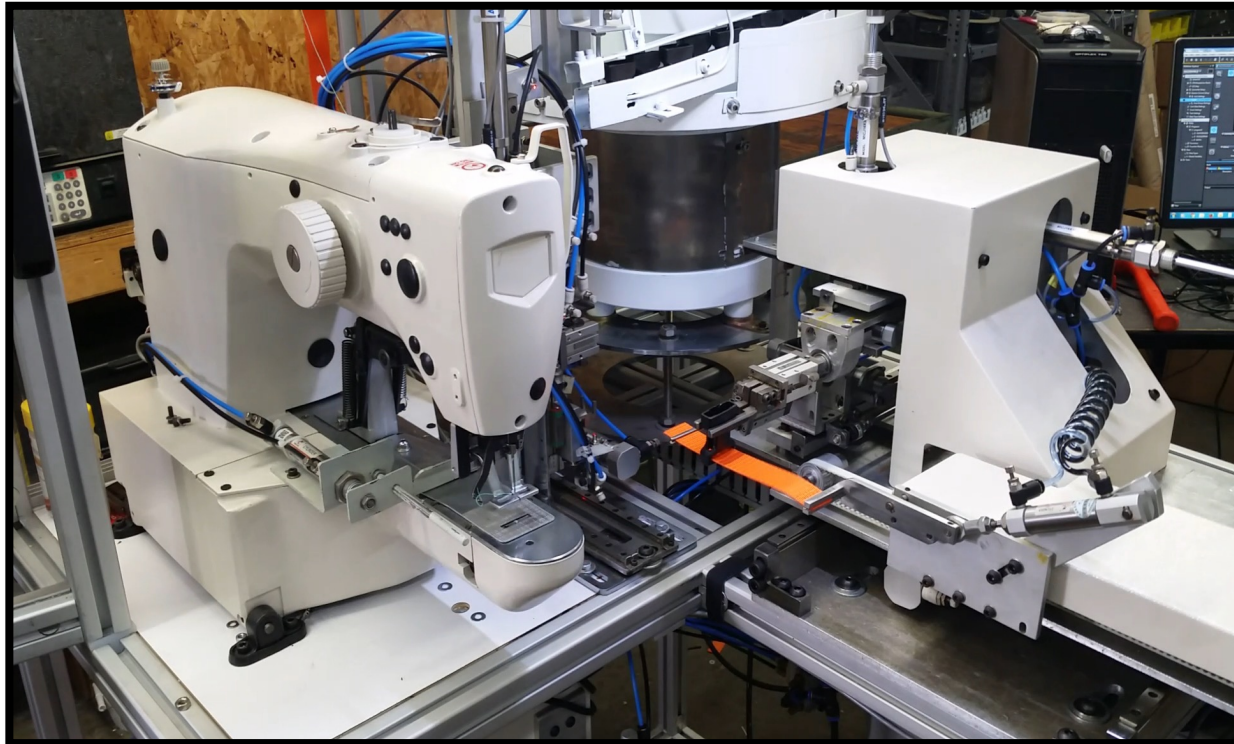


Bottom Velcro Load with Name Tape on

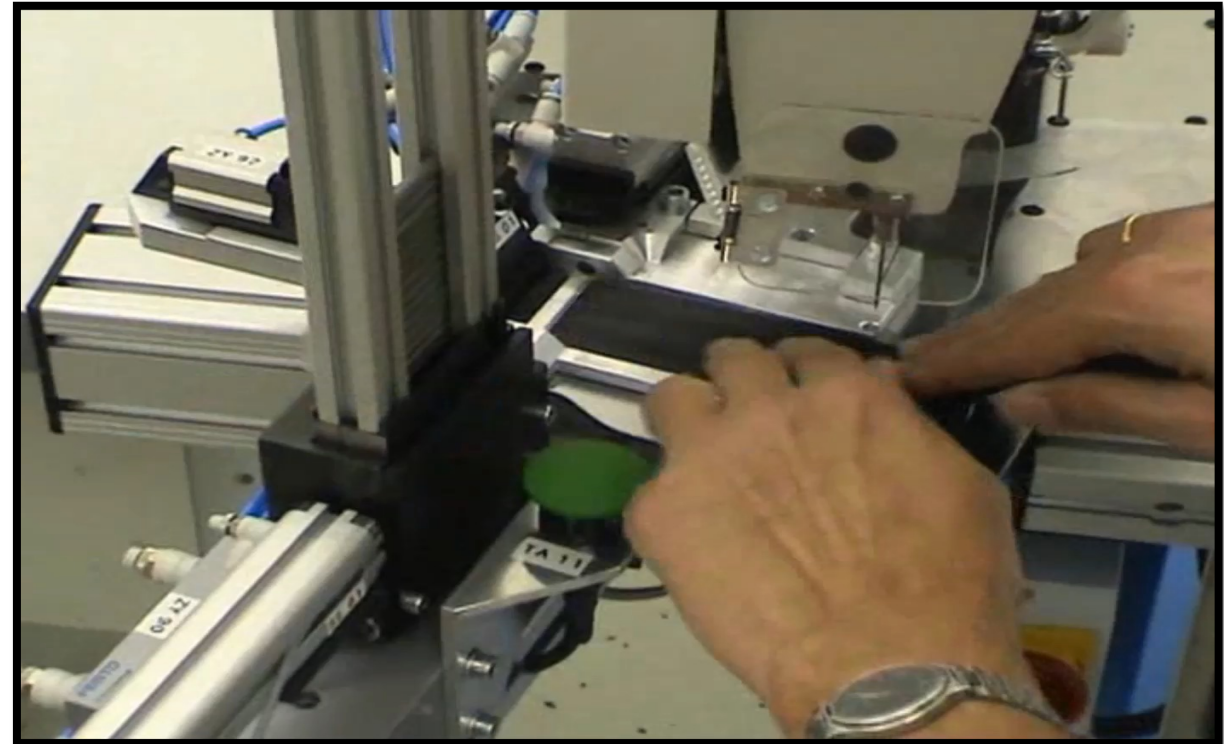
PRODUCT SPECIFIC

AUTOMATION

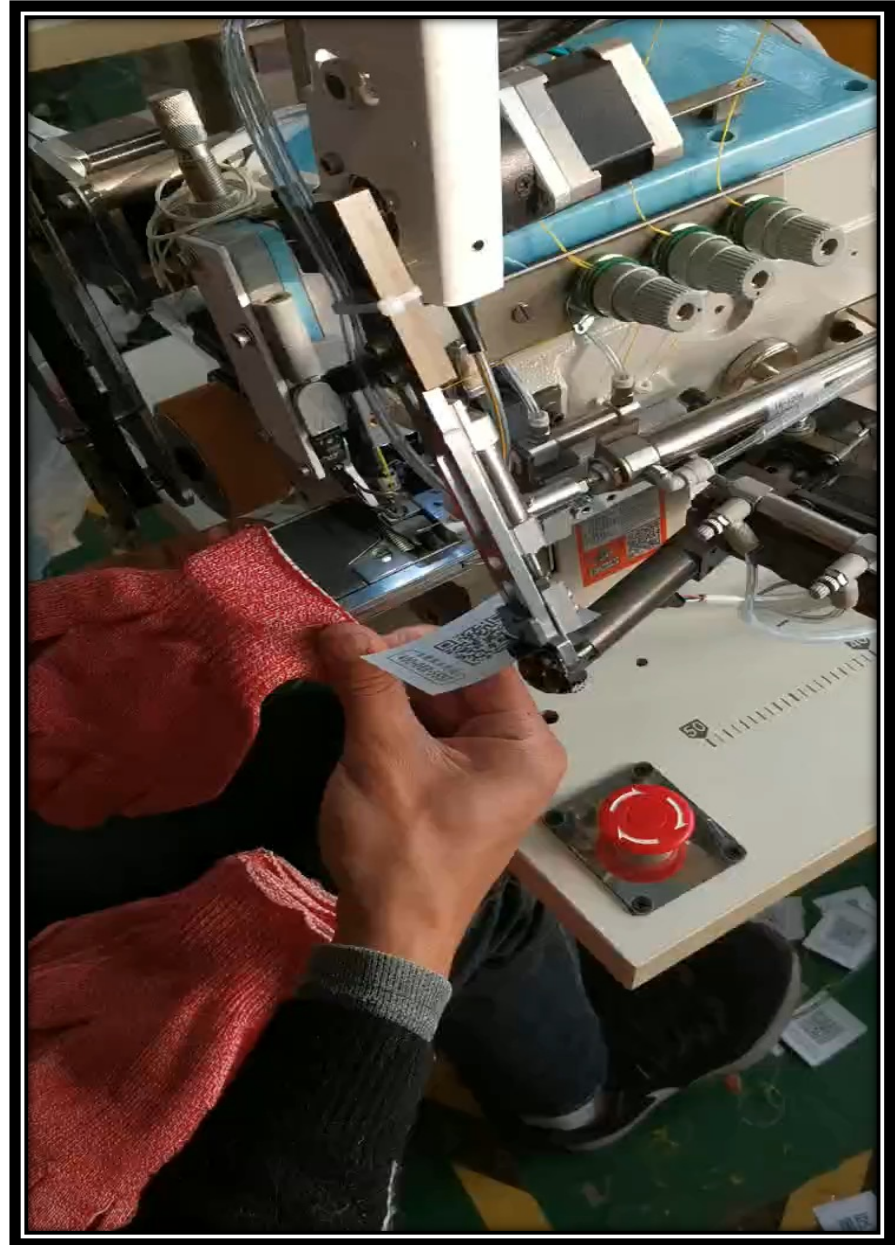
WEB END TURN & TACK
with Buckle



SEAT BELT PIN INSERTION



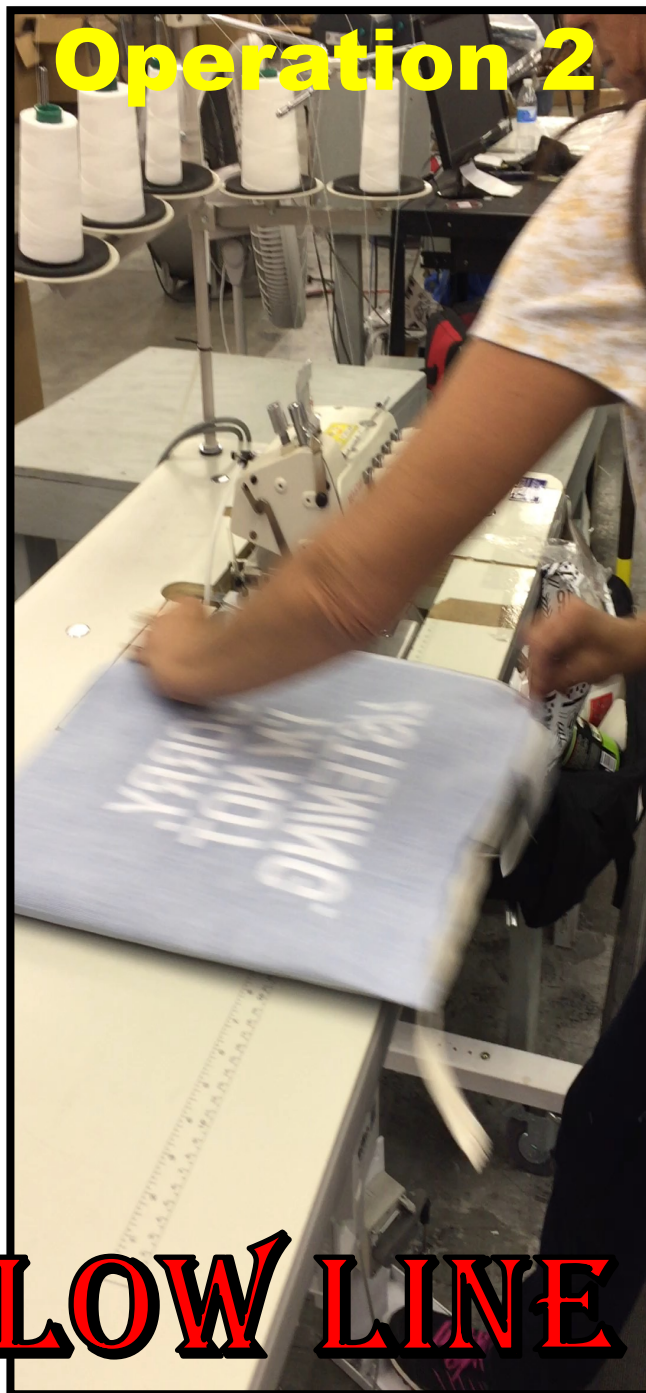
GLOVE HEM WITH LABEL INSERTION



Operation 1



Operation 2



LEAN PILLOW LINE

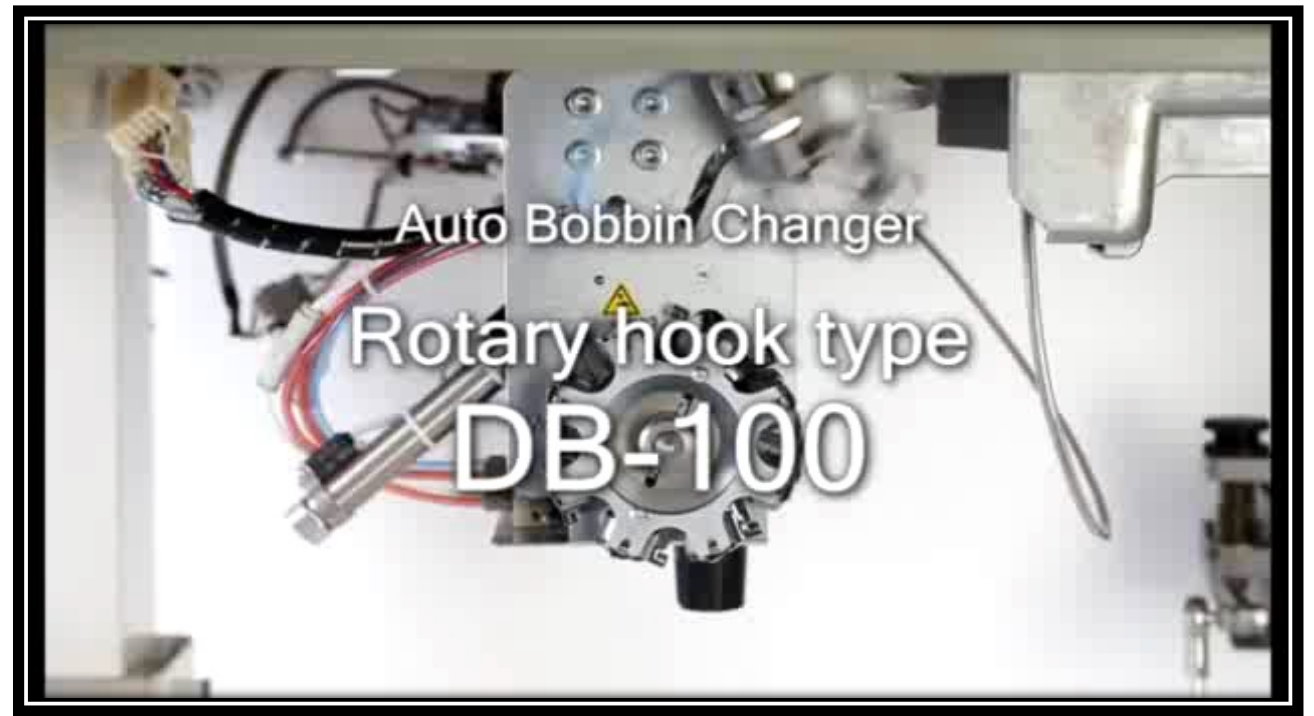


**U-LEAN LINE
Example**



**Straight LEAN LINE
Example**

AUTOMATED **Devices** **Used in** **Automation**



**Auto Bobbin
Checker**



Auto Skip Catcher



**Auto Bobbin
Changer**

AFFORDABLE Robots



Universal Dual Arm Robot



OMRON COBOT



FESTO BIONIC COBOT

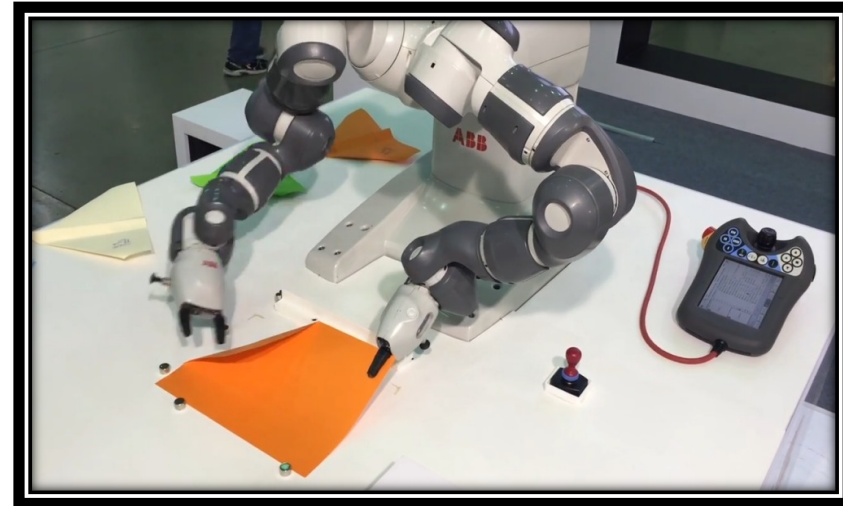


ABB YUMI ROBOT



COBOTS
Work WITH PEOPLE

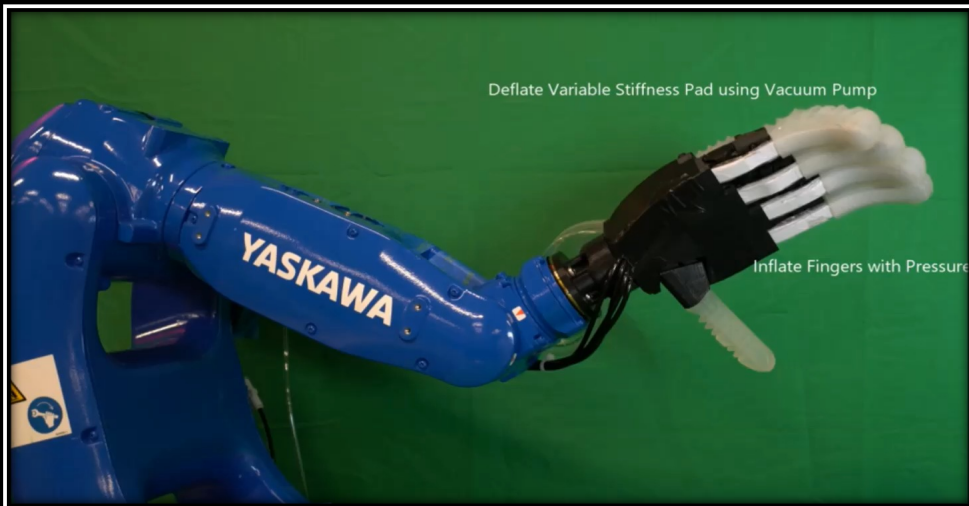
End Effectors for Robots



ExoHand-Human Machine Interaction

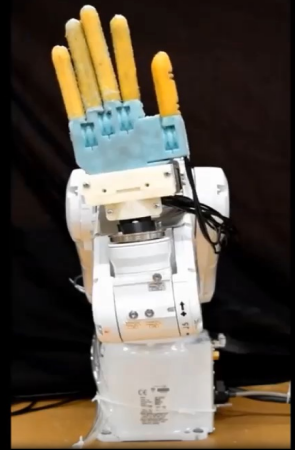


SynTouch Texture Discriminating Robotic Finger



Pneumatic Actuated Soft Hand

USC Soft Hand with Ten
Degrees of Freedom



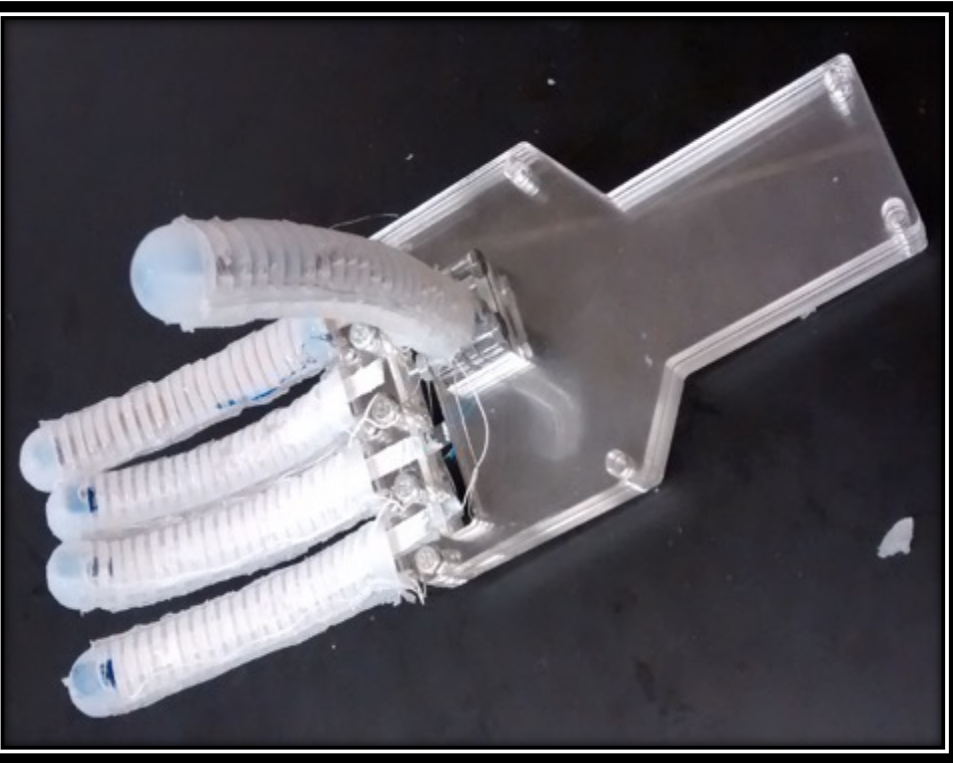
Robotic Hand Tool Manipulation Task

Robotic End Effectors



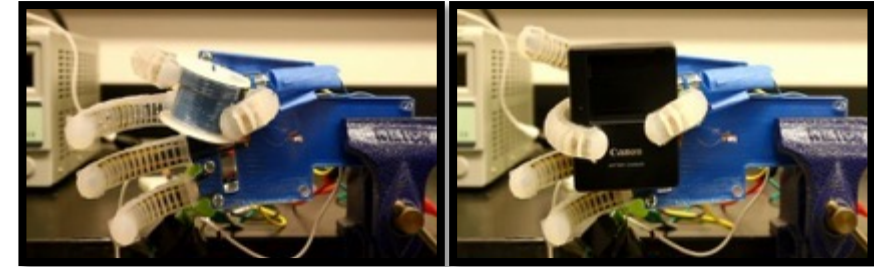
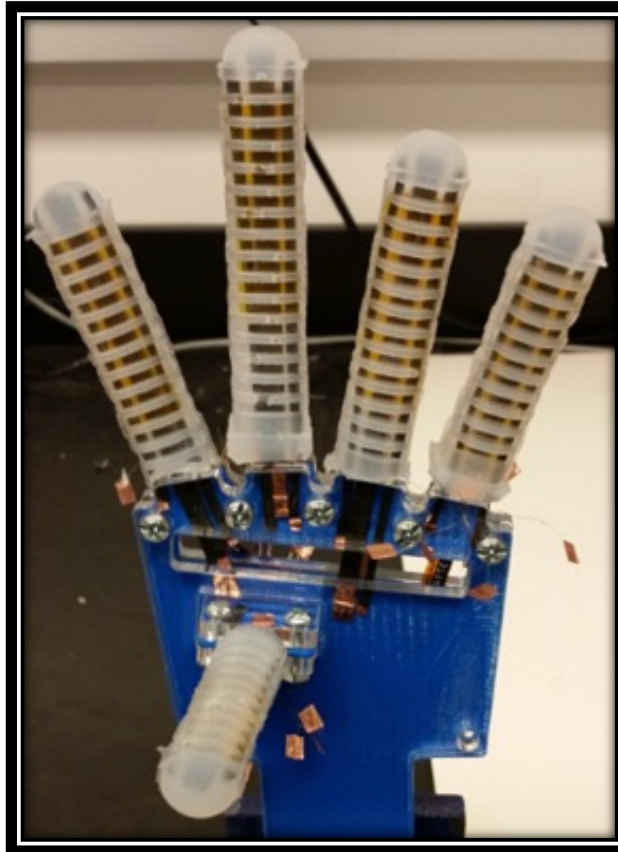
Perdue University Soft Robotics

CAMERA & HAPTIC TECHNOLOGY

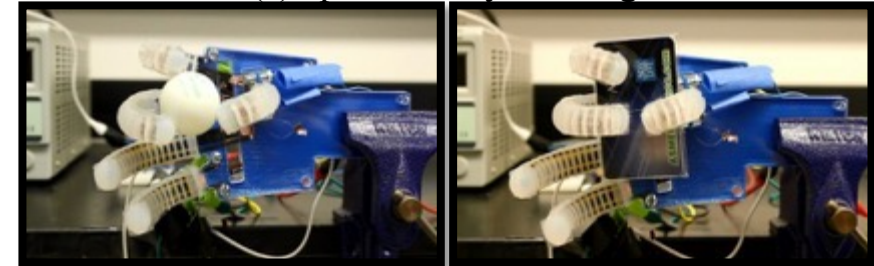


She, et al., *JMR*, 2015

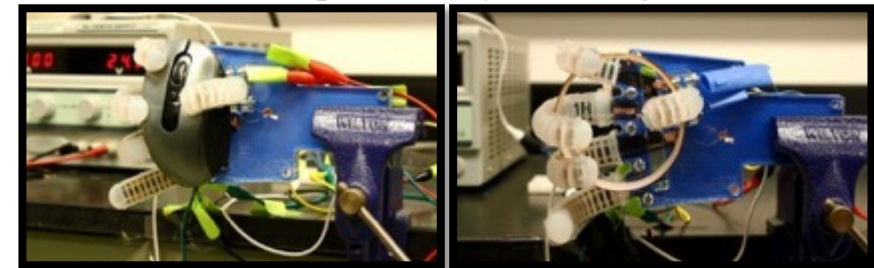
She, et al., *Soft Robotics*, 2016



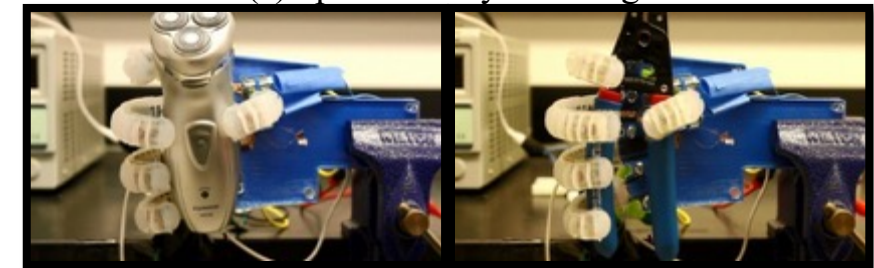
(a) operations by two fingers



(b) operations by three fingers

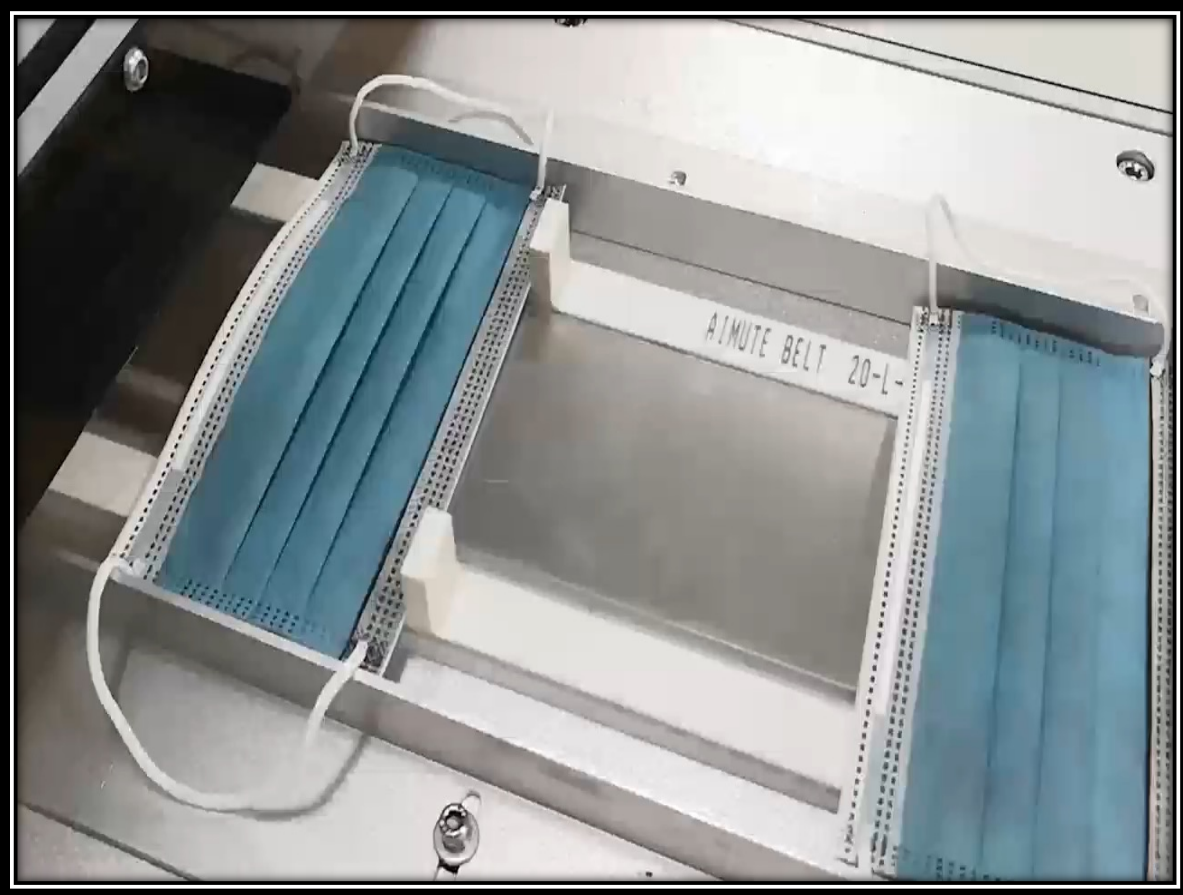


(c) operations by four fingers



(d) operations by five fingers

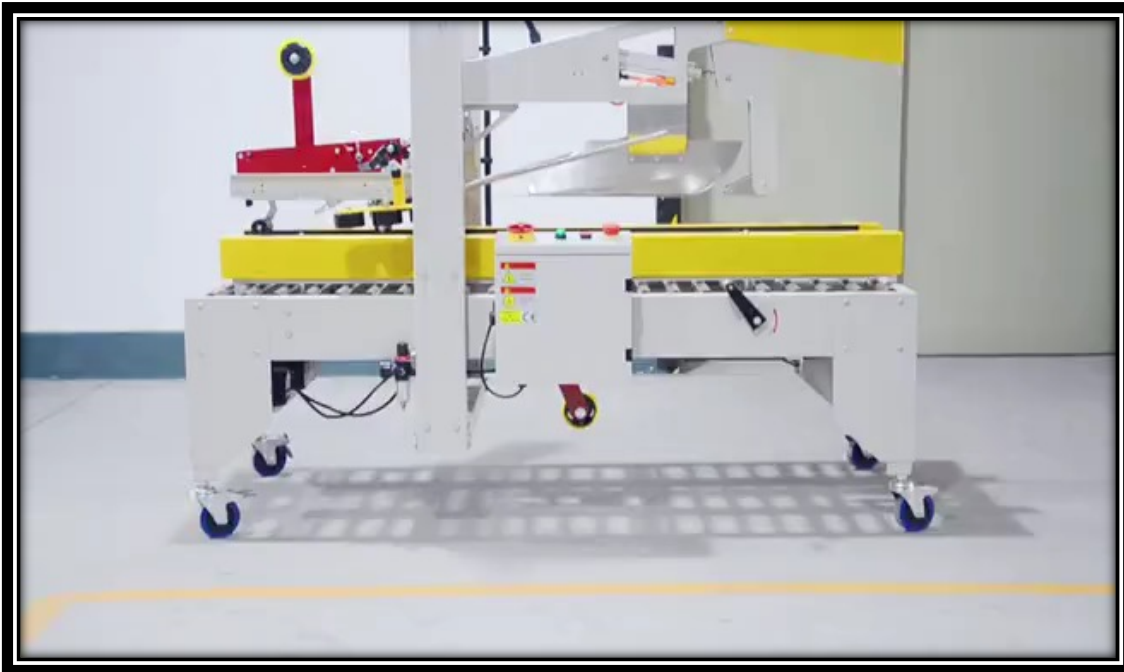
AUTOMATIC **FACE MASK** **MACHINES**



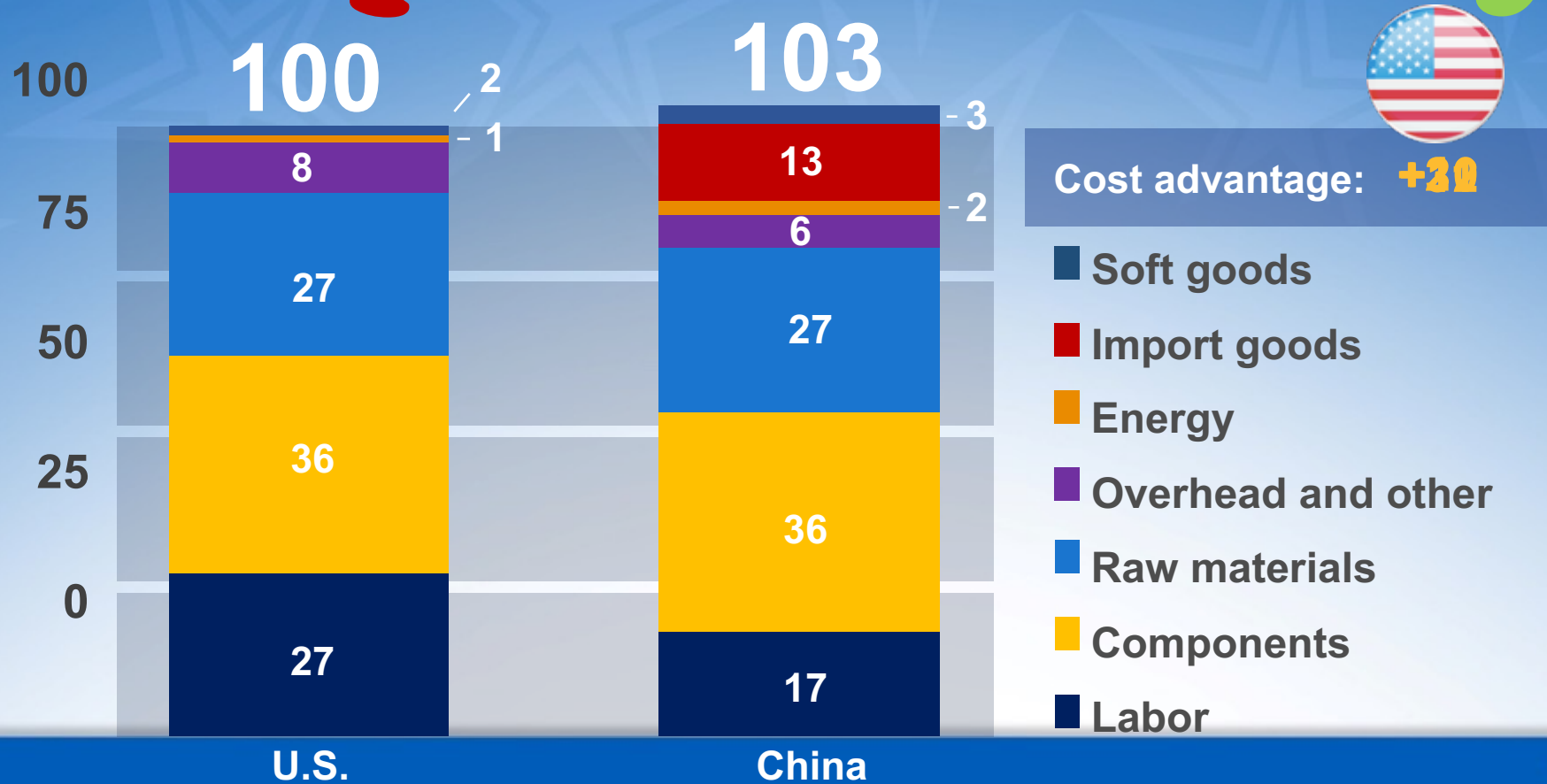
Automatic Folding Machine



Box Erector and Tape Sealing



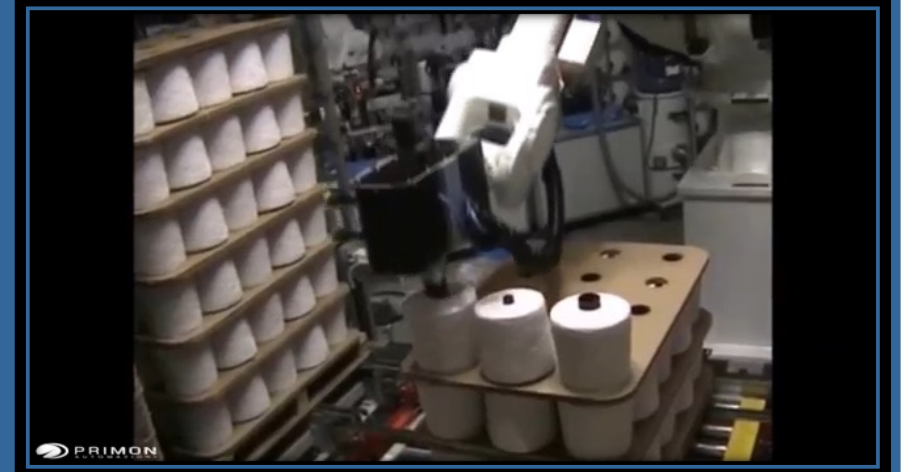
The USA is Cost Competitive Today



WE Can Automate America *TODAY*



ROBOTIC CREEL LOADING



ROBOTIC CREEL LOADING

**I HOPE YOU HAVE BEEN
LISTENING?**



THANK YOU!

FOR YOUR ATTENTION

Frank Henderson, CEO

Henderson Sewing Machine Co., Inc
1 Waits Drive Industrial Park
Andalusia, Alabama 36420 USA

Tel: 800-824-5113 / 334-222-2451

Fax: 800-239-8398 / 334-222-4085

Cell: 334-488-4534

E-Mail: frank@hendersonsewing.com

