Textile.org

Technical Textile Equipment Catalog

Machines · Processes · Sampling

Conductive circuits, stitched electronics, heating elements, composite structures, sensor surfaces, and functional-yarn processes — the equipment behind technical textiles, and the help to put it to work on your problem.

Textile.org · topher@textile.org · 717-706-7702

Welcome to Textile.org

Thank you for taking the time to look through our technical textile equipment catalog.

I started Textile.org because I believe textiles can do far more than most people realize. Fabric can carry electrical signals, generate heat, reinforce composite structures, hold circuit boards, sense touch, and become the foundation for entirely new products. The hard part is usually not having the idea. The hard part is figuring out how to make the idea real.

That is where I would like to help.

At Textile.org, we have equipment available for making conductive circuits, stitching circuit boards onto fabric, placing heating wires, building composite textile structures, creating sensor surfaces, working with conductive threads and functional yarns, and developing other technical textile processes. These tools are useful, but the real value is in helping you understand how to use them for your specific problem.

If you are trying to make a textile do something functional, I would like to hear about it.

Bring Your Idea, Materials, and Problem

You do not need to arrive with a finished product. You can bring a sketch, a circuit board, a fabric, a wire, a thread, a CAD file, a sample, a failed prototype, or simply a technical problem you are trying to solve.

I am glad to sit down with you, look at what you are trying to make, and help figure out whether one of these processes is a good fit. Sometimes the answer is obvious. Sometimes we need to test a few materials, stitch structures, or process settings before we know. Either way, the goal is to quickly find out whether the idea is worth pursuing.

Sampling and Feasibility Testing

We can set aside time for sampling, equipment trials, and early feasibility testing. These sessions are meant to answer practical questions:

- Can the material be stitched?
- Can the circuit conduct reliably?
- Can the board be attached securely?
- Will the textile bend, stretch, heat, wash, or wear the way it needs to?
- What manufacturing problems are likely to appear?
- How long does the process take?
- What would the machine time and production cost look like?

> This is often the most valuable first step. A short sampling session can reveal whether the concept is promising, what needs to be changed, and what risks should be solved before spending serious time or money.

Visit the Showroom

I invite you to visit our showroom, see the equipment in person, and try an idea out. The catalog will show you what equipment is available, but seeing the machines run and testing your own materials is usually much more useful.

If you are working on conductive textiles, stitched electronics, heating elements, composite parts, wearable systems, robotic skins, sensor textiles, or any other technical textile project, please reach out. I would be glad to help you think through the problem and see what is possible.

Sincerely, Topher Anderson
Textile Engineering and Science, PhD
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The TOWFORGE-4 — a custom four-head tailored fiber placement platform, shown in production.

COMPOSITE TOW PLACEMENT · PRODUCTION

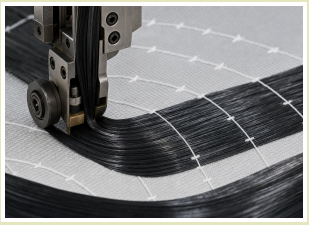
TOWFORGE-4

Four-head production tailored fiber placement — 1K to 52K tow.

A four-head specialty platform pairing flat embroidery with a large fiber placement head at every position. It is a small production machine — engineered for parallel tow placement and continuous wire / tube placement at industrial throughput.

WHY THIS MACHINE

Composite engineers can program fiber paths that follow the load, then build four identical preforms in parallel — or four variations for design-of-experiment work. The same platform places copper harnesses, CNT yarn, and tubing for high-volume smart-textile production.



Tailored carbon-tow preform

CAPABILITIES

- Tow sizes 1K through 52K — carbon, glass, basalt, natural fiber
- Flat preforms that drape — programmed fiber orientation
- Production-scale parallel output across four heads
- Couches 20–42 AWG wire, 16 µm CNT thread, tubing to 15 mm
- Drives 3–55 V, 1 mA – 15 A heating element circuits

IDEAL FOR

Composite manufacturers, aerospace and automotive R&D, and smart-textile OEMs scaling production.

SPECIFICATIONS

Configuration	6 needles × 4 flat heads + 4 large taping (PD) heads
Functions	Flat • Cording • Taping • Tow placement • Wire placement
Working volume	750 × 750 × 1000 mm
Maximum speed	850 spm
Control	15" colour touchscreen LCD
Drive	70 mm servo main motor
Thread capacity	Extended spool — ~3.5× standard
Power	Standard 120 V — quiet operation
Packing	Wooden crate

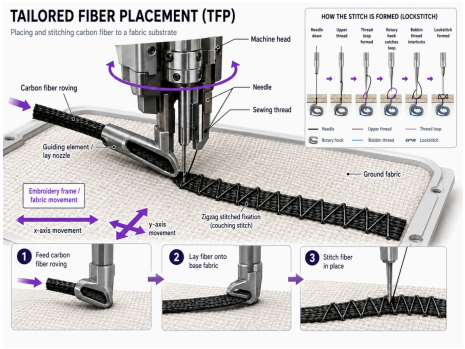
SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

PRICING Contact for current pricing and availability.

WHAT THE PLATFORM MAKES

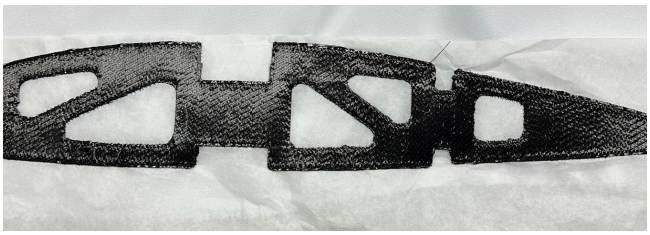
Tailored Fiber Placement, Materials Agnostic

Tailored fiber placement (TFP) lays continuous tow exactly along the load path and stitches it to a substrate — no cutting, no waste, and fibers aligned to principal stiffnesses. The same head places carbon, glass, natural fiber, fine sensing wire, and tubing.



THE PROCESS · TAILORED FIBER PLACEMENT

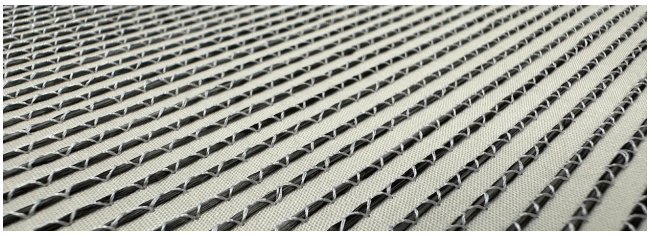
How TFP works A guiding nozzle lays continuous fiber roving onto a moving base fabric while a needle couches it down with a zigzag lockstitch. The embroidery frame moves in X and Y so the head follows any programmed curve — placing fiber only where the load demands it.



CARBON · NET-SHAPE PREFORM

Carbon-fiber airfoil — zero waste

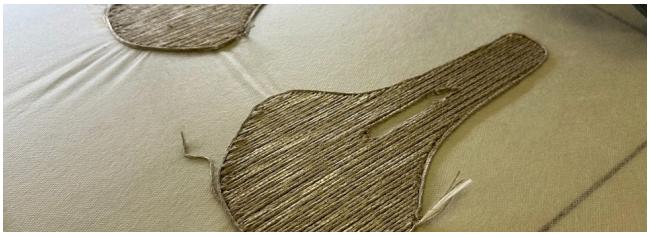
A full carbon-fiber airfoil built with no laminate cutting — fibers placed only where needed, so no material is wasted. The preform is ready to be molded.



CARBON · PROGRAMMED ORIENTATION

Tailored carbon-tow preform

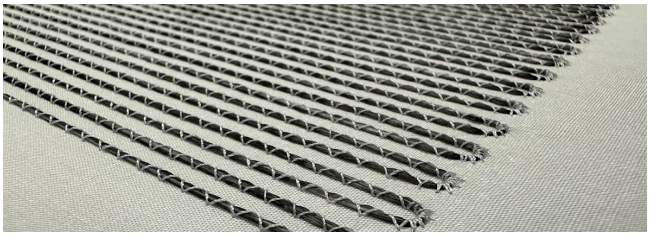
Continuous carbon tow placed in tightly programmed paths across a flat substrate. Fiber orientation is set in software, so the preform drapes and carries load exactly as designed.



NATURAL FIBER · RTM READY

Natural-fiber bike seat

A natural-fiber bike seat with fibers aligned to principal stiffnesses and no waste material. Infused with epoxy in RTM, it becomes a solid, strong finished part.



MATERIALS AGNOSTIC

Native & specialty fibers

A custom spiral preform from native fiber — proof the platform is materials agnostic, placing unconventional fibers alongside carbon and glass.

Built for smart textiles, too. Beyond structural preforms, the same heads couch 20–42 AWG wire and 16 µm CNT thread and place tubing to 15 mm — embedding fine sensing wires inside composites and stitching custom-geometry heating circuits directly into the part.



The COMPOSITRA-9 — a sample-scale tailored fiber placement platform for composite R&D.

COMPOSITE TOW PLACEMENT · SAMPLE SCALE

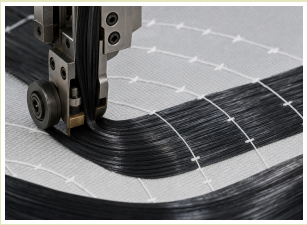
COMPOSITRA-9

Sample-scale tailored fiber placement — design and iterate before production.

A single-head platform configured for tow-placement R&D — develop and iterate fiber paths, evaluate tow size, and prove a preform geometry before scaling to production. Built for sampling and small-batch production of composite preforms, whether thermoset (epoxy-matrix infusion) or thermoplastic (meltable plastics built into the fibers).

WHY THIS MACHINE

It is a fast way to prototype and refine an idea and get it ready for production. Composite design groups can sketch a load path, stitch a preform, infuse it, test it, and revise — in a single afternoon. When the design is locked, the same DST file scales to the TOWFORGE-4 for four-up production.



Sample-scale tow placement

CAPABILITIES

- Tow sizes 1K through 52K — carbon, glass, basalt, natural fiber
- Natural-fiber composites — including hemp, flax, and wool
- Flat preforms that drape onto curved tooling — engineered fiber orientation
- Thermoset (epoxy-infused) or thermoplastic (meltable-fiber) preforms
- Hybrid layups: tow + couched wire + flat conductive thread
- Integrated laser cutter for net-shape preforms

IDEAL FOR

Composite R&D, aerospace structures groups, university composites programs, and motorsports innovation labs.

SPECIFICATIONS

Configuration	9 needles × 1 flat head + 1 taping (PD) head
Functions	Tow placement • Flat • Cording • Wire placement • Laser cutting
Embroidery area	650 × 1200 mm
Maximum speed	850 spm
Tow range	1K – 52K (carbon, glass, basalt, natural)
Control	12" colour touchscreen LCD
Power	Standard 120 V — quiet operation
Machine size	2,470 × 1,630 × 1,600 mm
Net weight	650 kg

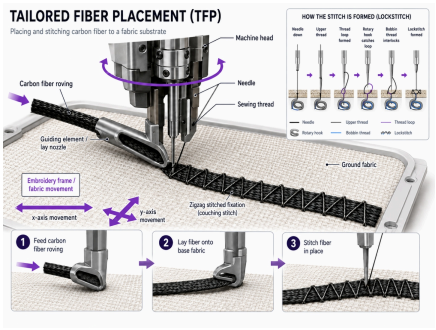
SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

PRICING Contact for current pricing and availability.

WHAT THE PLATFORM MAKES

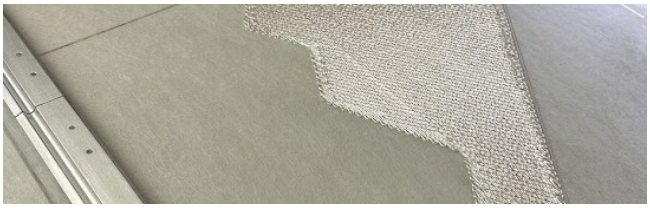
Sample-Scale Preforms, Materials Agnostic

Tailored fiber placement (TFP) lays continuous tow exactly along the load path and stitches it to a substrate — no cutting, no waste, and fibers aligned to principal stiffnesses. At sample scale, the COMPOSITRA-9 places carbon, glass, hemp, flax and wool natural fibers, and fine heating wire so you can prove a preform before committing to production tooling.



THE PROCESS · TAILORED FIBER PLACEMENT

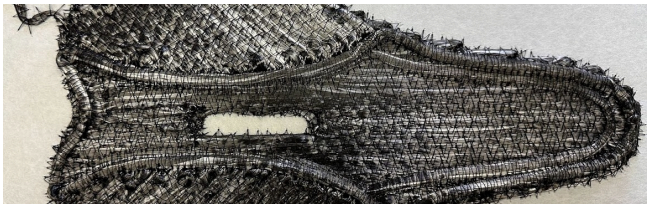
How TFP works A guiding nozzle lays continuous fiber roving onto a moving base fabric while a needle couches it down with a zigzag lockstitch. The embroidery frame moves in X and Y so the head follows any programmed curve — placing fiber only where the load demands it.



FIBERGLASS · EMBEDDED HEATING WIRE

Drone composite preform

A net-shape fiberglass drone preform with heating wire placed directly into the layup — fibers and circuit laid down together, ready to be molded into a single functional part.



CARBON · THERMOPLASTIC MATRIX

Thermoplastic carbon bike seat

A carbon-fiber bike seat built with meltable thermoplastic fibers worked into the layup. Heat consolidates the preform into a finished part — no separate resin infusion required.



NATURAL FIBER · THERMOSET READY

Natural-fiber bike seat

Bike-seat preforms placed in natural fiber, aligned to principal stiffnesses with no waste material. Infused with an epoxy matrix, each becomes a solid, sustainable finished part.



HEMP · FLAX · WOOL

Natural-fiber composites

Spiral and woven samples in hemp, flax and wool — proof the COMPOSITRA-9 is materials agnostic, placing sustainable natural fibers alongside carbon and glass.

From idea to production-ready preform. The COMPOSITRA-9 is built to prototype and refine a concept fast — iterate on fiber paths, hybrid layups and embedded heating wire at sample scale, then scale the proven program straight onto a production machine such as the TOWFORGE-4.

Topher Anderson · Topher@textile.org · 717-706-7702



The CONDUCTRA-9 — a wire and smart-textile cording platform for heating, sensing, and e-textile work.

WIRE & SMART-TEXTILE CORDING

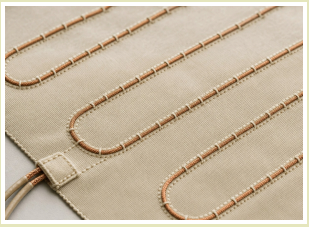
CONDUCTRA-9

Embroidered wires, sensors, heating elements — the smart-textile workhorse.

A nine-needle flat head paired with a single PD (taping) head, configured for couching continuous wire, CNT thread, and conductive cord under engineered stitch paths. The platform does Tailored Wire Placement — routing heating wire, sensor wire, and smart textiles and stitching them down — turning embroidery into an electrical assembly process.

WHY THIS MACHINE

Drop a 28 AWG copper wire under flat stitch, route a meander, and you have a heated panel. Swap to CNT thread and you have an antenna. Add a piezoresistive thread and you have a pressure sensor. One machine, one workflow, the entire smart-textile stack.



Couched wire heating element

CAPABILITIES

- Couches 20–42 AWG copper wire and 16 µm CNT thread
- Electrical envelope: 3 V – 55 V, 1 mA – 15 A
- Heating elements — car seat heaters, deicers, heated jackets
- Sensor wire stitching and smart-textile routing
- Integrated laser cutter for trimmed-edge encapsulated conductors
- Three-bead sequin head for hybrid decoration + function

IDEAL FOR

Heated-apparel makers, smart-textile startups, e-textile research groups, and deicing / heated-surface developers.

SPECIFICATIONS

Configuration	9 needles × 1 flat head + 1 taping (PD) head
Functions	Flat • Cording • Taping • Three-bead twin sequin • Laser cutting
Embroidery area	650 × 1200 mm
Maximum speed	1,200 spm
Control	12" colour touchscreen LCD
Special equipment	Three-bead twin sequin device, laser cutting device
Power	Standard 120 V — quiet operation
Machine size	2,470 × 1,630 × 1,600 mm
Net weight	650 kg

SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

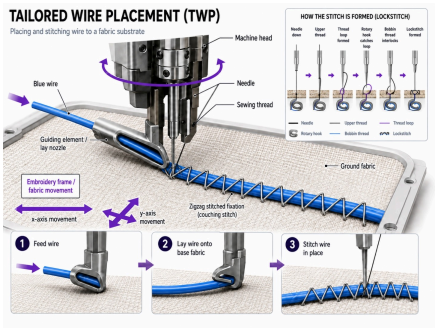
PRICING Contact for current pricing and availability.

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WHAT THE PLATFORM MAKES

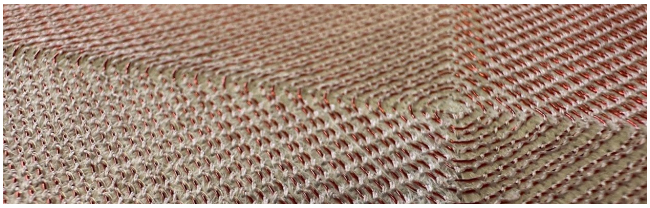
Tailored Wire Placement for Smart Textiles

Tailored Wire Placement (TWP) lays continuous wire exactly along a programmed path and stitches it down to a fabric substrate — no soldered traces, no rigid board. The CONDUCTRA-9 routes heating wire, sensor wire, CNT thread and conductive cord, embedding heating elements, sensors and antennas directly into the textile.



THE PROCESS · TAILORED WIRE PLACEMENT

How TWP works A guiding nozzle lays continuous wire onto a moving base fabric while a needle couches it down with a zigzag lockstitch. The embroidery frame moves in X and Y so the head follows any programmed path — placing conductor only where the circuit demands it.



COPPER WIRE · HEATING ELEMENT

Couched heating element

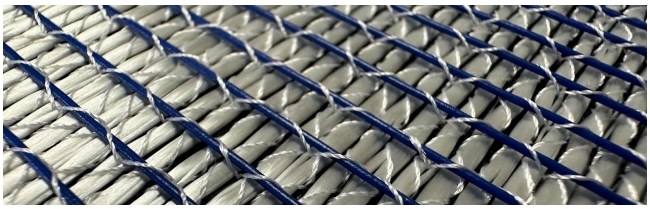
Continuous copper wire couched in a tight spiral meander — a programmable resistive heater stitched straight into fabric for car-seat heaters, deicers and heated apparel.



THERMAL IMAGING · HEAT PROOF

Heated panel under FLIR

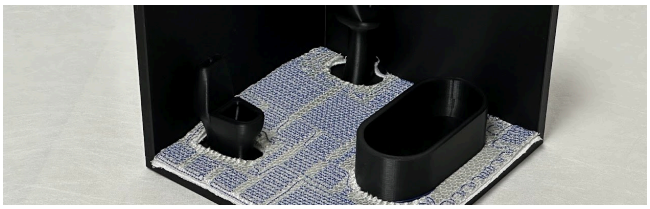
A thermal camera shows even heat across a couched-wire panel — proof the embroidered circuit warms uniformly with no cold spots or runaway hot wires.



SENSOR WIRE · SMART TEXTILE

Sensor-wire routing

Fine conductive wire couched in dense, repeatable rows — the basis for capacitive and resistive sensing grids stitched directly into a flexible textile.



E-TEXTILE · INTEGRATED ASSEMBLY

Smart-textile demonstrator

Embroidered conductive panels integrated with molded fixtures — showing how TWP turns a length of fabric into a finished, wired electrical assembly.

One machine, the entire smart-textile stack. Couch 20–42 AWG copper wire and 16 µm CNT thread, work within a 3–55 V, 1 mA–15 A electrical envelope, and trim encapsulated conductors with the integrated laser cutter — heating elements, sensors and antennas, all stitched on a single platform.

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The FLUIDSTITCH-9 — a tube and EL-wire placement platform for fluidic, pneumatic, and technical textiles.

TUBE & EL-WIRE CORDING

FLUIDSTITCH-9

Stitched-down tubes, EL wire, fluidic and pneumatic routes — the technical-textile workhorse.

A nine-needle flat head paired with a single PD (taping) head, configured for couching continuous tube and cord under engineered stitch paths. The platform does Tailored Tube Placement — routing silicone tubing, EL wire, and other tube-like structures and stitching them down — turning embroidery into a fluidic and technical-textile assembly process.

WHY THIS MACHINE

Drop a silicone tube under the PD head, route a serpentine, and you have a textile-integrated fluid line. Swap to EL wire and you have a glowing display. Run agricultural drip tube or air line and you have a soft pneumatic harness. One machine, one workflow, the entire technical-textile stack.



Silicone tube in textile carrier

CAPABILITIES

- Couches silicone, TPU, and PU tubing up to 15 mm OD without crimping the lumen
- Tailored Tube Placement for fluid, air, and EL-wire routes
- Pneumatic and hydraulic lines — soft actuators, thermal management, wearable cooling
- EL wire and tube-like structures stitched down for lighting and display
- Agricultural and technical routing — drip lines, microfluidic channels, lab-on-textile
- Combined fluidic + electrical routing on the same workpiece

IDEAL FOR

Soft robotics labs, microfluidics groups, wearable cooling / heating startups, agricultural-textile developers, and prosthetics R&D.

SPECIFICATIONS

Configuration	9 needles × 1 flat head + 1 taping (PD) head
Functions	Flat • Cording • Taping (fluidic) • Sequin • Laser
Embroidery area	650 × 1200 mm
Maximum speed	1,200 spm
Couching capacity	Tubing up to 15 mm OD
Control	12" colour touchscreen LCD
Power	Standard 120 V — quiet operation
Machine size	2,470 × 1,630 × 1,600 mm
Net weight	650 kg

SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

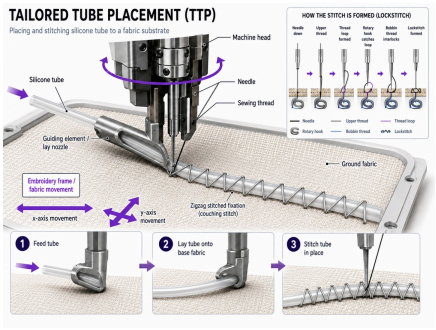
PRICING Contact for current pricing and availability.

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WHAT THE PLATFORM MAKES

Tailored Tube Placement for Technical Textiles

Tailored Tube Placement (TTP) lays continuous tube exactly along a programmed path and stitches it down to a fabric substrate — no clamps, no manual routing. The FLUIDSTITCH-9 routes silicone tubing, EL wire and other tube-like structures, embedding fluid lines, air channels and lit cord directly into the textile for fluid transport, air transport, agricultural and other technical uses.



THE PROCESS · TAILORED TUBE PLACEMENT

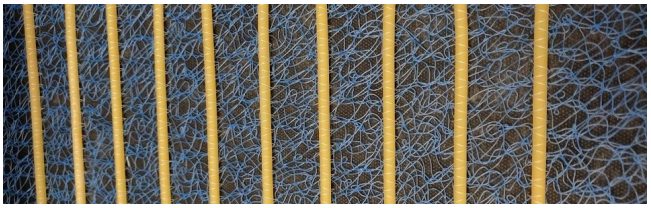
How TTP works A guiding nozzle lays continuous tube onto a moving base fabric while a needle couches it down with a zigzag lockstitch. The embroidery frame moves in X and Y so the head follows any programmed path — placing tube only where the route demands it, without crimping the lumen.



SILICONE TUBE · FLUID ROUTE

Couched fluid line

Continuous silicone tube couched in a tight serpentine and stitched flat to the carrier — a textile-integrated fluid or pneumatic line for soft actuators and wearable cooling.



TECHNICAL TUBE · AGRICULTURAL

Tube routing on mesh

Tubing laid in parallel U-turn rows on an open mesh carrier — the basis for irrigation, drip and air-transport panels stitched for agricultural and technical use.



COUCHING DETAIL · LUMEN INTACT

Stitched tube detail

A close look at the zigzag couching stitch anchoring clear tube to fabric — firm fixation along the route with the lumen left fully open for flow.



EL WIRE · LIT TEXTILE

EL-wire display

Electroluminescent wire couched in flowing multicolour paths — showing how TTP stitches tube-like structures into a flexible, illuminated technical textile.

One machine, the entire technical-textile stack. Couch silicone, TPU and PU tubing up to 15 mm OD, route EL wire and other tube-like structures, and combine fluidic with electrical routing on the same workpiece — fluid lines, air channels, agricultural tube and lit cord, all stitched on a single platform.

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The NEUROSTITCH-12 — a chenille chain-stitch platform for soft, dry biosignal electrodes and lead routing.

CHENILLE BIOSIGNAL ELECTRODES

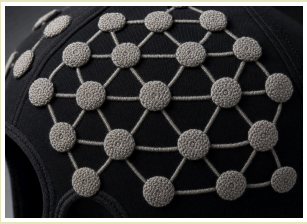
NEUROSTITCH-12

Soft, high-surface-area electrodes for EEG, EMG, and ECG.

A 12-needle flat head paired with a dedicated chenille / chain-stitch head — purpose-built for out-of-plane electrode geometry while the flat head prints insulating lead routing on the same workpiece in one setup. Chain stitch lifts conductive thread off the fabric in tight loops, turning embroidery into a dry-electrode assembly process.

WHY THIS MACHINE

Chain stitch lifts conductive thread off the fabric in tight loops, multiplying skin contact area. Dry electrodes match the performance of wet sensors with none of the gel and none of the rigid PCBs. Print electrode plus lead routing on one workpiece — no separate assembly step.



Hex chain-stitch electrode array

CAPABILITIES

- Electrode geometries from 0.5 cm × 0.5 cm to 100 cm × 100 cm and larger
- Any side, any shape — hex arrays, rings, disks, custom outlines
- Conductive chenille for skin contact plus insulating flat for leads
- Silver-plated nylon, carbon nanotube and kevlar conductive threads
- Combined fine and bulky decoration in one setup

IDEAL FOR

Neuroscience labs, BCI startups, wearable biosensor companies, and sports physiology groups.

SPECIFICATIONS

Configuration	12 needles flat head + 6-needle chenille (CT) head
Functions	Flat • Chenille • Chain stitch
Embroidery area	560 × 1200 mm
Cap embroidery area	280 × 60 mm
Maximum speed	1,000 spm flat • 700 spm cap
Stitch length	0.1 – 12.7 mm
Head distance	350 mm
Control	10" colour touchscreen LCD
Voltage	Standard 120 V
Machine size	2,470 × 1,630 × 1,600 mm
Net weight	650 kg

SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

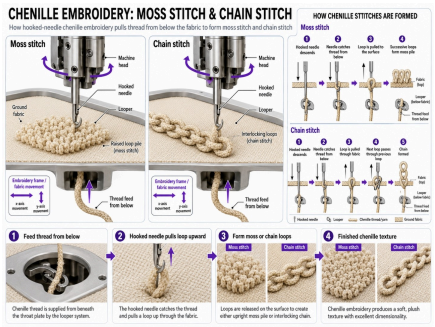
PRICING Contact for current pricing and availability.

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WHAT THE PLATFORM MAKES

Chenille Electrodes for Biosignal Sensing

Chenille and chain stitch lift conductive thread off the fabric into soft, high-surface-area loops — dry electrodes that match wet-sensor performance with no gel and no rigid PCB. The NEUROSTITCH-12 stitches the electrode and its insulating lead routing onto one workpiece in a single setup, embedding EEG, EMG and ECG sensing directly into caps, garments and bands.



THE PROCESS · CHENILLE & CHAIN STITCH

How chenille works

A hooked needle pulls conductive thread up from below the fabric, releasing loops on the surface to build either an upright moss pile or an interlocking chain. The embroidery frame moves in X and Y so the head follows any programmed outline — raising plush, high-contact electrode texture exactly where the sensor demands it.



EEG · BRAIN SENSING

Chenille EEG cap

A full array of soft chenille electrodes embroidered into a stretch cap with embroidered leads — dry, gel-free EEG contact across the scalp for neuroscience and BCI work.



EMG / ECG · WEARABLE

Biosignal sensing garment

Chenille electrodes and embroidered leads built straight into a compression shirt — EMG and ECG monitoring that moves with the athlete, no straps or adhesive pads.



SILVER-PLATED NYLON · ELECTRODE

Silver chenille electrode

A dense moss-pile patch in silver-plated nylon — high surface area for low skin-contact impedance, stitched to any outline the sensor design calls for.



CONDUCTIVE THREAD · ELECTRODE

Chenille electrode patch

A plush chenille electrode raised from conductive thread — showing how the chain-stitch head turns a flat textile into a soft, high-contact dry sensor.

One machine, electrode plus lead routing in a single setup. Raise conductive chenille for skin contact, print insulating flat stitch for the leads, and work in silver-plated nylon, carbon nanotube or kevlar thread — EEG, EMG and ECG sensors stitched to any shape from 0.5 cm to a full garment, all on one platform.



The BATCHCIRCUIT-5 — a five-head, nine-needle flat platform, shown stitching five identical circuit-board substrates in parallel.

PARALLEL SENSOR / PATCH PRODUCTION

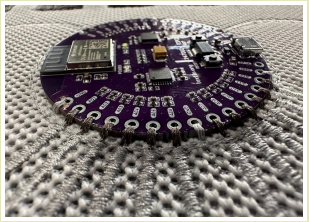
BATCHCIRCUIT-5

Five identical sensor patches per cycle — the parallel-production sensor line.

A five-head, nine-needle high-speed flat platform that produces five identical sensor patches, electrode arrays, or smart-textile units in parallel. When a design is locked, this is how you scale it — one operator's stitchout time becomes five units of throughput.

WHY THIS MACHINE

Five-head parallelism turns a single operator's stitchout time into five units of throughput. For sensor companies shipping production patches, biosignal electrode arrays, or wearable circuit substrates, BATCHCIRCUIT-5 is the bridge from prototype to product.



Parallel 5-up sensor patches

CAPABILITIES

- Parallel sensor / electrode / patch production (5-up)
- Identical conductive trace geometry across all five heads
- 9-needle thread library per head — multi-conductor designs
- Commercial throughput at 1,200 spm
- 200 × 500 mm field per head

IDEAL FOR

Sensor product companies, electrode array manufacturers, and smart-textile OEMs in pilot production and scale-up labs.

SPECIFICATIONS

Configuration	9 needles × 5 heads
Functions	Flat • Parallel patch / sensor production
Embroidery area	200 × 500 mm (per head)
Maximum speed	1,200 spm
Control	7" colour touchscreen LCD
Drive	Servo main motor
Voltage	Standard 120 V (wide-input 80 – 260 V)
Power	150 W — quiet operation
Machine size	1,950 × 1,130 × 1,300 mm
Net weight	690 kg

SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

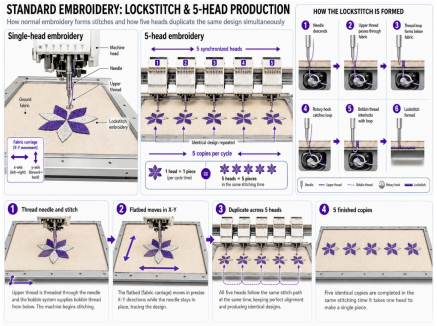
PRICING Contact for current pricing and availability.

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FROM LOCKED DESIGN TO PRODUCTION

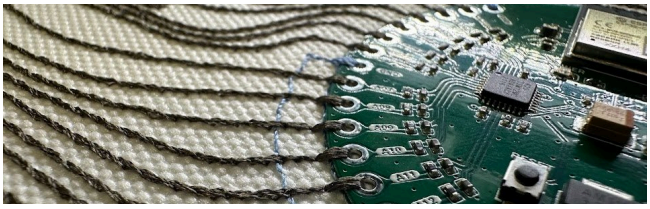
Five Identical Copies, One Stitching Cycle

Once a sensor patch, electrode array, or circuit substrate is proven, the BATCHCIRCUIT-5 reproduces it five at a time. All five heads follow the same stitch path simultaneously, so every copy carries identical conductive trace geometry — turning a single operator's stitchout time into five finished units.



THE PROCESS · LOCKSTITCH & 5-HEAD PRODUCTION

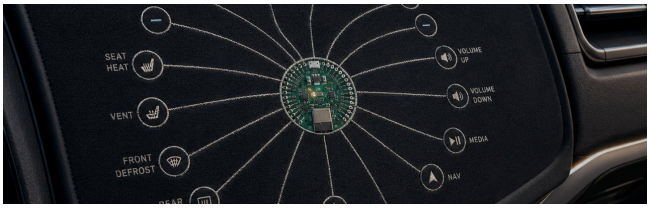
How 5-head works Each head threads a needle and forms a lockstitch as the flatbed carriage moves in X and Y, tracing the design. All five heads share that same motion at once — so in the time a single head makes one piece, the machine completes five identical copies in perfect alignment.



CONDUCTIVE TRACES · SENSOR SUBSTRATE

Stitched circuit substrate

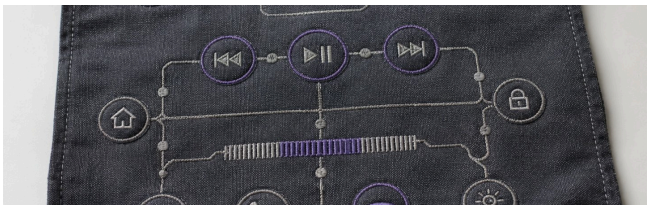
A circuit board joined to woven fabric by a fan of conductive traces stitched directly into the textile — the production sensor unit this platform reproduces five at a time.



SMART TEXTILE · AUTOMOTIVE

Embroidered control surface

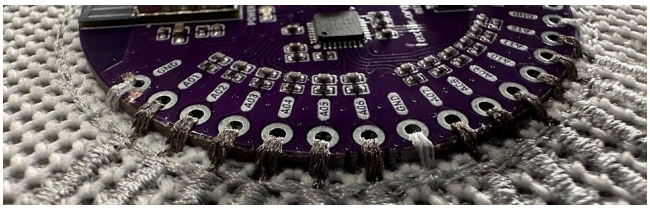
A full set of capacitive controls stitched into an automotive dash panel, each icon wired back to a central board with conductive thread — smart-textile interfaces at production scale.



CAPACITIVE · TOUCH INTERFACE

Embroidered touchpad

A media-control touchpad rendered entirely in conductive and decorative thread — proof that finished, repeatable interface patches come straight off the heads.



WEARABLE · SENSOR PATCH

Round sensor patch

A round sensor board bonded into stretch knit with a ring of stitched leads — the kind of wearable circuit substrate the five heads turn out in identical batches.

Built to scale a locked design. Nine needles per head give a full multi-conductor thread library, identical trace geometry holds across all five heads, and 1,200 spm keeps commercial throughput — taking a proven sensor patch, electrode array, or circuit substrate from prototype to production batches in one platform.

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The CIRCUITSTITCH-15 — a single-head, 15-needle 360°-rotary platform for sampling embroidered circuits, antennas, and sensors.

CONDUCTIVE STITCHING · 360° HEAD

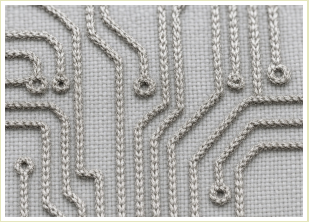
CIRCUITSTITCH-15

Embroidered PCBs, antennas, and surface sensors — the sampling head.

The single-head sampling counterpart to the BATCHCIRCUIT-5 production line. A 15-needle colour range and a 360°-rotating R-series head give true any-direction trace routing without rotating the workpiece — the fastest way to prove a design before scaling it five-up.

WHY THIS MACHINE

Lay a meander antenna, drop in a capacitive touch pad, jumper a trace, and route a piezoresistive grid — in one DST file, on one head. Fifteen needles means you can pre-load conductive, insulating, sacrificial, and gradient threads and let the colour change call them up in sequence.



Conductive traces on woven substrate

CAPABILITIES

- Silver-plated nylon, kevlar, carbon nanotube, water-soluble thread
- Capacitive and piezoresistive sensor geometries (all types)
- Embroidered patch, monopole, and meander antennas
- Sacrificial routing for free-form conductor patterns
- 15-needle thread library — multiple conductors loaded at once

IDEAL FOR

Wearable electronics groups, antenna researchers, and sensor labs scaling beyond bench coupons.

SPECIFICATIONS

Configuration	15 needles × 1 head, 360° rotary
Functions	Flat • Cap • Finished garments
Embroidery area	350 × 500 mm
Maximum speed	1,200 spm
Control	12" colour touchscreen LCD (17-language)
Memory	20,000,000 stitches • 200 designs
Stitch length	0.1 – 12.7 mm
Voltage	Standard 120 V (wide-input 80 – 260 V)
Power	150 – 160 W — quiet operation
Net weight	100 kg
Standard accessories	Cap driver, cap station, 2 cap frames, garment frames (9/12/15/19/30×30 cm), 58×36 cm flat frame, steel stand, auto winder, tool kit

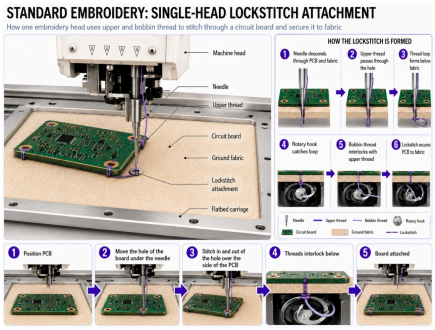
SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

PRICING Contact for current pricing and availability.

WHERE A DESIGN GETS PROVEN

Embroidered Circuits, Any Direction

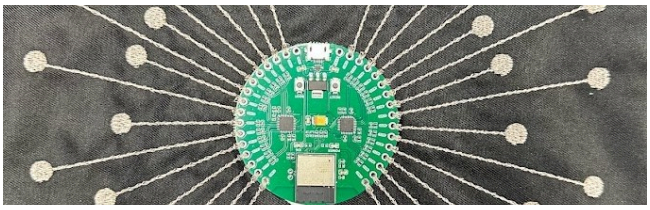
The 360°-rotating head routes conductive thread in any direction without turning the workpiece — so antennas, capacitive pads, jumpered traces, and piezoresistive grids all stitch from a single DST file. Prove the geometry here on one head, then hand the proven file to the BATCHCIRCUIT-5 to run it five-up.



THE PROCESS · SINGLE-HEAD LOCKSTITCH ATTACHMENT

How attachment works

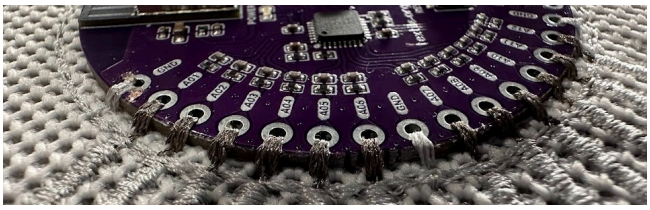
The board is positioned and its mounting holes move under the needle, which stitches in and out over the edge of the PCB. Upper and bobbin thread interlock below the fabric, forming a lockstitch that secures the board — and the same head routes conductive thread into traces, pads, and antennas across the substrate.



SENSOR COUPON · CAPACITIVE / PIEZORESISTIVE

Radial sensor array

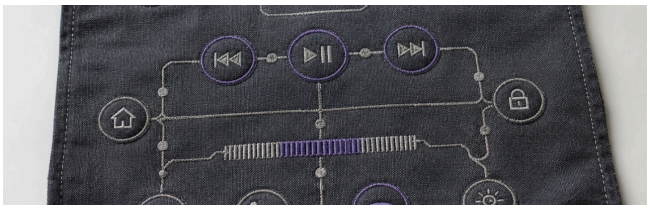
A round sensor board with conductive traces fanned out to a ring of silver electrode pads stitched on fabric — a capacitive / piezoresistive coupon sampled on one head before scale-up.



WEARABLE · SENSOR PATCH

Round sensor patch

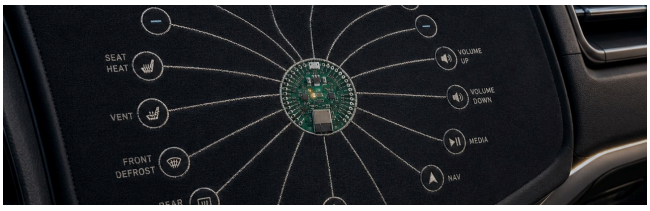
A round sensor board bonded into stretch knit with a ring of stitched leads — a wearable circuit substrate prototyped on the 360° head before it goes to production batches.



CAPACITIVE · TOUCH INTERFACE

Embroidered touchpad

A media-control touchpad rendered entirely in conductive and decorative thread — capacitive pads and traces routed in any direction by the rotating head.



SMART TEXTILE · AUTOMOTIVE

Embroidered control surface

A full set of capacitive controls stitched into a dash panel, each icon wired back to a central board with conductive thread — a smart-textile interface proven before tooling for volume.

The bench before the line. Conductive, insulating, sacrificial, and gradient threads load across fifteen needles and the 360° head routes them in any direction — sampling embroidered PCBs, antennas, and surface sensors at production speed, then handing the proven DST file straight to the BATCHCIRCUIT-5 for five-up runs.