

The TOWFORGE-4 — a custom four-head tailored fiber placement platform, shown in production.

COMPOSITE TOW PLACEMENT · PRODUCTION

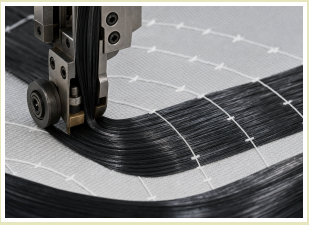
TOWFORGE-4

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

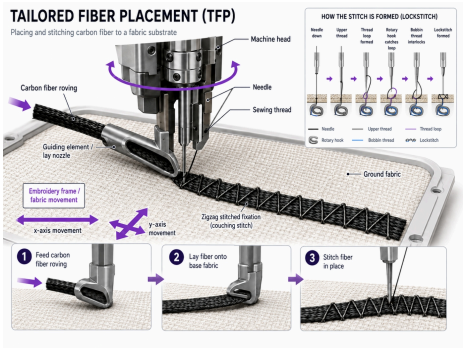
SAMPLING Bring your spec — we'll stitch a sample on this platform at our showroom.

PRICING Contact for current pricing and availability.

WHAT THE PLATFORM MAKES

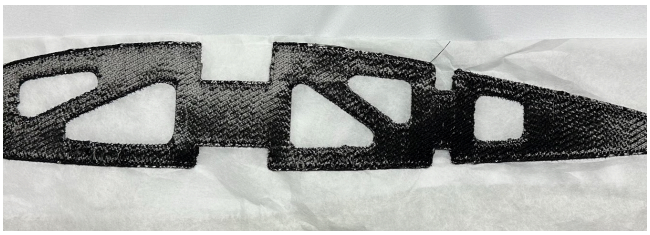
Tailored Fiber Placement, Materials Agnostic

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

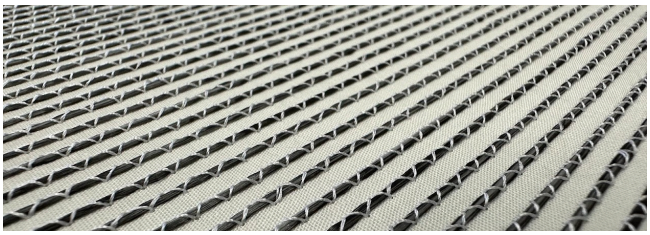
How TFP works A guiding nozzle lays continuous fiber roving onto a moving base fabric while a needle couches it down with a zigzag lockstitch. The embroidery frame moves in X and Y so the head follows any programmed curve — placing fiber only where the load demands it.



CARBON · NET-SHAPE PREFORM

Carbon-fiber airfoil — zero waste

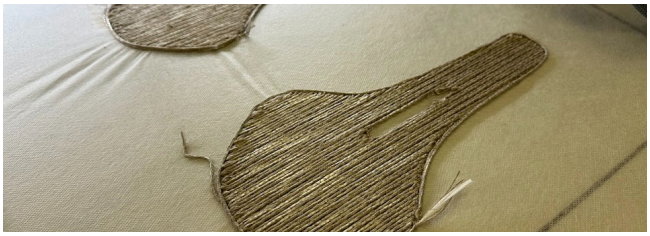
A full carbon-fiber airfoil built with no laminate cutting — fibers placed only where needed, so no material is wasted. The preform is ready to be molded.



CARBON · PROGRAMMED ORIENTATION

Tailored carbon-tow preform

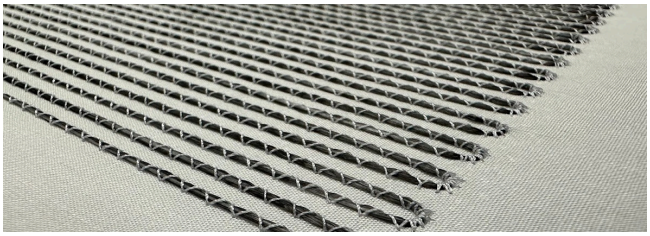
Continuous carbon tow placed in tightly programmed paths across a flat substrate. Fiber orientation is set in software, so the preform drapes and carries load exactly as designed.



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.