JABIL | HEALTHCARE

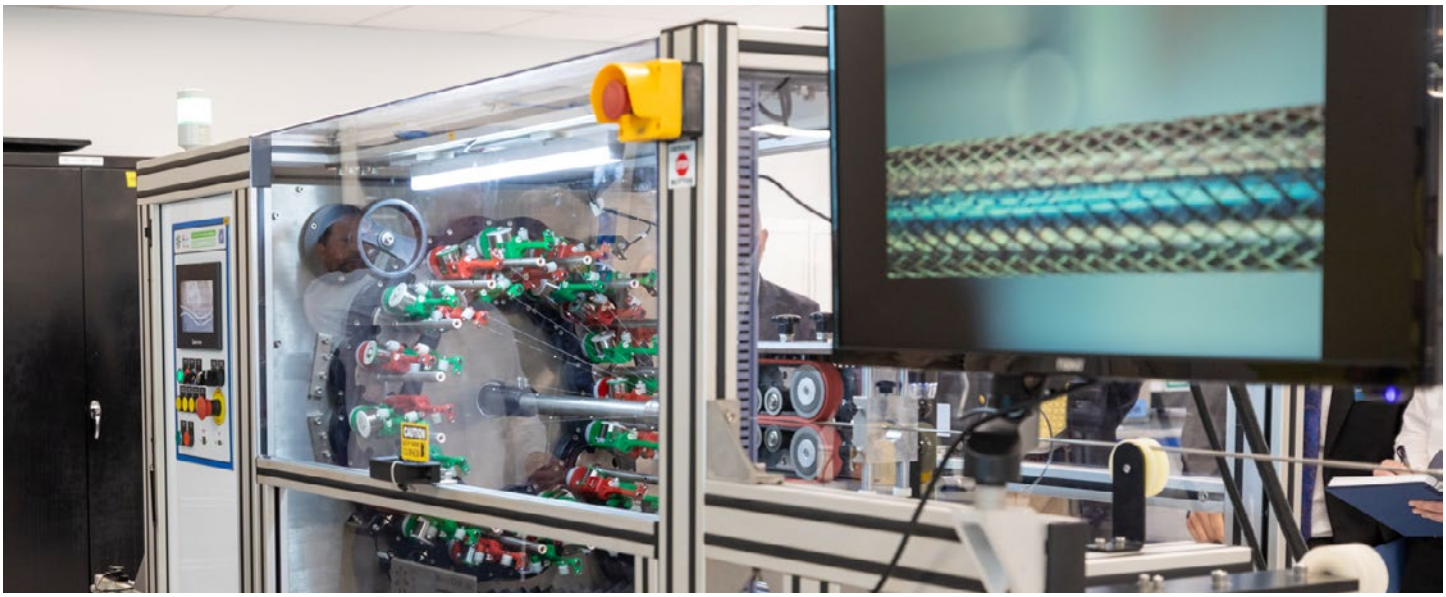
Jabil Advanced Catheter Development Lab

The lab is located in the Jabil Innovation Center at Jabil's headquarters in St. Petersburg, Florida, USA. It is a dedicated center for innovation and refinement of minimally invasive devices (MID) and catheter product design, prototyping, testing, and manufacturing development.

Product developers who book the lab are provided with advanced skills, equipment, and processes for the design, development, and testing of catheters and minimally invasive devices (MID).

In our new state-of-the-art lab, we provide expert collaboration on product design with rapid prototyping and process optimization that can lead to commercial manufacturing at scale.

Catheters and MIDs require highly specialized, intricate manufacturing processes and Jabil offers proven capabilities and specialized equipment for materials, miniaturization, component integration, micro-assembly, skills training, and continual process improvement.



Processes

- Braiding
- Hole Punching and Skiving
- Tip Forming
- Coiling
- Laser Cutting and Welding
- Nitinol Shape Setting
- Balloon Forming and Bonding
- Catheter Shape Setting
- Electrode Swaging
- Parison Stretching
- Liner Stretching

For additional information, visit jabil.com/healthcare

Specialized Equipment Under One Roof

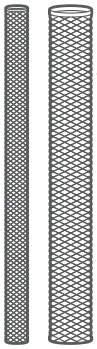
The lab provides advantages in product development because we house critical equipment in a single location including high magnification optical inspection, SEM, EDX, FTIR, x-ray imaging and other failure analysis instruments. The following processes are supported at the Lab and do not require multiple transfers of IP or supplies among several sites.

FEMTO AND FIBER LASER CUTTER

Laser Cutting of hypo tubes, and flat sheets. The equipment can accommodate ferrous and non-ferrous metals as well as exotic materials.

PRECISION LASER WELDING

Laser welding of anchor rings, pull wires, braid, and fine wire. The equipment can accommodate a wide range of materials.



BRAIDING

A 32-carrier horizontal braider, that is able to braid a variety of materials including:

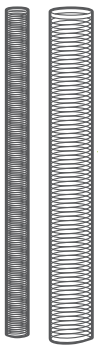
- Round and Flat Wire: stainless steel, copper, nitinol, titanium, gold, platinum, and cobalt-chromium.
- Fiber and other non-metallic strands: nylon, polyester, Dyneema®, Kevlar®, Vectran™, Spectra®, PET, PEN, PP, PEEK, and liquid crystal polymers (LCP).

HOLE PUNCHING / SKIVING

Automated catheter hole punching/skiving with four axes to allow for repeatable patterns of round, oval, and other shaped holes. Automated hole punching and tube drilling employ quick-change tooling to manage a broad range of material types and sizes.

TIPPING

Achieve flash-less tips, smooth bonds, and exacting geometry with virtually all thermoplastic materials. Produce a range of applications including flares, flanges, angular welds, bonds, multi-lumen shape transitions, butt welds, balloon-to-catheter welds, neck downs, soft-tip fusion, metal-to-tube adhering, sheaths, dilators, radio-opaque, strain relief bonds, swaged metal needle guides, and tube-in-tube bonds.



COIL WINDING

Winds coils using filaments as small as .001-inch diameter on a .004-inch mandrel using innovative closed-loop filar tension control system. Machine flexibility enables the filar tension to be recipe-controlled from 5 to 600 grams during entire wind.

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VERTICAL REFLOW TOWER

A precision catheter laminating machine designed for consistent results using a tightly controlled heated chamber that moves along the tubing at a regulated speed to produce uniform laminations across medium to long length shafts.

AUTOMATED PTFE LINER STRETCHER

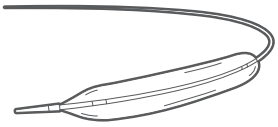
Stretcher allows the liner to sit tight against the mandrel with minimal relaxation. Fine machine control increases throughput, decreases scrapped units, reduces etching issues, and eliminates carpal tunnel injury concerns.

SHAPE SETTING

Shape setting for complex curves of various materials and durometers.

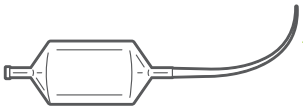
PARISON STRETCHER

Stretch or neck-down tube parisons for preparation for balloon-forming with precision.



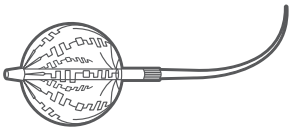
BALLOON FORMING

Full servo control on proximal and distal axes which allows for precise, fast stretching of the parisons during balloon-blowing process. Allows for quick exchange of the heat/cool block for different balloon sizes and shapes.



BALLOON BONDING

Balloon thermal split die bonder for adhering balloons to sheaths and catheters as well as tip bonding and lap-joint bonding of various polymer durometers.



SWAGING

Rotary swaging of electrodes on catheter outer diameter or marker-band swaging to lock down lower profile radiopaque marker.

NITINOL SHAPE SETTING

Nitinol shape-setting ovens provide the accuracy and precision required for nitinol. Shape setting entails process development to determine the exact temperatures needed to transition temperatures and holding time. It offers a highly controllable, fluidized salt bath (aluminum oxide or equivalent) to hold the part and control the temperature and time.

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BRAIDED TUBE CUTTING

Automated Braided Tubing Cutter cuts difficult materials, including braid-reinforced tubing, stainless steel, polycarbonate, and nylon 12.

THERMAL BONDING

Thermal bonding for lap joints, butt welding, and PE-shrinking.

Please visit jabil.com/healthcare to learn more or request a visit to the Jabil Innovation Center at our headquarters in St. Petersburg, Florida.

About Jabil

At Jabil (NYSE: JBL), we are proud to be a trusted partner for the world's top brands, offering comprehensive engineering, manufacturing, and supply chain solutions. With over 50 years of experience across industries and a vast network of over 100 sites worldwide, Jabil combines global reach with local expertise to deliver both scalable and customized solutions. Our commitment extends beyond business success as we strive to build sustainable processes that minimize environmental impact and foster vibrant and diverse communities around the globe. Discover more about us at www.jabil.com.