



K-TUBE TECHNOLOGIES

**Manufacturing stainless steel
tubing for more than 40 years.**



Overview

- a. K-Tube's History
- b. How It's Made
- c. Capabilities & Design Options
- d. Conversation

A Solid Foundation

1974

Herb Karlinski and Brian Baldwin form K-Tube and build the first welding mill. Brian was Mr. Bill Cook's fraternity brother and college roommate in 1949, and they founded two businesses together before Cook Medical or K-Tube was formed.

1998

K-Tube becomes a fully-owned subsidiary of Cook Group, Inc.

2014

Today, K-Tube has capacity to produce over 100,000,000 feet of tubing each year. Approximately 93% of the tubing manufactured is custom.

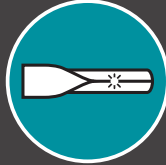
We believe customers deserve a strong partner who treats them fairly and honestly.

STAINLESS STEEL TUBING

How It's Made



SLITTING



FORMING &
LASER WELDING



HEAT
TREATING



STRAIGHTENING



CLEANING



PACKAGING



SINKING



PLUGGING



CENTERLESS
GRINDING



CUTTING



INSPECTION



FIBER OPTIC
FILLED TUBING

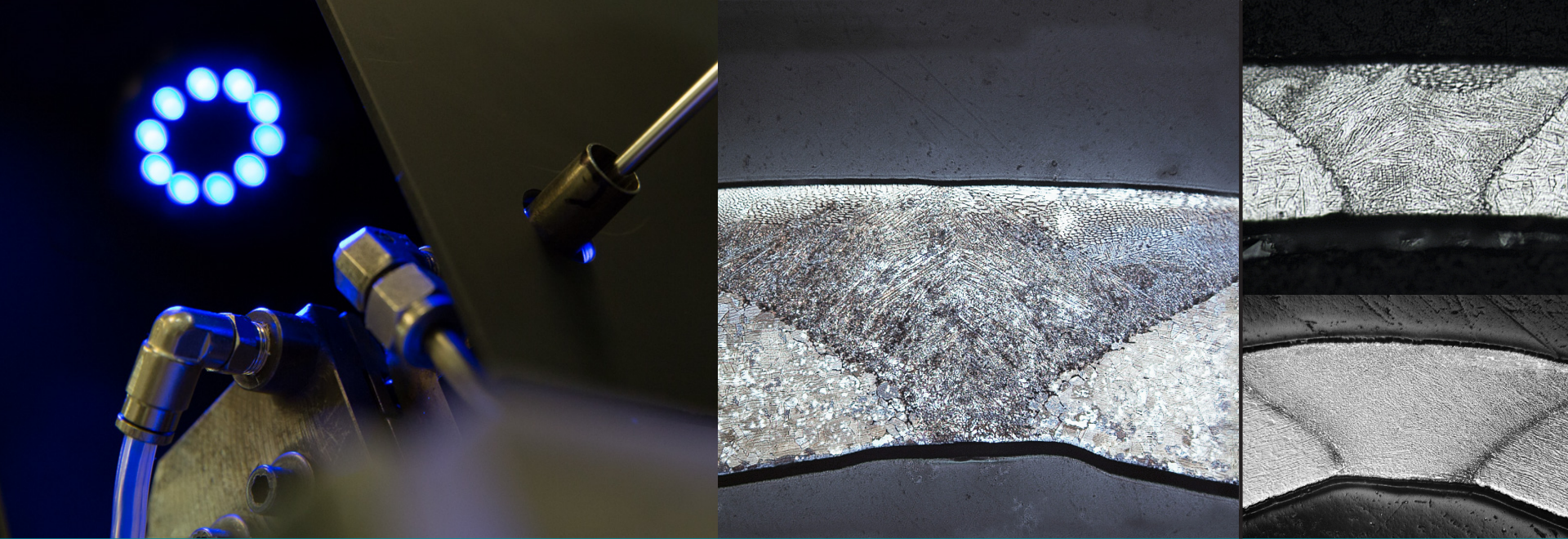


PROCESS

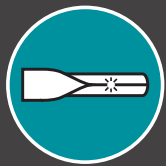


SLITTING

- Performed by approved suppliers
- Strict specifications ensure repeatability
- Coils supplied in long lengths

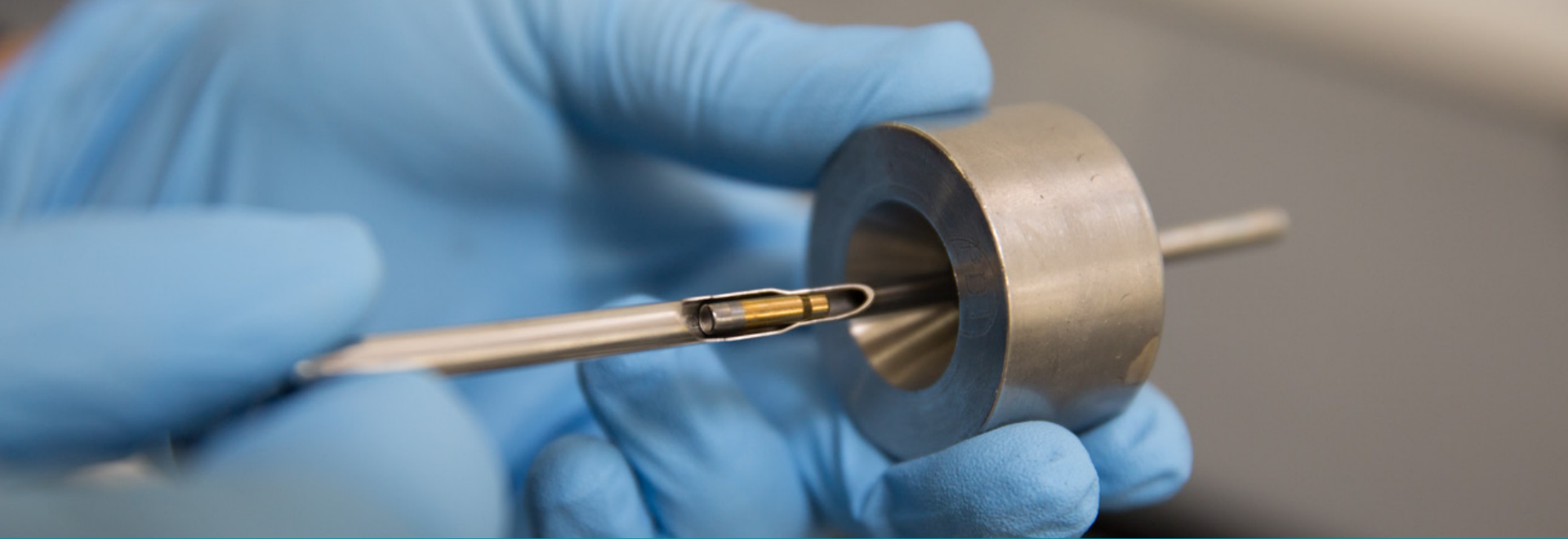


PROCESS



FORMING & LASER WELDING

- Precision roll forming mills create uniform product.
- Defect detection is integrated into the process.
- The strip is welded into coils in a continuous process.

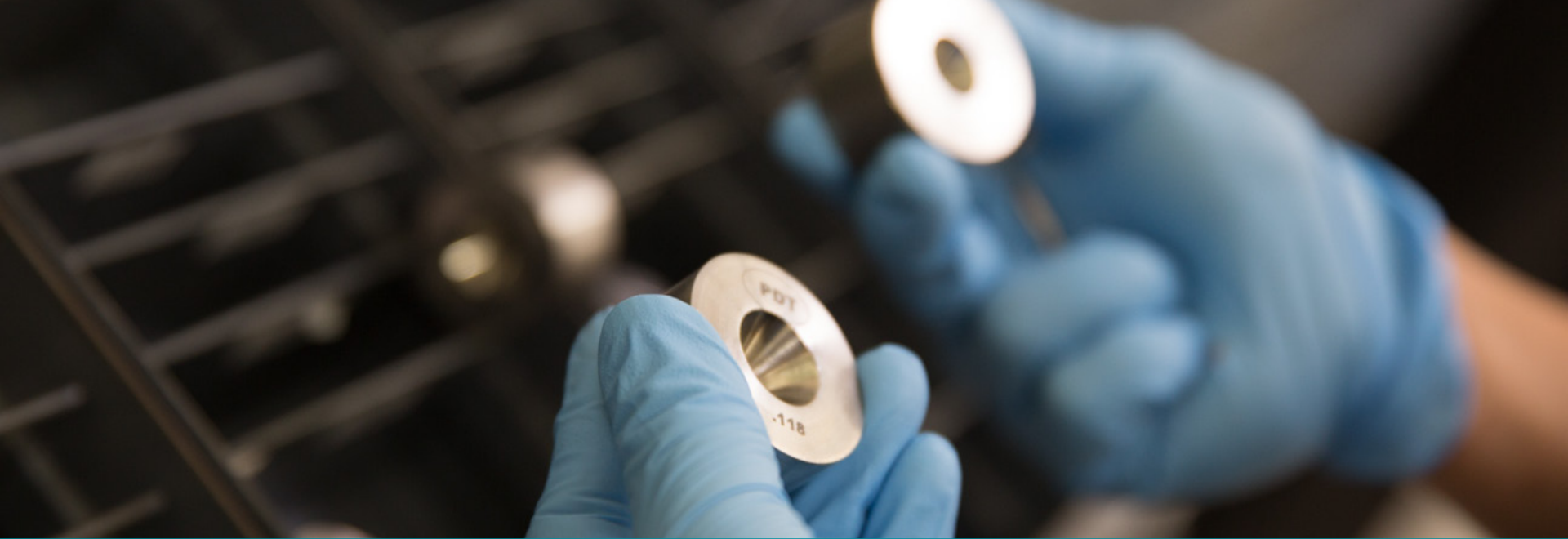


PROCESS



PLUGGING

- This process fine tunes wall thickness to tight tolerances.
- The floating plug smooths the finish of the ID.
- The surface finish is determined by the percent of plugging vs. sinking.
- This is the primary technology used in Brite Draw and Matte products.

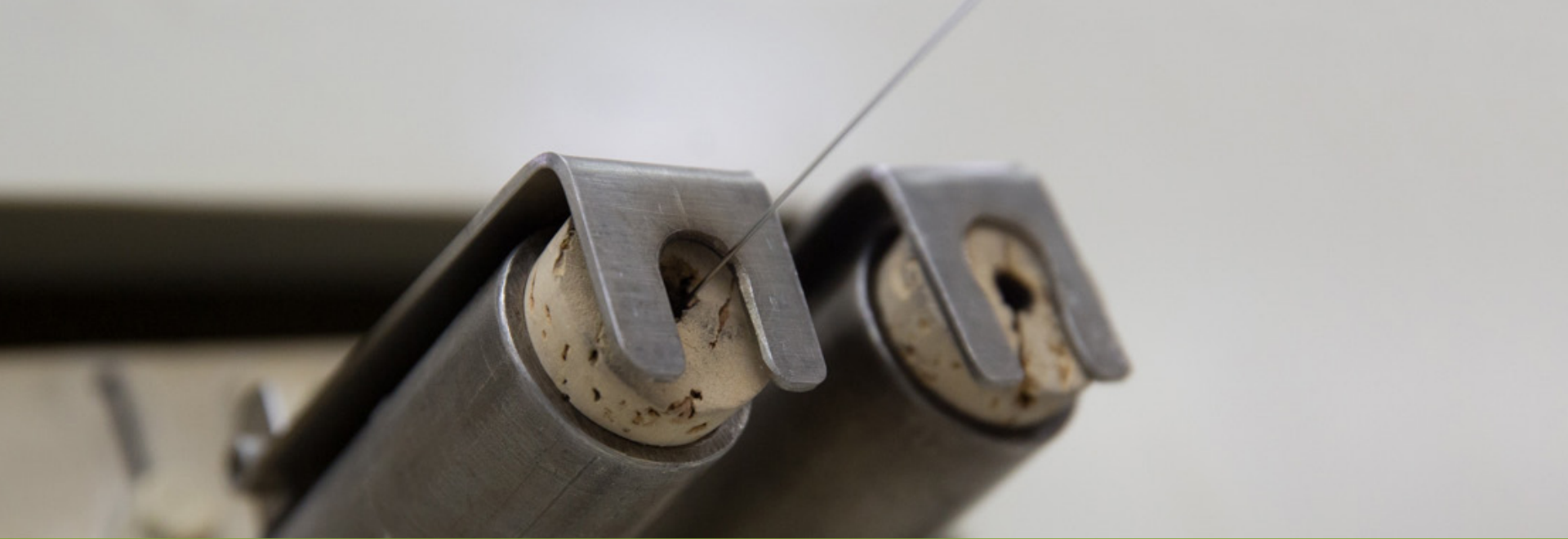


PROCESS



SINKING

- The tubing's outside diameter is reduced through a series of dies.
- Reduction causes cold work, which increases tensile strength.
- This is the primary technology used in K-Form products.

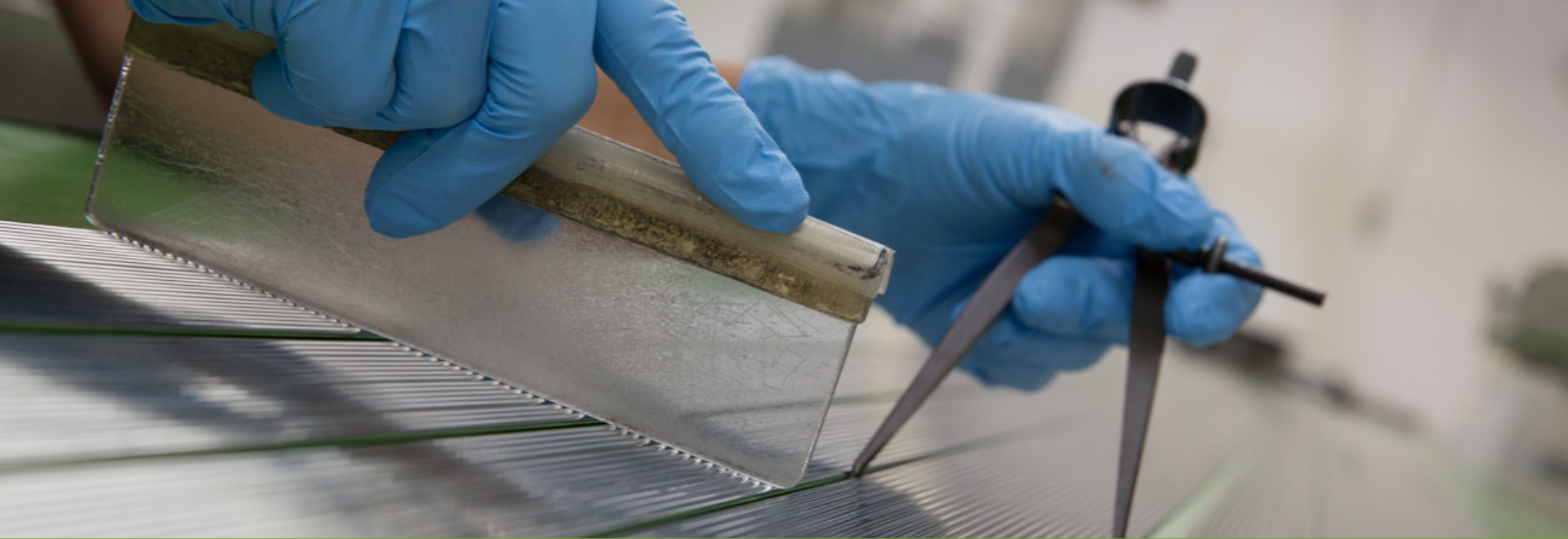


PROCESS



HEAT TREATING

- Heat treating tailors custom material properties.
- Annealing relieves stress and allows for more reduction.
- The coils are heat treated inline.



PROCESS



STRAIGHTENING

- A rotary straightener balances internal stress to remove coil cast.
- Parts are visually inspected after straightening.



PROCESS



CENTERLESS GRINDING

- This equipment can hold tight OD tolerances.
- Grinding removes wall thickness for high OD/wall ratio designs.



PROCESS



CUTTING

We offer multiple cutting styles:

- Shear: crimped end
- Score break: 70-90% open
- Electrolytic: 100% open, burr free, slight edge break
- Laser: 100% open, burr free, sharp edge
- Some parts can be tumbled to break edges



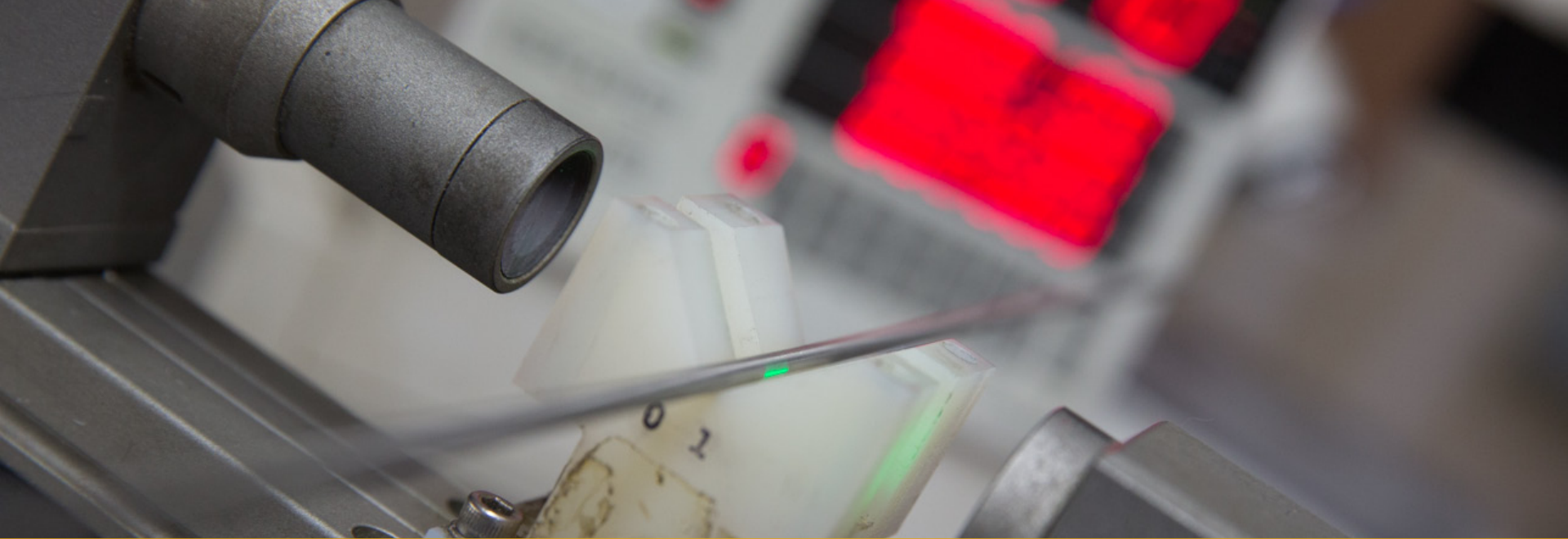
PROCESS



CLEANING

We offer different cleaning methods for different cutting styles:

- Shear or score break - OD wipe
- Electrolytic - ultrasonic: degreaser, brightened, DI flush
- Laser - degreased, pickled, rinsed



PROCESS



INSPECTION

- Quality and metallurgical analysis are conducted.
- Physical properties: UTS, YS, %EL, hardness and surface finish
- C=0, AQL sampling plan

Testing & Certification

- A. ISO 9626: Breakage, stiffness and corrosion testing performed in-house.
- B. Physical Property Testing Per ASTM Standards
- C. Tensile Test, Hardness, Surface Finish
- D. Failure Analysis Equipment
 - i. Metallurgy Wet Lab (Mount and Polish)
 - ii. Microstructure and Grain Size
 - iii. 3D Imaging of Fracture surfaces
 - iv. Optical Imaging (6x - 3500x)

PROCESS



FIBER OPTIC FILLED TUBING

- Optical fibers are encapsulated in metal tubing.
- Tubing provides strong, leak-free protection for optical fibers.
- Fiber optic tubing is shipped on large spools to cable companies.

WHAT WE ARE UP TO

Current Development Projects

- A. Dimensional: Increasing max OD up to .320", High OD/Wall Ratio Designs
- B. Alloys: Carpenter Proprietary Alloys (465, Bio-Dur), AL6XN (non-magnetic), 1RK91 (PH alloy), additional Inconel grades
- C. Inspection: Final Size Eddy-Current Testing
- D. Fabrications: In-house Flaring, Swaging, Grit Blasting, Electropolish, Laser Cut Fabrication, Induction Annealing

LET'S WORK TOGETHER

How to Collaborate or Buy



For instant access to stock tubing

- No request for quote is necessary
- Over 100 options available
- Easy payment options
- Shipped the same day



For custom tubing with unique requirements

- Made exactly to your specifications
- Total traceability
- Quality assurance program for consistency



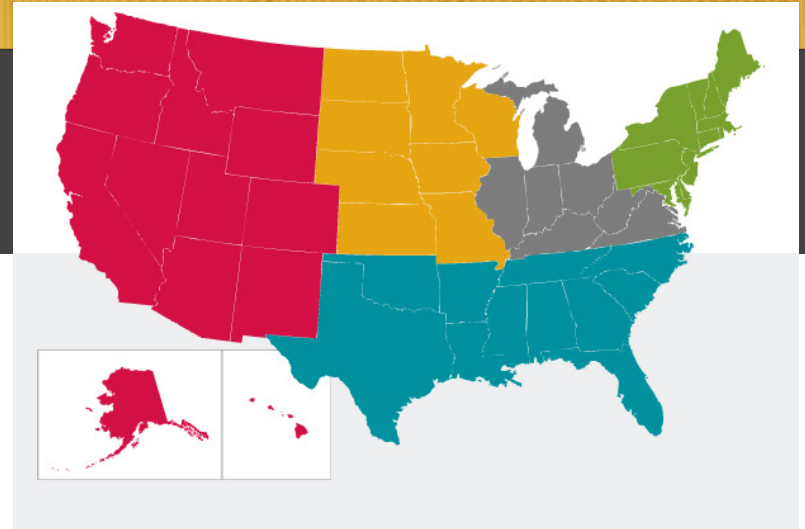
For design refinements of early-stage projects

- Collaborate with the makers of your tubing
- Explore alloy options to enhance your decision
- Benefit from quick-turnaround manufacturing for early-stage prototypes

CONTACT US

Whatever your question or need, K-Tube is here to assist you.

Our professional staff is available to assist you with custom projects and provide you with the direction you need to complete your project to specification and on time. We look forward to working with you. Thank you for considering K-Tube.



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