



A HANDY & HARMAN COMPANY

Global Material Solutions





## A RELIABLE PARTNER

As a premium manufacturer, HandyTube provides customer-specific solutions for the flow of gas, steam and liquid for critical applications around the world. Our unique process allows us to produce made-to-order, seamless, stainless steel and high-nickel alloyed tubing with diameters ranging from 1.00" to 0.020". HandyTube's longest seamless coil can stretch 6,926 feet, which is approximately 5.5 times the height of New York City's Empire State Building.

---

*"The use of coiled tubing has saved time and money. We did not require as many fittings and it shortened the time dramatically for the install. It also improved quality by giving us fewer potential leak points by not using fittings."*

*–Installation Program Manager*





## An Industry Leader

**Our customers trust us.** From our proprietary cleaning process to our in-house, climate-controlled laboratory, we provide only the BEST quality and service. With over 65 years of experience, HandyTube is a world leader in design and service for multiple industries.



NUCLEAR



OIL & GAS



SHIPBUILDING



CHEMICAL PROCESS



CHROMATOGRAPHY



ALTERNATIVE ENERGY



AEROSPACE & DEFENSE



INSTRUMENTATION



HEALTH CARE AND LIFE SCIENCES

### 1867

Handy & Harman founded as a precious metals company

### 1948

Handy & Harman Tube Division is founded in Norristown, Pennsylvania

### 1981

Camdel Metals Long Coil Division is founded in Camden, Delaware

### 2006

Precision Materials product line added to Camdel Metals

### 2011

Camdel Metals Corporation is renamed HandyTube Corporation

### 2012

Xtreme Length™ coil launched

### 2013

Ultra-Small Diameter (USD™) capillary tubing successfully engineered

### 2014

First compressed natural gas station constructed using CNG Tubing



## Unrivaled Service

**We're working to create advantages for you.** With in-depth knowledge, passion for quality and years of experience, HandyTube's engineers provide expertise on new product development, testing and proof-of-principle. We have worked successfully with our customers worldwide to take products from idea to implementation.



**QUICK DELIVERY**



**TECHNICAL SUPPORT**



**PERSONALIZED SERVICE**

- Significant cost savings as we develop components from raw material
- High quality, at the right cost, to ensure your position in a competitive market
- One-stop shop – HandyTube simplifies the supply chain by reducing the number of suppliers you have to manage
- Global distribution – Local stock for just-in-time delivery

“ In a technology-driven business climate, meeting service expectations is a challenge; exceeding them is rare. Transparent communication, proactive business solving, and above-and-beyond attitude on every transaction makes HandyTube different. ”

*Jessie Cochran, Mid-South Technologies*





# COIL TUBING – REDUCE COSTS, SAVE TIME

Our, long-length coils help customers decrease changeovers and eliminate waste.

- **INCREASED SAFETY**

Fewer connections means fewer leak points, decreasing the potential for hazardous materials to escape from the system.

- **IMPROVED RELIABILITY**

Using fewer couplings increases overall system integrity and minimizes maintenance.

- **REDUCED SCRAP**

Coils can be cut to exact lengths in the field, minimizing waste.

- **REDUCED INSTALLATION COSTS**

Installing long-length coils saves time and money by reducing the labor and material costs associated with joining shorter lengths.

- **IMPROVED FLOW**

Each connection adds friction to a system, interrupting flow and reducing overall efficiency.



HandyTube uses only precisely controlled vacuum furnaces in its processes. Vacuum furnaces promote lot traceability and produce consistent products from load to load.

## VACUUM ANNEALING

**vs.**

## CONVENTIONAL HEAT TREATMENT

Material undergoes precisely controlled process cycles.

Inert atmosphere does not cause oxidation or allow scale to develop on the surface of material.

Furnace work zones maintained within  $\pm 25^{\circ}\text{F}$ , resulting in a consistent anneal.

Temperature of the furnace can vary.

Varying temperatures affect material performance in the field.

Process variations may cause material to have a lower pressure rating.



# Our world-class workforce operates state-of-the-art equipment to consistently produce paramount quality.

## Truly Seamless

HandyTube only manufactures the highest quality seamless tubing for use in extreme environments. When welded tubing is used in medium- to high-risk environments, it must undergo rigorous testing, such as nondestructive examinations and corrosion analyses. Even after the testing is complete, there is still an opportunity for defects to occur.

### SEAMLESS TUBING

**VS.**

### WELDED TUBING

Produced from one integral extrusion

Consistent dimensions and metallurgy offer increased corrosion resistance.

Safer and more cost-effective long term

Increased working pressures\*

Produced from strip that is rolled and welded together to form a tube

Dimensional and metallurgical variation create opportunity for corrosion.

More costly long term when defects and repairs are required

Decreased working pressures\*

*\*Per ASME B31.3 using same alloy, tubing dimensions and operating conditions*

### Micrographs of seamless, as-welded and seam-free tubing



HandyTube's heat-treated seamless tubing



Seam-free tubing



As-welded tubing

# WHEN QUALITY COUNTS, COUNT ON HANDYTUBE

HandyTube's facilities are ISO 9001 certified, ensuring only high-quality products ship through our doors. We also have the latest testing equipment and trained personnel to assure compliance with stringent specifications.

- Traceability throughout the entire manufacturing process
- Material Test Reports accompany every shipment
- In-house, climate-controlled laboratory
- Samples retained from every lot for peace of mind
- 100% Positive Material Identification (PMI)
- 100% pressure testing of all coils

## Approvals and Product Standards

- ISO 9001
- Pressure Equipment Directive (PED 97/23/EC)
- AD 2000-Merkblatt W 0
- DNV Approved Supplier
- BV Mode I Scheme
- NACE MR0175
- NACE MR0103
- ABS
- EN 10204
- NORSOK M-650

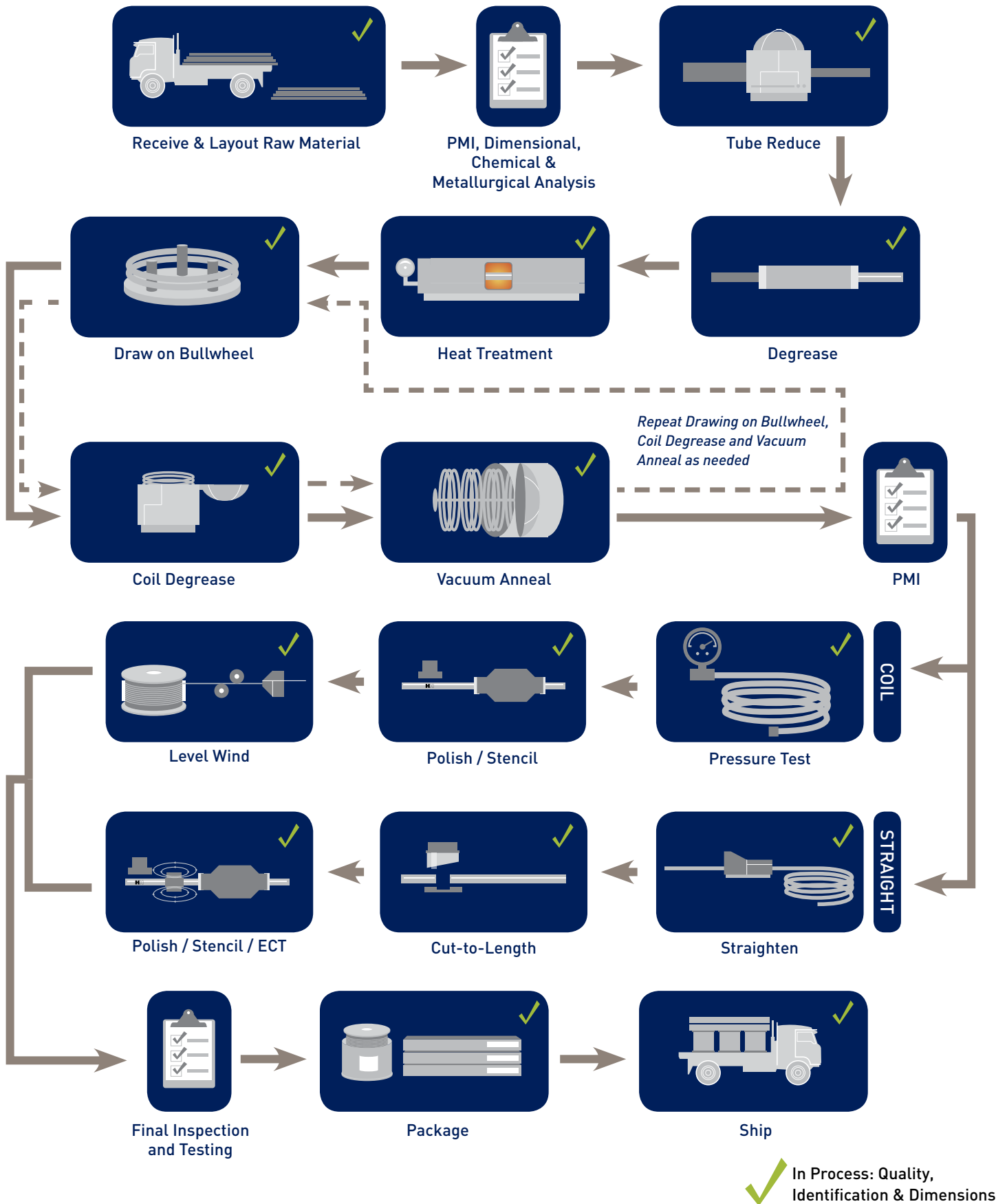


## Testing Abilities

- Dimensional Analysis
  - Positive Material Identification (PMI)
  - Metallurgical Analysis
  - Chemical Analysis
  - Eddy-Current
  - Hydrostatic
  - Tensile
  - Yield
  - Elongation
  - Hardness
  - Grain Size
  - Surface Roughness
  - Flatten
  - Flare
  - Corrosion
- \*Other testing services available upon request.*



# Process Flow





# CAPABILITIES

HandyTube services its customers through two unique product lines: Fluid and Gas Transfer and Precision Materials. Fluid and Gas Transfer mainly serves those customers within the Oil and Gas, Chemical Processing and Shipbuilding markets, while Precision Materials serves those in Health Care, Life Sciences and Instrumentation.

## Fluid and Gas Transfer

- CNG tubing—Provided in long lengths needed to transfer compressed natural gas, reducing time and money associated with joining shorter lengths
- Xtreme Length™ coils—Reduce the number of welds or fittings required to make connections
- Optimized flow and pressure—Tubing available with outer diameters up to 1.00" and heavy wall thicknesses to withstand extreme pressures and maximize flow.
- Enhanced corrosion resistance—HandyTube can provide many corrosion resistant coatings including PVC and TPU on many of its Xtreme Length™ coils.

## Precision Materials

- Ultra-Small Diameter (USD™) capillary tubing, with an outside diameter less than 0.0625"
- Chromat I.D.™ smooth bore capillary tubing
- Chroma Clean I.D.™ proprietary cleaning process reduces impurities.
- Inert coatings improve the accuracy of results by reducing the reactivity of the steel surfaces.
- TTOL™—Controlled tolerances for a tighter seal when using standard compression fittings
- Precision cutting—Ability to produce short pieces with tight tolerances



		Wall Thickness																			
		[in.]	0.005	0.010	0.015	0.020	0.025	0.028	0.030	0.035	0.039	0.045	0.049	0.059	0.065	0.079	0.083	0.098	0.109	0.118	0.125
		[mm]	0.13	0.25	0.38	0.51	0.64	0.71	0.76	0.89	1.00	1.14	1.24	1.50	1.65	2.00	2.11	2.50	2.77	3.00	3.18
Outer Diameter	[in.]	[mm]																			
	0.020	0.51																			
	0.025	0.64																			
	0.031	0.79																			
	0.039	1.00																			
	0.063	1.59																			
	0.079	2.00																			
	0.094	2.38																			
	0.118	3.00																			
	0.125	3.18																			
	0.156	3.97																			
	0.188	4.76																			
	0.236	6.00																			
	0.250	6.35																			
	0.313	7.94																			
	0.375	9.53																			
	0.394	10.00																			
	0.472	12.00																			
	0.500	12.70																			
	0.625	15.88																			
	0.750	19.05																			
	0.787	20.00																			
	1.000	25.40																			

## Industry Standards and Tolerances

Grade	UNS Number	Specification	Outer Diameter Tolerances	Wall Thickness Tolerances
304/304L	S30400/S30403	ASTM A269, ASTM A213	± 0.005"	± 10%
316/316L	S31600/S31603	ASTM A269, ASTM A213	± 0.005"	± 10%
316/316L (2.5% Mo)	S31600/S31603	ASTM A269, ASTM A213	± 0.005"	± 10%
316Ti	S31635	ASTM A213	± 0.005"	± 10%
317/317L	S31700/S31703	ASTM A269, ASTM A213	± 0.005"	± 10%
321	S32100	ASTM A269, ASTM A213	± 0.005"	± 10%
347	S34700	ASTM A269, ASTM A213	± 0.005"	± 10%
6Mo	S31254	ASTM A269, ASTM A213	± 0.005"	± 10%
M400	N04400	ASTM B165	± 0.005"	± 10%
I600	N06600	ASTM B167	+ 0.005"	± 10%
I625	N06625	ASTM B444	+ 0.005"	± 10%
I825	N08825	ASTM B423	+ 0.005"	± 10%
904L	N08904	ASTM A269, ASTM A213	± 0.005"	± 10%
C22	N06022	ASTM B622	+ 0.005"	± 10%
C276	N10276	ASTM B622	+ 0.005"	± 10%
N200	N02200	ASTM B161	+ 0.005"	± 10%

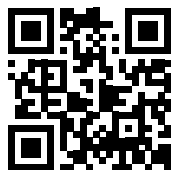
\*Tighter tolerances available by request.



WHEN QUALITY COUNTS, COUNT ON HANDYTUBE



A HANDY & HARMAN COMPANY



**phone:** +1 (302) 697.9521

**fax:** +1 (302) 697.7405

**email:** [sales@handytube.com](mailto:sales@handytube.com)

124 Vepco Boulevard • Camden, DE 19934, USA

**[WWW.HANDYTUBE.COM](http://WWW.HANDYTUBE.COM)**