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From Your Tube Bending Experts...

HARCO METAL PRODUCTS, INC

OPTICAL MEASURING CONTRACT SERVICES

www.webendtube.com • www.tubebending.net

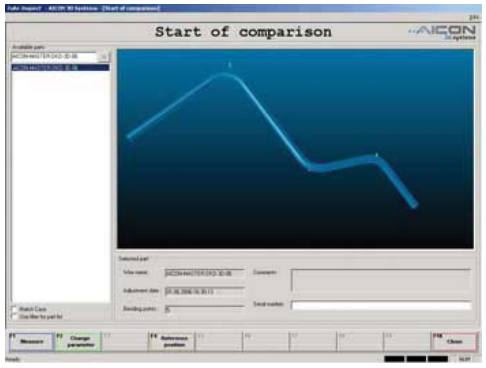
Harco Delivers Confidence...

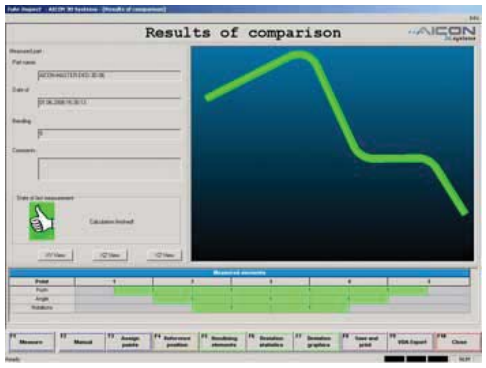
AICON 3d.systems

Attention tube fabricators! We are proud to announce the **Aicon TubeInspect HD** now offer for **CONTRACT MEASURING SERVICES**.

For That "Perfect" Bend...

The Aicon system is a touch-less 3D dimensional measuring system that works as a fully programmable gauge. This system allows operators and quality teams to design complicated tubular components with confidence that the accuracy of the fabricated part can be determined and bend corrections can be easily and quickly calculated to reduce the efforts that manual fixtures create during the development process of manufacturing.



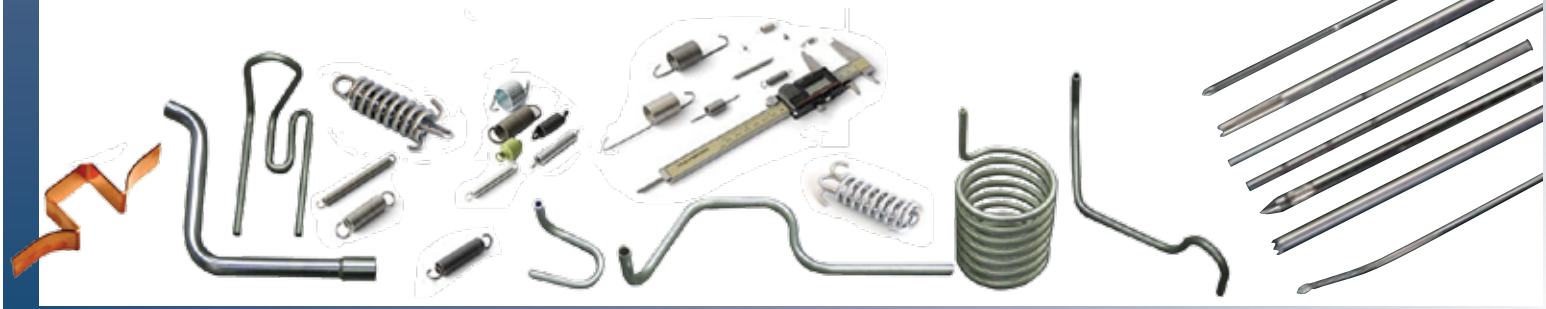


- FAST: 15-20 Bend Geometry in 10-20 seconds
- ACCURATE: ± .01mm
- Capable of Measuring Complicated Tube Geometrics with Ease including Free Form Shapes
- Metal & Plastic Tubes, Springs, Tubular/Hose Assemblies
- Works off CAD Data to Compare Actual Parts To Model

Tubes and wires shorter than 500mm (20") are hidden in nearly all common objects. Consequently, the quality control of these parts concerns almost all industrial sectors. The typically applied metrology is not able to acquire the elements of each individual small part, and even a common gauge check often proves to be unfeasible.
The solution is AICON's TubeInspect HD.

The Aicon TubeInspect HD is especially designed to suit the requirements arising in the production of bent tube and wire parts shorter than 500mm (20"). It is based on the successful TubeInspect software that is also applied in AICON's optical tube measuring systems TubeInspect and TubeInspect S.

At Harco Metal Products, Inc., we are always looking for ways to better meet your needs. We expand our capabilities frequently to offer our customers the best and most innovative products and services.



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TubeInspect HD three-dimensionally inspects short, thin tubes and wires with diameters of 1mm up to 10mm. It checks for various geometric features such as bends, length of the part, and end-to-end distance. TubeInspect HD is able to measure the geometries with a unique accuracy due to several decisive factors: It disposes of eight digital cameras positioned close to the work piece, each having a res. of 2 megapixels. Moreover, it uses a glass reference that is stable both with respect to shape and temperature. For the determination of the sheath tolerance, the measuring accuracy accounts for +0.025mm (.001"). The measuring results are available within seconds and are displayed on the provided notebook computer. They are presented in a color-coded way following a gauge check. Thus the operator can quickly make a decision about the quality of the parts.

TECHNICAL SPECIFICATIONS

Measurement Area	450mm x 400mm x 200mm
Cameras	8 High Resolution Digital Cameras at 2 Megapixels
Tube Diameter	1 – 10mm
Measured Bending Angle	1° - 180°
Minimum Push Between Two Bends	Bend in Bend Possible
Accuracy Sheath Tolerance	± 0.025mm (25um)

HIGH QUALITY • ACCURACY • ON-TIME DELIVERY CUSTOMER SERVICE

Harco, At Your Service...

- **OEM Hydraulic Fuel & Break Lines • Tube Bending**
- **Tube Forming • Welding & Brazing • Specialty Finishes**
- **Metal Stamping • CNC Machining • Product Design**
- **Fittings, Fasteners, & End-Caps • Vender Managed Inventory**
- **Optical Measuring Contract Services • Assembly**
- **Quality Assurance Program & Best Of All, Customer Service...**

Our "At Your Service Attitude" puts you in the drivers seat. We offer specialty & custom tube end forming for all applications with no order too big or small. We offer complete design assistance as well as stocking programs. Contact us today...

QUALITY ASSURANCE • ISO9001:2008 • HARCO METAL PRODUCTS

Quality Assurance

At Harco our core strategy is to build quality into products through continual improvement of processes and services. As part of this commitment, Harco has embarked on a program to implement **ISO 9001** as a basis for our Quality Management System.

For our more complicated tubular components we use the state-of-the-art **Aicon Tube Inspect HD** which is a touch-less 3D dimensional measuring system that works as a fully programmable optical gauge. This system allows operators to de-sign complicated tubular components with confidence, accuracy and can determine bend calculations.

For our less complicated tubular components we use a **Romer CMM** device. With this programmable equipment we measure length, bend angles, rotation and develop corrected bend data rotation that is easily and quickly transferred to our bending equipment so that our tube bending set up time is reduced and tube yield is maximized.

Recently we have added **PC-DMIS** software to our arsenal of quality tools. PC-DMIS is the industry leading software designed to collect, evaluate, manage and present manufacturing data for machined components and assemblies created by Harco Metal Products, Inc..

QUALITY ASSURANCE QUALITY ASSURANCE QUALITY ASSURANCE

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Your Tube Bending Experts...

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