Benderlink Customer Shares Results Of ***Return-On-Investment*** Study

Another Stunning Success for New Correction-Loop System

Proof From Actual Tests That Benderlink and Tube Measuring Center Systems Save Tube Fabricators Thousands Of Dollars Every Month In Setup Costs Alone

HCI needed to transfer corrections *more quickly* and *more accurately.*

What Is Benderlink?

The Advanced Tubular Technologies Benderlink system is designed to bring automatic connectivity between tube bending machines and tube measuring centers.

The ultimate goal for using Benderlink in most cases is to streamline the process of bender correction by **automatically transmitting correction data** to the bender from a tube measuring center. In this scenario, the operator is never required to type in the corrections by hand from a printed report created by the measuring center. (Note: Other goals we often encounter: 1. To provide a way for operators to create backups of bender data on a standard PC computer and/or network. 2. To enter data in an offline computer in order to transfer it to the bender. 3. To transfer data between benders. All of these goals can be achieved by our various software packages integrated with our Benderlink systems.)

The Test Results Are In

Over the years, we have heard opinions from sources in the tube-fabrication industry that it is "impossible to quantify the savings from using a direct link system like Benderlink." Now we have data that proves to the contrary: Not only do savings exist in using Benderlink, but it is *more than we anticipated*. Recently, Hitachi Cable of Indiana, a Benderlink customer, shared their "before and after" test results with us. The data discussed in this document is based upon the tests performed by Brian Leasure, a manufacturing engineer for HCI.

The Customer's Goal

HCI needed to transfer corrections *more quickly* and *more accurately* to each of their CNC benders. They were performing so many setups in a day that they were struggling to keep up with customer demand.

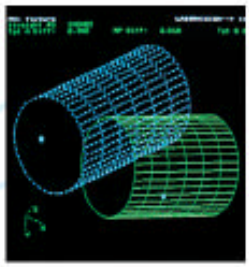
They had purchased a tube measuring center sometime before ordering our Benderlink system.

The HCI test results show that the greatest portion of the expense was the *time required making a proper manual adjustment* to the bender.

They had extensive experience in working with a tube measuring center, but without the convenience of a direct connection to their CNC benders. This means that operators measured the tube shapes, printed the corrections, and then used the reports to correct their benders by hand-entry.

But HCI felt that they could do better, so they began investigating ways to make a direct link to their benders. Upon recommendation by their bender distributor and others in the industry, they contacted Advanced Tubular Technologies for help.

They were further convinced that our Benderlink system was the solution when an HCI vendor demonstrated increased productivity using a similar Advanced Tubular system. Based upon this evidence, they concluded that the Advanced Tubular Benderlink system was a solution worth the risk of implementation.



Hitachi Cable

Gather Before Data

Steps #4

	COST	
	45 Min.	1 Hr.
Production set-up takes approx. 45 minutes to 1 Hour.	$ 7.97	$ 10.62
	20 Min.	30 Min.
If Tube is non-conforming approx. 20-30 minutes additional for re-adjustments.	$ 3.54	$ 5.31
	4-BEND	15-BEND
High scrap rate due to many tube ran for Set-up purpose. -- APPROX = 20 PIECES	$ 16.88	$ 53.00
Prototype set-up time approx. 5 hr. Depending on Tube complexity. I.e. Tube with 4-Bends vs. Tube with 15 Bends. Proper Tooling already on bender. 4 - Bends 3 - 5 - Hours Approx. 1st piece set-up only.	3 hrs	5 hrs
	$ 31.86	$ 53.10
15 - Bends ? Depending on Aluminum vs. Steel and the angles to deal with. Roughly 12 - 15 Hours Proper Tooling already on bender. 1st piece set-up only.	12 hrs	15 hrs
	$ 127.44	$ 159.30
High scrap rate due to many tube ran for Set-up purpose. -- APPROX = 15 OR GREATER	4-BEND	15-BEND
	$ 12.66	$ 39.75

Labor cost is 0.177 per minute.

For 15 Pieces	Prototype Total	$ 171.96	$ 252.15
	Prototype Average	$212.06	
Generally prototype set-up is performed 10 times per month.		$2,120.55	
For 20 Pieces	Production Total	$ 28.39	$ 68.93
	Production Average	$48.66	
Generally production set-up is performed 30 times per month. Amongst 4 Benders.		$1,459.73	

They targeted the unacceptable adjustment time required to setup and bend tube shapes…

HCI had three specific goals:

1. **Reducing labor cost** of adjusting tubes in production.
2. **Reducing setup time** for the prototype tubes.
3. **Reducing scrap** at the setup stage of production and prototype

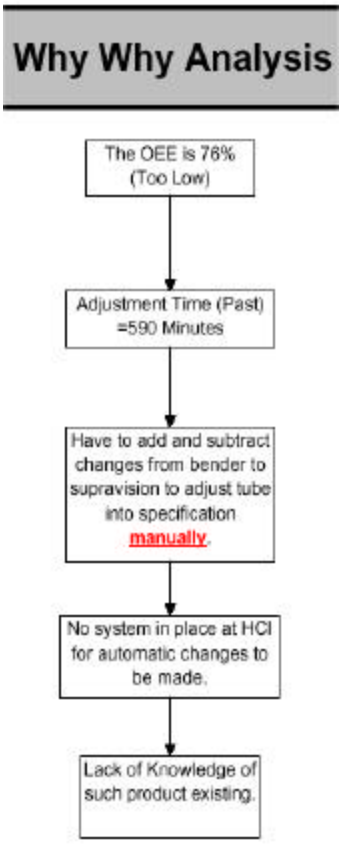
Before the Benderlink system, HCI concluded that it spent $2,120 in prototype setup per month, and $1460 per month in production setup and adjustment. (See page 2 for the chart showing additional HCI details of the "before" scenario.)

The total savings per month was $3086!

The Bottleneck

Examining the components of cost, HCI concluded that the test results demonstrated that the greatest portion of the expense was the ***time required making a proper manual adjustment*** to the bender.

In the justification for the analysis they targeted the unacceptable adjustment time required to setup and bend tube shapes to within specification. (See the "Why Why Analysis" flowchart on the right.)



They recovered *290 man-hours* per month…

The Benderlink Installation

In beginning of May 2001, HCI ordered Benderlink 2ei system with on-site installation. Advanced Tubular installed the complete system by the end of May.

HCI calculated that with the savings they found using a Benderlink system, they had return-on-investment in less than 6 months.

The results were quite stunning: The prototype setup costs decreased from $2,120 to $137 per month. The production setup costs decreased from $1460 to $357. **The total savings per month was $3086!**

Before
$2120 + $1460

Minus

After $137 + $357

$3086 per month SAVINGS

Hitachi Cable

Gather After Data

Steps #12

	COST	
	15 Min.	20 Min.
Production set-up takes approx. 15 - 20 minutes.	$ 2.66	$ 3.54
	5 Min.	10 Min.
If Tube is non-conforming approx. 5 - 10 minutes additional for re-adjustments.	$ 0.89	$ 1.77
	4-BEND	15-BEND
High scrap reduced to 2 - 5 tubes instead of numerous tubes Ex. 15 - 20.	$ 1.69	$ 13.25

Prototype set-up time approx. 1 hr. Depending on Tube complexity.
I.e. Tube with 4-Bends vs. Tube with 15 Bends.

		10 Min.	15 Min.
4 - Bends 10 - 15 Minutes Approx.	Proper Tooling already on bender. 1st piece set-up only.	$ 1.77	$ 2.66
15 - Bends 15- 30 Minutes Approx.	Proper Tooling already on bender. 1st piece set-up only.	15 Min. $ 2.66	30 Min. $ 5.31

High scrap rate reduced majorally. Now a few 2 - 5 tubes and part is in specification.

	4-BEND	15-BEND
OEE FOR SEPTEMBER BENDER #1 WAS 82% WITH ADJUSTMENTS BEING LOWERED BY OVER 400 MINUTES	$ 1.69	$ 13.25

Labor cost is 0.177 per minute.

For 5 Pieces	Prototype Total	$ 6.11	$ 21.22
	Prototype Average	$13.66	
Generally prototype set-up is performed 10 times per month.		$136.64	
For 5 Pieces	Production Total	$ 5.23	$ 18.56
	Production Average	$11.89	
Generally production set-up is performed 30 times per month. Amongst 4 Benders.		$356.82	

PINES MANUFACTURING

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Recovered 290 Hours Per Month

Just as important is the finding that HCI recovered 290 man-hours per month among its operators. This means less overtime hours, or more hours to apply to other projects in the job queue.

Conclusion

Obviously HCI is very pleased with the system as they experience its benefits daily, and know how much productivity they gain by using it. Their goal for 2002 is to double the number of benders by adding a new cell with a *second* Benderlink system.

Our technicians have performed scores of installations like this one in many industries – from automotive, to HVAC, to aerospace. We've seen them all. We invite you to contact us regarding the specifics of your tube fabrication applications using CNC Benders to discuss the benefits of integrating Benderlink systems on your shop floor.

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