

Benderlink IV Customer Application

Stunning Success for New Corrections-Loop System



Why More Tube Fabricators Than Ever Are Choosing To Use Benderlink IV Systems with Chiyoda and KEINS Benders

"The tube shapes wrap in every direction. They're not just the simple, mostly horizontal, tube shapes."

This is a true story of an actual Benderlink IV installation. This Benderlink system was considered a test case for the customer. They wanted to be sure that the new Benderlink IV system was not just another money-wasting gadget before recommending the system to other divisions. The new system was a success, and is now highly recommended to other divisions. Read the story to see why.

ABOUT THE TUBE FABRICATOR

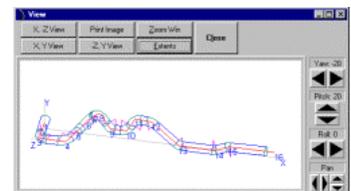
As a fabricator of air-conditioning and power-steering tube assemblies, this customer's tube fabrications often contain 15 or more bends. The tube shapes wrap in every direction. They're not just the simple, mostly horizontal, tube shapes.

COMPLICATED SETUP

When the operator finished the original bender setup with creative avoidance moves, his job had just begun. Next came the complicated task of adjusting the bender data until the tube shapes fell into their gauges. Some of their parts are so complicated that they required hours (yes - they told us **hours**) of tweaking before the machine was completely setup for bending. This company needed a complete corrections-loop system desperately.

THE NEW MEASURING CENTER

They were able to acquire a SupraGauge Plus measuring center from another division. Then they contacted Advanced Tubular Technologies



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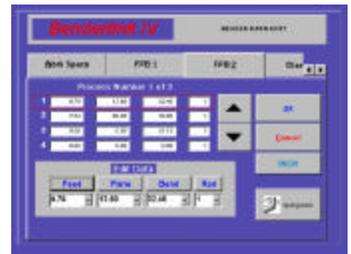
to complete the networking of all the benders and the measuring center with Benderlink. Under the auspices of Multi Systems Service Company, we installed a measuring center upgrade (new computer and software) to enable the fast Supervision Network Protocol for communicating with the Benderlink IV system.

MULTIPLE BENDERS OF DIFFERENT TYPES

They have one new Chiyoda and six older style Chiyoda benders. They agreed that the best approach for the design of the system would be to integrate a network of all the Chiyodas with a single Benderlink workstation near the measuring center. This arrangement is an ideal setup for our single Benderlink computer system with its new Smart Switch technology. Smart Switch technology enables Benderlink to streamline the communications by giving the measuring center direct control of switching between bender types when retrieving or sending data. Seven 100-foot cables move from the benders to the Benderlink Smart Switch using the RS-422 protocol (This is a good protocol for the industrial environment.) A single connection was made between the Smart Switch and the Benderlink computer. A standard Ethernet (LAN) connection was made between the Benderlink computer and the measuring center.

EXTRA LOGIC FOR AVOIDANCE MOVES

For these types of parts, the customer required the ability to add avoidance moves by inserting extra FPB rows in the older Chiyoda controls. We spent a lot of time enhancing the logic so that these extra rows of FPB data do not confuse the measuring center. To make matters more difficult, it is also necessary to properly re-translate the data in the bender's direction with measuring center corrections without changing



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the avoidance moves. We performed several days of programming and testing to prove out the logic. The new logic had to work for every special avoidance case they could create.

THE FINAL TEST

We performed several corrections-loops with multiple benders using real parts. The results were stunning. Parts were dropping into their gauges with that crisp "ringing" sound that a good part makes. The stainless tubes were falling into the gauges after the first corrections-loop. The aluminum parts were doing the same after two or three corrections. (Each corrections-loop, including measuring the tube, was taking just a few minutes.)

SUCCESS

Obviously, they're convinced, as the system has improved their setup adjustment time from hours to a few minutes per part. We're not surprised that they report that other divisions are now showing great interest in the Benderlink system!

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