KRAUSE CORPORATION

Steve Rothel was supply manager for the Midwest division of the Krause Corporation. Shortly before his company was to install an exhaust system in a new construction project, Steve was asked to compare fabricating the pipe with buying the pipe from an outside source.

Krause Corporation

Krause Corporation, a mechanical and sheet metal contractor, was founded over 50 years ago. Although it had a number of branches in the United States, the majority of its metal fabrication work was performed in its Midwest facility. The company mission stressed quality workmanship, competitive pricing, and timely performance.

A Laboratory Exhaust System

Krause recently was awarded the bid to provide the HVAC system in a corporate headquarters building that housed a research laboratory. This was a complex project with many nonstandard features due to the specialized use of the building.

The system included a need for over 6,500 feet of 10-inch diameter, 16-gauge stainless steel pipe. This piping would be used for the venting of the laboratory exhaust. When the cost estimation department at Krause prepared the original bid, they had planned to fabricate this pipe at their Midwest facility.

A Request for Cost Reduction

As the project got under way the vice president of sheet metal fabrication asked Steve Rothel "if it would be possible to provide the stainless steel pipe at a lower cost than the original estimate." Steve knew, of course, that any reduction in cost must not come at a sacrifice of quality. Because of toxins that would be present in the laboratory exhaust, it was critical that this system be absolutely leak proof. Every pipe run would be individually tested to insure integrity If leaks were uncovered in the welds, it would require a time-consuming effort to reweld the joints on site.

Steve realized that there were two approaches to providing the pipe. Krause could proceed as planned and fabricate the pipe in-house, using the lowest-cost, acceptable quality steel available on the market. The second possibility would be to find a supplier who could provide the pipe already formed at a better cost.

The Purchase Option

Steve first explored the purchase option. He did a thorough search of the market, and found that most suppliers were asking from 23 to 28 dollars per linear foot (delivered) for 10-inch-diameter, 16-gauge stainless steel pipe. He was pleasantly surprised, however, to find a supplier who would provide the pipe for $18.10 per linear foot. This supplier provided the pipe in 20-foot sections and guaranteed the pipe to be sound (no leaks). In addition, their pipe was "perfectly" true (round), a trait that Krause's current equipment could not always provide. This feature would reduce the time needed to make connections between sections of pipe and reduce the likelihood of a bad

weld joint.

Although this option sounded very attractive, Steve, a veteran in the supply management area with almost 14 years of experience, knew he couldn't rely on first impressions to make important management decisions. He would have to subject his options to a thorough analysis to ensure a wise decision.

The Make Option

Steve had access to the data necessary for manufacturing cost estimating. He knew that the process of making pipe required two steps. First, a flat sheet of steel is formed into a cylinder through the process of "rolling." Then the seam is joined in a welding process. For a 10-inch-diameter pipe of 16-gauge steel, it takes about six minutes per piece to roll, including loading and unloading the part. The equipment Krause had available for this process could roll lengths up to eight feet. The welding process was estimated to take ten minutes for an eight-foot section. The figure the company used for cost estimating purposes for hourly labor rate was $32.60 per hour. An overhead charge of 40 percent was added to the variable costs.

Stainless steel sheets were available in 36-inch, 48-inch, and 60-inch widths at any length up to 10 feet, with the best price being $1.80 per pound. A square foot of 16-gauge steel weighs two and one-half pounds. The welding process required welding wire and welding gas. Welding wire cost around $5.20 per pound and .03 pounds were needed per foot of weld. Welding gas cost around 25 cents per eight-foot seam.

Many of the lengths of pipe needed in the project were longer than eight feet. Thus, Steve thought it necessary to include the cost of an extra joint (which, for example, would make two eight-foot lengths into one sixteen-foot length) in the "make in-house" alternative. Such a joint required welding around the diameter of the pipe, a process that, with setup, would take around 18 minutes per joint.

Steve wondered which option would be best.

1. Should Steve recommend buying the pipe or making it?