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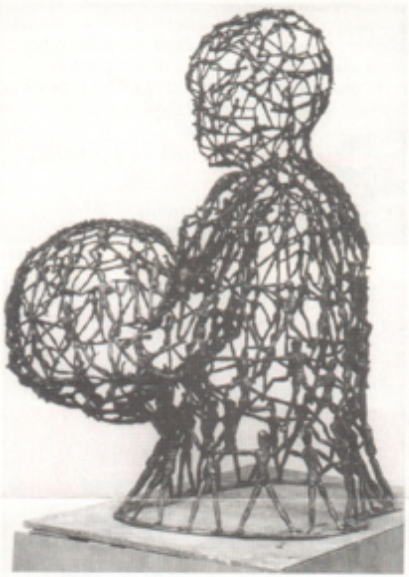
Measurement Consulting Firm Goes for Olympic Bronze

Baltimore, MD — It's hard to believe, but a group of non-athletic, middle-aged computer guys recently found themselves in Atlanta going for the bronze.

Direct Dimensions, a firm specializing in computer-assisted, three-dimensional measurements, was recently commissioned by the Atlanta Committee for the Olympic Games to determine the structural integrity of a 25-foot-high statue that will stand in Olympic Park.

The Baltimore company was asked to measure a one-fifth scale bronze model and to provide precise dimensions and data.



The giant, welded sculpture is somewhat of a structural oddity. The overall shape is that of a human figure holding a ball. But a closer look reveals that the larger shape is formed by a complex linkage of many small human forms, each one distinct from all the others.

Making determinations about such a unique piece with old methods would have been haphazard at best. Decisions would have been based upon gross assumptions and hand calculations. Direct Dimensions used techniques it pioneered in three-dimensional computer measurement for data that was exponentially more accurate.

Michael Raphael, Direct Dimensions Vice President/

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Chief of Engineering, explained how his technical team accomplished the objectives. "We used a mechanical arm with articulating links and rotating joints," he said. "It's a lot like a human arm in that it has a full range of motion. With a probe at the end of this arm, we scan complex surfaces. The data are transmitted directly into a computer for design modifications or structural analysis."

The computer-generated image that Direct Dimensions provided was startling in its accuracy. The end product can be seen in the magnificent sculpture that now safely adorns Atlanta.

Direct Dimensions is a full-service measurement consulting firm offering computerized three-dimensional measuring, quality assurance and control, rapid reverse engineering, and manufacturing assistance.

For more about solving complex, three-dimensional measurement problems, **circle E17.**

Waterjet Makes Landing Safe

Westminster, MD — Laser Applications Inc. (LAI), a waterjet cutting and laser job shop, was recently contacted to determine the viability of a waterjet processing challenge.

The challenge was to rough machine a 3100 pound AMS 6532 steel forging that was 12 x 36 x 6.5 inches thick. The component was a piston fork for an aerospace landing gear, where induced stress — thermal or mechanical — was a vital concern.

LAI understood the expectations; the client needed a low stress, cost effective method to provide a near net shape part from a forging. Quantities were small, only four parts were required. The final part would weigh only 18 percent of the original forging mass.

LAI engineers and technicians offered suggestions on repositioning the part and cutting through a 10.25 inch cross section to further reduce final machining.

This operation had a special cutting requirement. The part needed a 0.020 inch taper along the entire 10.25 inch cross section.

This taper was a challenge to the natural process of the waterjet. As the abrasive waterjet cuts through a given cross section, the material produces an intrinsic taper. Usually, through a 10.25 inch cross section, taper would be 0.25 inch per side. Because of LAI's expert use of process control, the taper was successfully held at 0.020 inch.

For this application, abrasive waterjet cutting cost-effectively produced a near net shape part with no thermal or mechanical stresses imposed. It also saved weeks on the