Best-in-Class Cast Components: 2001

Earning top recognition from the first-ever Casting Contest, these components clearly illustrate the benefits the casting process offers to the design and engineering community.

An Engineered Casting Solutions Staff Report

To further demonstrate to the engineering community--with some impressive, in-the-field applications--some of the creative possibilities that the metalcasting process offers, the editors of *Engineered Casting Solutions* launched the first-ever Casting Contest in 2001.

In this inaugural contest, 41 components of a wide variety of metals and processes and end-use applications were submitted. A panel of independent judges personally evaluated each submission on ingenuity in design, casting quality and functional benefits to each unique application.

Benefits found through these designs (many are conversions to castings from other manufacturing methods) include lead-time gains, part consolidation and OEM inventory reduction, elimination of machining and other secondary processing and dimensional tolerance improvements--all leading to major cost savings.

A total of 14 components were recognized this year, including the highest honor, "The Casting of the Year." These successes are significant for both the end-use manufacturer and casting producer alike. Only thorough patience, total systems knowledge, and upfront and open communication between metalcasters and their customers' design and purchasing teams are such enormous possibilities turned into reality.

Foundry:
PIAD Precision Casting Corp., Greensburg, Pennsylvania
Component: 6.0 K Amp Rectifier

Application: High-amperage industrial electrical breakers.

Casting Process: Permanent mold.

Metal: Pure copper.

Dimensions: 12 x 7.5 x 4.75 in.

Weight: 34 lb.

Converted from: Assembly from machined copper bar stock requiring bolted-on aluminum extrusions. Prototypes failed to pass the required 6000 amp heat rise tests.

Foundry:
PIAD Precision Casting Corp., Greensburg, Pennsylvania
Component: Foot base.

Application: Leg extension adjustment mechanisms on specialty hospital beds.

Casting Process: Permanent mold.

Metal: Ni-Al-Bronze

Dimensions: 5.25 x 5 x 2.5 in.

Weight: 1.73 lb.

Converted from: Welded assembly.

Features/Benefits:

- one-piece casting design incorporated heat-dissipated fins and eliminated resistive and mechanical joints;
- component stretched the size envelope for chill mold casting;
- supplied to customer cast, machined and silver-plated.

Features/Benefit:

- consolidated seven individual components to a one-piece casting
- eliminated fixturing and machining problems by eliminating the 17 welds required previously;
- reduced secondary processing to only three reamed holes and two drilled holes;
- reduced total component weight by 33%;
- reduced customer's in-house plant processing time by 80% (welding, weld-distortion straightening, machining, etc.)

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