



# U.S. Metalcasting Industry Fact Sheet

## **The Process**

The practice of melting and casting metal into a mold has served society's needs for more than 5000 years. The process has stood the test of time because it is the most direct and cost-effective method of producing single-component parts with complex geometries.

## **A Wide Palette of Choices**

The U.S. metalcasting industry represents all metals (iron, steel, aluminum, copper-base, magnesium, etc.) and all processes (sand, die, investment and permanent mold casting). Castings can range in weight from several hundred tons to less than 1 ounce. A metal casting can meet any desired application.

## **A Solution for Every Need**

Metalcasting is the only manufacturing solution to create many parts and components, from your car's engine block to the knee implants for aging baby boomers. Without castings, society would not be able to draw oil, propel aircraft and space vehicles or economically plant and harvest crops to feed our people. In fact, 90% of all manufactured goods and capital equipment use castings as engineered components or rely on castings in their production process. Further, cast metal products are critical to military and armament components and vehicles. In fact, the U.S. Department of Defense has established formal programs to convert fabricated components to single-piece castings, improving our military's ability to cost-effectively produce such equipment in the least amount of time.

## **A Strong Heritage**

Delivering a product (cast metal) that is the foundation for all other manufacturing, foundries have been vital building blocks for every nation's economic wealth. In the U.S., seven of the signers of the Declaration of Independence in 1776 were metalcasters.

## **An Industry of Small Business**

Metalcasting plants are found in every state. The 2600-plant-industry is predominantly small, family-owned operations. About 80% of the plants consist of fewer than 100 employees, with nearly one-third having fewer than 20 workers. As a whole, the value of the products produced by U.S. foundries represents \$28 billion, a significant contributor to the U.S. economy.

## **Jobs and Quality of Life**

The industry provides a very good way of life for 220,000 men and women. Through education and training programs, employers provide workers with skills that are very much in demand in metalcasting as well as other industries. In 2002, the typical iron foundry worker earned more than \$39,000, plus benefits.

## **The Original Recyclers**

From the earliest of times, the metalcasting process has taken otherwise useless scrap metal and turned it into

a usable, highly valued product. Old and discarded products such as appliances, sewer grates, cans, cars and water meters are not trash; they constitute the key raw material for metalcasting. As a result, the industry saves neighborhood landfills from 13 million tons of material each year.

In addition, sand casting operations internally use and reuse molding media. After extended use, only 6% must be discarded, with much of it going for beneficial reuse projects (spent sand for cement manufacturing, road barriers, bricks and pavers, asphalt and construction fill), minimizing environmental impact for raw materials.

### **Safety First**

Like all industries, risks do exist in the process of melting metal, transferring it and pouring it into molds. In addition to cautioning against these inherent dangers by employing ever-safer tools and equipment safeguards, U.S. foundries have long been advocates of a safe workplace and have invested widely in educating their workforces to ensure safety.

As an example, members of the American Foundry Society were the earliest of safety proponents. Among the key milestones was the formation of a Committee on the Prevention of Accidents in Foundries in 1907; the industry's leadership in helping to create the National Safety Council in 1908; the publication of industry-specific safety and sanitation codes in 1917; and the creation of a full-time association staff for environmental, health and safety in 1936.

The industry has worked closely and cooperatively with the U.S. Occupational Safety and Health Administration (OSHA) for decades, including seminars in which OSHA instructors train foundry personnel. The fact that the industry has reduced its average lost workday injury and illness rates by 28% from 1997 to 2001 is reflective of such cooperative activities and the importance employers place on safe workplace practices.

### **Ever-Evolving Technology**

Technology continues to advance the industry and redefine the 21<sup>st</sup> century metalcasting plant. Recent years have seen greater implementation of factory-floor computer networks, statistical process control and lean manufacturing concepts. Further, enormous technological strides have been made in binder systems, alloys, casting processes (semisolid, lost foam, precision sand, etc.), robotics and other labor-saving material handling, process modeling and rapid prototyping, to name a few.

### **About the American Foundry Society**

The American Foundry Society (AFS) is a not-for-profit association that was formed in 1896 to “provide and promote knowledge and services that strengthen the metalcasting industry for the ultimate benefit of its customers and society.” Headquartered in Des Plaines, Illinois, today's AFS offers members education and information on technology, environmental issues, marketing, human resources, government affairs and research. AFS currently has 10,000 members in 47 nations, with 51 chapters and 35 student chapters throughout North America.



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