



# Application casting simulation program

Valve casting industries worldwide are becoming more complex and diverse than ever before. Casting quality requirements are increasing. New frontiers in science require advanced engineering technology to satisfy the demanding and competitive market. Read on to learn how Tycon Alloy Industries is part of these new frontiers.

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Casting defects revealed in conventional non-destructive testing methods can be repaired but defects not revealed by conventional methods are only evident after final machining. Defects such as micro porosity are difficult to interpret via radiographic examination. In many instances, these may be missed and are usually found after final machining, which results in scrap castings. The added value of these scraps can significantly increase manufacturing costs; they might be far in excess of the unmachined casting, which is a small proportion of the finished assembly. For the foundry man, this is a challenge. To remove such defects, there is a need to bring in innovative technologies to ensure the products satisfy the ever-changing market requirements. Studies in the effects of micro porosity prompted Tycon Alloy Industries to seek out and apply the latest simulation software to help significantly reduce such costs.

### Use your pc

Advances in software technology in casting simulation have allowed the foundry man to view the finished casting from his computer. The customer required zero defects in the area shown, radiography revealed no defect in the black casting stage, however after final machining micro porosity was found in the bore. Using an advanced software simulation program confirmed there was micro porosity present in the critical area as shown in Figure 1.

The results shown in Figure 2 allowed techni-



Figure 1.

icians to modify the runner and riser configuration to eliminate the defect. Figure 3 indicated revisions made, which showed no porosity in the critical area resulting in a sound casting.

### What the future holds

The world casting industry expects to grow 3% annually up until 2020. Tycon has invested in advanced production equipment to ensure better process control, better productivity and cost reduction in all aspects of their manufacturing facilities. In a competitive world, foundries are under constant pressure from demands for alternative materials, improvement in carbon footprint, ever in-

creasing customer requirements and inevitable price changes. Manufacturing equipment alone cannot satisfy these criteria. Tycon recognizes the need to serve valve custom-

ers better through the use of an advanced simulation program to complement their production facilities. Through the simulation program, the company is able to fully comply with the customer requirements of cost- and time-saving plus defect-free valve castings. Moreover, the com-

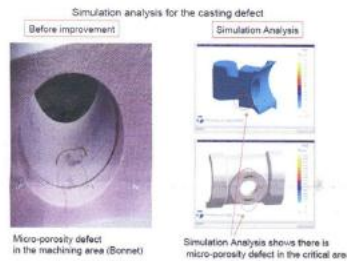


Figure 2.

pany gives customers confidence in their ability to meet market demands by demonstrating integrity of the finished casting in the development stage.

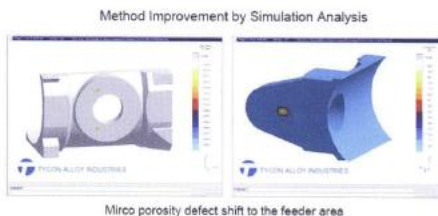


Figure 3.