

# Tymac Case History

## #71 Sullivan Die Casting:

A leading Eastern company, Sullivan specialized in making high-quality zinc automotive, computer, and other die cast components. The application was a thin-wall side-view automotive mirror bracket requiring buffing, followed by powder-coating and baking. The following statistics were reported by executives at Sullivan: A conventional 650-ton hot-chamber machine operated at 106 shots/hour, with average scrap levels of 18%. The machine was dedicated to the production of these parts on a 2-3 shift basis. Defects were caused primarily by poor surface and porosity, which caused blisters during the baking process. It was also necessary to maintain a separate plant to buff the castings. After retrofitting a SuperShot system to the machine, scrap was reduced to 4.5% and most of the buffing labor was eliminated. This let the scaled-down buffing operation be consolidated into the die casting plant.

In addition, the rapid deceleration provided by the SuperShot within 0.2 inches of the cavity filling process, resulted in a substantial reduction of fill time by allowing higher fill velocities. Previously, fill velocities had to be reduced due to unacceptable flashing. However, with the SuperShot, flash decreased from 0.12 inches to 0.02 inches. This generated cost savings, as part weight decreased by 6.6% from 1.52 to 1.42 pounds. The combination of reduced part weight and faster fill times resulted in substantially less heat input to the die, and permitted production rates to increase to 142 shots per hour. Other benefits included a die life extended by 50%, and savings on tool repair previously caused by unavoidable flash. Before the SuperShot installation, the die required re-fitting and bluing every 6-8 weeks at a cost of \$5-6,000 each time, averaging \$38-42,000 annually. After SuperShot installation, tools required maintenance only once a year at an average annual cost of \$5,000. The combination of improved quality and faster cycle time resulted in an increase in parts shipped from 257,040 to 401,122, or a 56% increase. Material savings resulting from reduced flash amounted to approximately 40,100 pounds annually.

Additional savings that have not been calculated, but are substantial, include reduced downtime due to



**"We were losing money**  
on automotive castings. We had  
major quality and flash problems.  
Tymac's SuperShot controls solved  
the problem completely. We've  
stayed competitive ever since."

--- Jim Sullivan

SULLIVAN  DIE CASTING, INC.  
Automated Zinc Die Casting

decreased tool maintenance, energy savings due to a higher percentage of acceptable shots, reduced start-up shots, reduced re-melt material losses and energy costs due to less re-melt, and lower runner, overflow, and flash weights due to the flash reduction. Perhaps the largest savings come from the dramatic increase in the number of good castings shipped per year, and the consequential reduction in fixed-cost amortization across the board. The effective plant capacity was increased substantially with the existing complement of machines, operating personnel, and floor space. Success on this project motivated Sullivan to install an additional SuperShot on a 200-ton high-end hot chamber machine, and a complete closed-loop controlled shot end on a 600-ton rebuilt machine.

## Tymac Controls Corp

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US Patents: 3,911,419, 3,878,375, 4,094,490, 4,249,186 4,383,449, 4,504,920, 4,734,869 Canadian Patent: 1-234-902 European Patent: 0 126 174