

Tymac Case History

#81 Top Die Casting:

A prominent Midwestern custom die casting company obtained substantial scrap reductions and quality improvements by retrofitting Tymac SuperShot real-time closed-loop control systems to several older die casting machines. These included a 600-ton Lester cold chamber die casting machine of late 1970's vintage and a 1978 650-ton B&T. Both machines were also equipped with Tymac Intensimax fast-response intensifier systems.

In the first application, the specifications for the barrel for a portable "nailgun" required close tolerance machining of the inside diameter, followed by chrome plating and heat treating. Production rates ranged from 3000 to 4000 per month. Due to the draft required on the 7-inch-long bore, between .100 and .125 inches of material had to be machined off, exposing the interior of the casting, where porosity is most difficult to eliminate. According to executives at Top, prior to installation of the SuperShot system, scrap was 80%. After, it decreased to less than 2%. Meeting the leak requirements was particularly challenging due to the extreme pressure requirements, and the fact that any surface porosity exposed by the machining was expanded during the plating process. Porosity control was also essential because the parts required heat treating.

In a second application, a hydraulic adapter between the motor and pump of a personnel lifting device (also known as a "cherry



picker") required 5000 psi leak testing after machining and impregnation. The previous supplier had experienced scrap levels as high as 80%, and an average of 35% over a three year period.

Top's Tymac MTU-9000 Central Computer was used to analyze filling conditions and determine the optimum gating. The parts were then made on a SuperShot-equipped 1978 650-ton B&T machine. In the first month of operation a scrap level of 8% was achieved. In the second month, after gating changes were made in accordance with the MTU-9000 recommendations, scrap decreased to 1%.



The performance and flexibility of the Tymac SuperShots has been a key factor in our ability to rapidly expand while remaining profitable every year. Consequently, our maintenance team has decided to install Tymac SuperShot real time control systems on every machine.

Joe Prieve, Plant Manager,
Top Die Casting Co.

Further improvements were made in the process settings, resulting in scrap levels consistently below 0.4%. The die casting purchaser's confidence increased as a result of the long-term reliability of the process, to the extent that today they no longer require leak testing. This resulted in considerable savings, because they were able to rely on the consistent process control provided by the SuperShot real-time closed-loop control system, and the MTU-9000 Central Computer monitoring of 100% of the parts produced.

Top also reports that they successfully do 800-ton jobs on their SuperShot-equipped 650-ton machines, due to the effectiveness of the low impact deceleration.

Tymac Controls Corp

127 Main St. Franklin, NJ 07416 Phone: (973)827-4050 Fax: (973)827-9247 us@tymac.com
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