

Diversified Plastics, Inc.

PRECISION INJECTION MOLDING SINCE 1977



SOCCKER MAN A Case Study

As a custom injection molder, we are frequently approached by someone who has an idea for a better product. This person is well aware of what is available in the marketplace and has a great idea for an improvement to their product. Diversified Plastics offers its expertise in making that idea work. It is the perfect marriage of creativity and technical knowledge that eventually results in a better product.

We had the good fortune to be involved in just such a marriage. We were approached

by an individual who wanted to make a professional, tournament quality foosball

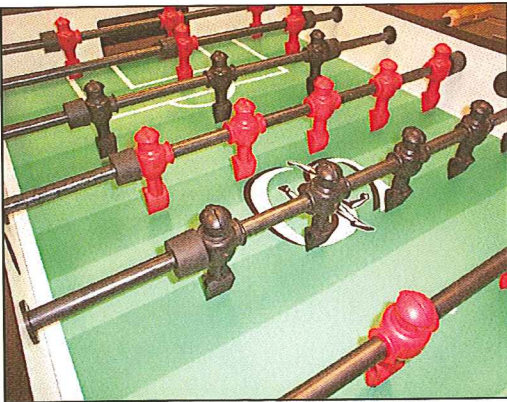


table. This might not sound like a very exacting or demanding project and we were skeptical as to whether this was a good fit for us. As a close tolerance, high quality molder, it seemed that the engineer might do better with a molder who concentrated more on pricing than quality. However, after further investigation, it was apparent that there was more to this project than met the eye. It was going to be a project that would challenge all of our capabilities.

Surprisingly, there is a large contingent of players that take this amusement very seriously. In fact, there are tournaments held throughout the country that offer prize money that makes these players almost professionals. They demand tables that give them consistency and control. The key element for this performance is the soccer man. The shape, design, balance, size, and fit to the rod are all critical factors for playing the game. Our customer had done extensive experimentation and knew exactly what he needed. Now it was up to us to make it work.

To achieve the right balance, it was necessary to use a metal weight. Size, density, and location of the weight are critical to a smooth rotation of the figure and to keep the man balanced with his head upright. Control of the ball is very important to the player. Our customer had developed a spiked pattern for the player's foot area that would require some intricate and complicated mold building. Because of the force used to propel the ball (speeds up to 100 mph), the figure needed to have thick wall sections. This presented a challenge due to the constant threat of the plastic sinking as it cooled, causing indentations in the body of the man. Also, there was a critical hole through which the shaft would be inserted. To obtain the necessary fit to allow the soccer man figure to be slipped on and off, but not wiggle or move in operation, a tolerance of .001" or less was required. Finally, all of this had to be accomplished in less than eight weeks because our client had made a commitment to have his product used in an

upcoming tournament event.

Because of the time constraints, we turned to a rapid prototype house to produce the cores and cavities. While this work went on, we refined the design and located a manufacturer who could give him rods ground to a tolerance of .0005". With three weeks to go, we were ready to make our first sampling in black. Although the men were to be in two colors, the specific red that was needed had not been determined in time for the colorant manufacturer to get us dye (apparently tournament players are picky about colors). This was not a concern, as we knew there would be corrections necessary before we were ready to go to production.

The first sampling turned out surprisingly well. As expected, the foot design had to be adjusted and the hole size for the rod was not quite right. In addition, there were some minor cosmetic issues that had to be addressed. With an actual sample to work with, our client could see where he wanted changes made in the foot design. By making men with varying hole sizes, we were able to determine what size worked the best for our customer's needs.

The second sampling produced three surprises. The red color that we had now received did not match the standard color chip that we had been provided. With the red, we also discovered that the oil used in the metal inserts leached to the surface as a dark halo. While the hole adjustment for the rod turned out to work perfectly, another hole used to secure the man to the rod needed to be reduced to prevent movement in the vertical plane.

By then, everyone was getting nervous as time was running short. It was imperative that the next sampling be the final one. Dye was secured, the stabilizing hole was

made smaller, and the inserts were cleaned of the oil. The proof would be when the completed table was tested. Our client had invited a pro to town to test the table. We worked until 10:00 PM to get parts. Our client rushed to his hotel to assemble it and by midnight the answer came back that we had a winner.

The foot design made the ball fly straight, no matter where it connected. The figure spun smoothly and remained in position even when the table was bumped. Finally, the red color was warmly received. Our client was ecstatic. He was able to meet his commitment and was now off to a successful start to a new market.