When a major manufacturer of stone fascias for upscale homes needed to transfer its 300lb mold forms into a spray booth for release coating, they approached TKF Conveyors. TKF has earned a worldwide reputation for its custom engineered material handling systems. Whether functioning as a systems integrator or providing specific engineered product solutions, TKF creates engineering concepts and final system designs for customers, manufactures the equipment, and installs it too.

“The customer needed ten extending, elevating fork transfers,” reports David Radford, Design Engineer and Project Manager at TKF Conveyors, “so we looked into the cost of purchasing these from a European manufacturer. The cost, however, was prohibitively expensive; the mechanism, without drives, controls or frames would have cost in excess of $20,000 each. The answer was to design and build our own system.”

“The biggest challenge in developing such a system was finding a precision linear motion device that could handle the extreme loads. The 300lb molds have to be moved 96 inches, so not including machine components, we were looking at 28,800 inch pounds/moment, but as much as 90,000 inch pounds when the remaining machine elements are factored in.”

Radford had four main considerations when specifying a linear motion system for this application; capacity, deflection, cost and reliability. He says, “After a thorough examination of what was available in the marketplace, we came to the conclusion that the Telescopic Rail from Rollon was the only system that would stand up to these kinds of loads.”
Rick Wood of Rollon Corporation, comments, “The Telescopic Rail was designed by Rollon to create a linear bearing that telescoped beyond its mounting structure. Before Rollon attacked the problem, drawer slides were simple, bent steel products suited for desk drawers, filing cabinets, keyboard trays and other light duty applications. Engineers were forced to use homemade solutions or to double up on thicker gauge bent steel drawer slides. In creating the Telescopic Rail family, Rollon’s engineers succeeded in creating a telescopic linear bearing – similar in movement to a drawer slide but in function closer to a linear bearing.”

TKF’s David Radford continues, “Of equal importance was the stiffness of the rail. When the molds are positioned in the spray booth the positioning tolerance is only plus/minus a quarter of an inch to ensure the mold is completely covered by the release coating. The Rollon product we chose is made from induction hardened and ground, alloy steel, so we were confident that this rail was stiff enough, and would therefore provide the accuracy we needed.”

“Of course, we initially went this direction because of cost, so it was critical that the Telescopic Rail enabled us to design and build a system that was comparative to anything we could buy. Commercial item costs were kept down to about $13,000 and the finished system was designed and built for about half the price of a commercially available alternative.”

Radford adds, “Finally, we had to be sure of the reliability. Any custom solution is a huge reflection on our company and, in the case of these 300-pound molds, failure could be extremely damaging to nearby personnel and equipment, not to mention the lost production. We worked closely with the Rollon team to ensure a safety factor of 2:1 because we have an old school philosophy of building heavy and reliable one-off designs, rather than systems intended for mass manufacturing.”

“The technical support from Rollon was of a very high standard – we presented many design concepts and their engineers were both helpful and knowledgeable. It really adds value to a project like this when high quality products are matched with high quality technical support.”

For more information visit www.rollonnews.com.