



Collaborating for Success

WITH FLORIDA'S LARGEST ROTOMOLDER

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Field trials drive improvements in large tank performance and molding operations

hen Dave Orcutt was growing up in Boston, rooting for the Patriots, he couldn't have imagined he'd end up owner and president of a rotational molding company in Central Florida. It was mere chance, or perhaps fate, when Dave's father Bruce came across an ad in the Wall Street Journal about a plastics company for sale in Florida and was intrigued by the opportunity to invest in the fast-growing industry.

In 1987 Bruce Orcutt made the leap and became the new owner of Dura-Cast Products, Inc. in Lake Wales. Dave joined the company in 1992 and then took the helm as owner of the company in 2014. Today, Dura-Cast is one of the largest rotomolders in the Southeast with thousands of custom-part molds, dedicated large and small tank molding operations, and a wide-ranging list of prominent customers.

"RMs245 had just been introduced to the market, and we knew if Dave took advantage of its exceptional performance it could really improve his bottom line," said D'Agostino.

Improving Efficiency

In 2014 Dura-Cast invested in large tank molding equipment, looking to grow their business in one of the largest rotomolding sectors. However, manufacturing inefficiencies were hurting the bottom line. A lack of design expertise, especially for chemical storage tanks, resulted in finished tanks that were heavier than the competition's. In early 2015 they realized they needed to do something differently to be successful.

NOVA Chemicals first started working with Dura-Cast through distribution giant M Holland in 2013. However, the resin producer and the rotomolder always enjoyed a collaborative business relationship for some of the molder's technical needs. Orcutt approached M Holland, and they in turn asked NOVA Chemicals to provide some expertise. Carmine D'Agostino and Henry Hay, both NOVA Chemicals' technical service specialists, met with Dave and M Holland and began to discuss how to optimize the physical properties of the Dura-Cast large tanks.

NOVA Chemicals had recently commercialized SURPASS[®] RMs245-U/ UG resin, an Octene high density PE





designed for the challenges of the large tank market. The high-performance resin offers an industry-leading combination of stiffness, toughness, and environmental stress crack resistance (ESCR). These are all performance properties required for large tanks used to store water, chemicals and other liquids as well as solid bulk dry materials. In addition, RMs245-U/ UG was awarded the best-in-class 1.600 psi hydrostatic design basis (HDB) cell classification. Achieving this industry benchmark indicates parts molded with the resin have the potential to be lightweighted up to 20%, without loss of long-term structural integrity, compared to hexene tank resins with a 1,250 psi HBD rating. Trials run at NOVA Chemicals' Centre for Performance Applications also showed cycle time improvements of 10% or more were possible.

However, moving to this new resin seemed like a significant challenge, especially for a rotomolder without extensive experience in producing large tanks. Before making the move, Orcutt requested an on-site trial to demonstrate three key promised benefits:

- The potential to lightweight tanks without compromising physical properties
- Cycle time improvement compared to competitive tank resins
- The versatility to use the resin in large and small tanks, enabling resin consolidation

Large tank molds and machinery are often a rotomolder's single largest capital investment.

Dura-Cast manufactures large tanks up to 12,500 gallons.



Proving Performance

D'Agostino and Hay spent three full days at the Dura-Cast facility manufacturing and then testing tanks made with RMs245-U/ UG. The large tank trials consisted of 2,500, 5,000, and 10,000 gallon sizes. Immediate results demonstrated the productivity benefit: cycle time was improved by 15% on average. Parts lightweighted by 5, 10, and 15% demonstrated excellent degree of cure - a measure of how well the parts were molded - and no warpage. Then, the tanks were placed out in the Florida sun and filled with water to simulate typical field conditions. Over the next four months, Dura-Cast took regular measurements of creep, the industry's term for product deformation over time. The results were impressive: The data illustrated improved creep performance in addition to the weight reduction over tanks produced with a competitive Hexene HDPE.

"The trial results gave me the confidence to start using RMs245 to manufacture tanks," says Orcutt. "But the entire experience was a home run. Carmine and Henry really listened to my concerns. This work has helped put Dura-Cast on a growth path with our large tank business."

The small tank trials were just as successful, and demonstrated the resin's versatility. Three different types of tanks were tested: 275 gallon natural (no color additives) biodiesel, 300 gallon natural vertical, and 500 gallon blue vertical. All three were able to be light-weighted 10% versus a competitive 5MI MDPE with no loss of physical property performance. The 275 gal and 300 gal incurred no cycle time penalty, while the 500 gal tank was optimized with a 16% reduction in cycle time.

In addition to the tank trials, Orcutt, D'Agostino and Hay also discussed some other cost-saving tools and tips. Best practices including methods to help distribute heat and material evenly throughout the mold, and other ways to help optimize tank wall thickness will enable further material savings and other operational efficiencies.

Accelerating Success

Two years later, Dura-Cast is fully committed to using RMs245-U/UG. They've been steadily increasing their use of the resin, and it now makes up about 25% of their total NOVA Chemicals' resin buy. Every tank made with RMs245-U/UG saves Dura-Cast 10% in material costs, up to 10% in labor costs due to improved cycle times, and even reduced energy costs. Dave is still cheering for his beloved Patriots, but he's happier than ever to be in Florida, running his rotomolding business.



Orcutt (L) and D'Agostino discuss the tank trials and other technical issues.







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