STRUCTURAL FOAM MOLDING

CASE STUDY



Client

DitchGates | ditchgates.com

Project

Lightweight irrigation ditch control gates made from durable structural foam molded recycled HDPE

The Challenge

Alma, a former teacher with a passion for agriculture, had a vision to improve flood irrigation. For 18 years, she had been handcrafting cement irrigation gates, a process that yielded only six gates per day. While effective, the cement gates were heavy, fragile, and nearly impossible to ship, limiting Alma's market reach and business growth. She knew there had to be a better way.

Alma's brother Steve stepped in to help. He understood Alma's vision and, as someone who has mentored many entrepreneurs, was able to translate it into a design concept. The duo lacked the expertise to turn the design into a physical product, especially one that could withstand the harsh conditions of irrigation ditches weathering in open fields. They needed to determine a manufacturing process and a partner who could not only produce the gates but also provide the technical guidance to bring their vision to life.

The old cement gates



The new HDPE gate



The Solution

One day while looking at a plastic irrigation valve box Alma had the thought that the box material might be well-suited for the construction of her irrigation gates. Steve researched plastic manufacturing options and discovered StructuralFoamMolding.net, a website specializing in plastic injection molding. He found a design guide and a case study about working with Decked, which led him to connect with plastics manufacturing expert Macay Hunter. Steve was intrigued not only by the structural foam molding process, but also by the broader network and understanding of alternative manufacturing methods like rotational molding, blow molding, and vacuum forming that could have been considered for this part.

Macay's expertise stood out. He met with Alma and Steve to understand their goals, helped sketch out concepts, and guided them through two design approaches before refining the final version into a manufacturable part. Macay also guided them through the mold quoting process and provided expert advice on design modifications, material selection, and the intricacies of the structural foam molding process.

This hands-on support was invaluable to Alma and Steve, who had no prior experience with plastic manufacturing. Macay's team took Alma's concept and developed a lightweight, durable, and shippable gate.

The Resolution

Despite the challenges posed by the COVID-19 pandemic, Structural Foam Molding was able to produce the first batch of plastic gates. With the factory closed to visitors, Steve met with the manufacturing team at a nearby library to review the product. A gate was assembled via a video call with Alma to verify the quality. Trusting Macay's expertise, Alma took a leap of faith and invested the capital required to order and build the mold – all without ever having touched a physical sample – eventually leading to an initial order of 768 gates.

The gates were perfect when they arrived, functioning flawlessly right off the pallet and exceeding Alma's expectations. The packaging was also well-suited for the product, as this was taken into consideration early in the process with Macay and the Structural Foam Molding team collaborating with Alma in the DitchGates packaging design – balancing visual appeal with shipping efficiency. The plastic gates were not only lighter and more durable than their cement counterparts but also significantly cheaper to ship, opening new markets and opportunities for Alma's business.





The Result

The switch to plastic injection molding revolutionized Alma's business. She was able to expand her reach beyond her local area, selling her DitchGates online and even securing a coveted spot on Amazon. Customers raved about the quality and ease of use of the new gates, praising their durability and efficiency.

Alma's story is a testament to the power of collaboration and the transformative potential of innovative manufacturing. By partnering with Structural Foam Molding, she was able to overcome the limitations of her previous production methods and bring her vision to life.

The success of DitchGates shows how the right manufacturing partner can turn a vision into a game-changing product. Macay's expertise and commitment to quality were instrumental in Alma's success. With Macay and the Structural Foam Molding team, Alma revolutionized her approach to sluice type gates—creating a more accessible, efficient solution for flood irrigation systems everywhere.

> "The very first mold – the product that came out of it – worked! If a gate leaks water, no one is going to buy it. The thing about this product is there's a real small tolerance that keeps the gate from leaking water. And, the incredible thing was, from the very first gate I sold, they worked. So I started shipping them and everybody falls in love with them."
>
> *— Alma Ramsey, DitchGates*



Contact Macay



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