

Case Study: Converting Metal to Plastic



Agricultural machinery company reduces costs and increases productivity by switching from metal to thermoformed plastic products

Overview

Joslyn Manufacturing was approached by an agricultural machinery company looking for assistance in converting several of its **metal components to plastic**. Being new to the thermoforming process, they requested input on design feasibility, material selection and tooling options. The customer also expressed concern with the production process of their current sheet metal components. These concerns were brought to Joslyn and the team provided solutions that would eventually reduce costs and increase productivity for the company.

Sprayer made with sheet metal components



The Challenges

Key Challenge #1: Appearance

The customer's desire to redesign a portion of their sprayer unit was a result of the current machine aesthetics. The shroud and panels appeared boxy, with unforgiving sharp angles. The sheet metal process currently being used limited their ability to produce more modern-looking parts that flowed together seamlessly. Additionally, the parts were custom-colored and would need to remain that way.

Key Challenge #2: Cost

The customer's current process of fabricating parts out of sheet metal was laden with extra expenses and labor hours. Each component required hours of bending and welding, followed by powder coating. All of these processes were completed in-house, consuming production time that could be better utilized elsewhere.

Key Challenge #3: Efficiency

Due to the weight of the current metal components, the customer was concerned that fuel efficiency was not being maximized. Furthermore, the customer felt the assembly process could be more efficient if there were fewer pieces requiring attachment.

The Solutions

Solution #1: Appearance

During the initial discussion, the customer provided preliminary designs for thermoformed parts. These designs were reviewed by key Joslyn employees to determine feasibility and ensure the desired aesthetics could be achieved. To address the subject of the component coloring, a color chip was provided by the customer and a **color match** was completed. With the customer's approval, it was determined that the best option for material would be ALLEN 6280HG, an acrylic-capped ABS in a high-gloss custom color from SEKISUI KYDEX. The acrylic cap would prevent color fading due to UV exposure and the ABS base would provide good impact resistance.

Solution #2: Cost

Because thermoforming is less labor-intensive, the cost to produce plastic parts is often lower when compared to metal fabrication. As a result of the custom-colored material selection, the need for a secondary powder coating operation was eliminated, saving time and added expense. With the production of these parts now outsourced, the customer's labor hours could be allocated elsewhere.

Solution #3: Efficiency

By making the switch from metal to plastic, the customer would have a vehicle that contained components nearly six times lighter than before. A lighter-weight vehicle equates to greater fuel efficiency and the increased capacity for storage of fluids when required. The shipping costs for components and machinery as a whole would decrease. The lighter components would also allow the opportunity for productivity rates to increase.



Sprayer made with thermoformed plastic components

The Outcome

After reviewing the solutions and input provided by Joslyn, the customer made the decision to move forward with thermoformed plastic components for their machinery. Since making the switch from fabricated metal to thermoformed plastic, the customer continues to review metal components across their fleet for the opportunity to convert to plastic.

If you're manufacturing using sheet metal, it's worth taking a look at switching to thermoformed plastic for a durable product that costs less. **Contact Joslyn** to guide you through the transition process.



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