

Category: Design & Analysis

Example: Design of a rotational-molded coolant tank (Image 1)

Situation: New plasma cutting system needed a new tank for the coolant system.

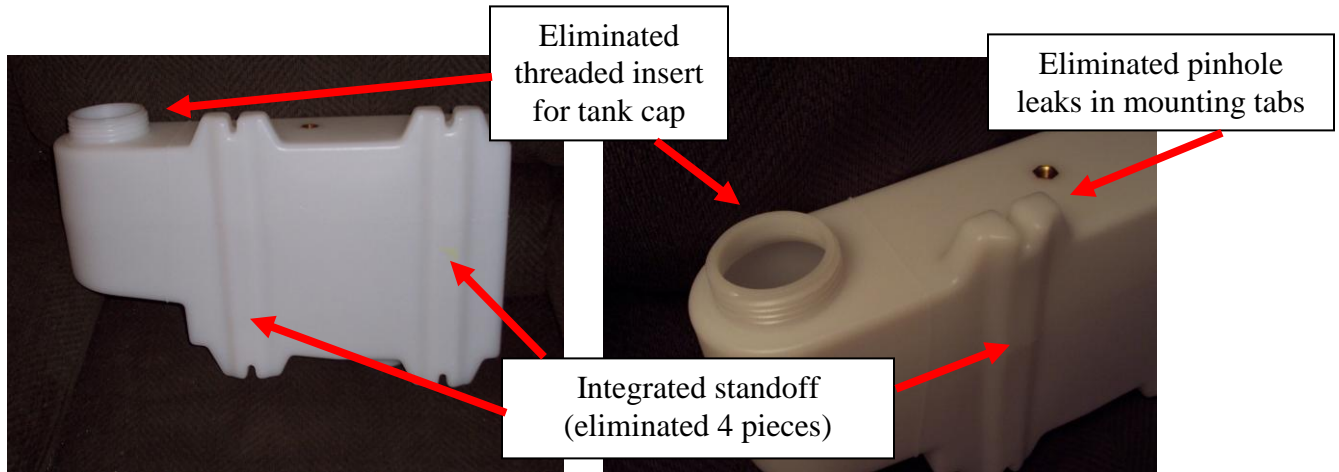


Image 1: View of whole tank

Image 2: Close-up of key design features

Problem: Prior tank was expensive, in large part due to a molded-in threaded insert for the tank cap. Mounting the tank required spacers to create a standoff between the tank and sheet metal. The tank also had a pinhole leak issue at the mounting tabs due to poor design for the manufacturing process.

Action:

1. Worked with system team members to establish needed tank volume and other functional requirements
2. Studied *Rotational Molding Association Design Handbook*
3. Iterated designs with comments from both team members and molding supplier to obtain meaningful system and manufacturing input
4. Obtained sign-off from systems engineers and supplier approving CAD design from both functional and molding process needs

Result:

1. New tank is 15% less expensive than prior model
2. Molded-in threaded insert for tank cap replaced by as-molded threads (Images 1 & 2)
3. Molded-in standoffs eliminated four spacers, saving parts and labor during assembly into end item (Images 1 & 2)
4. Pinhole leak problem eliminated by designing mounting tabs to be compatible with rotational molding process requirements (Image 2)