

# Demshe Forge Inc. gets the forging process right first time with Simufact Forming

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**Demshe Forge Inc. uses Simufact Forming to develop tooling and process parameters for hot forging processes of large parts manufactured with hammer presses.**

Demshe Forge Inc., located in Port Robinson, Ontario, Canada was founded in May 2008 and is based on the former forging supplier to the automotive industry DemShe Products Inc.

Demshe Forge Inc. today is a one-stop shop for die sinking, forging, heat treating, and production machining. While DemShe Products Inc. was mainly a supplier for the automotive industry, offering components from a few ounces to 25 lbs, the new Demshe Forge Inc. supplies many different industries, among them oil and gas, railway equipment, safety harness and shackle forgings, as well as truck and trailer component industries, with forging components in the range of 30 to 450 lbs. This change of portfolio is supported through the acquisition of new equipment and the construction of a new building. Demshe Forge Inc. is ISO 9000 certified.

**Company:**

Demshe Forge Inc.

**Industry:**

Machinery

**Challenge:**

A fold occurred during the production of a forging that had to be rejected

**Solution:**

Process simulation & redesign of forging stages

**Product used:**

Simufact Forming

**Benefits:**

- Time savings
- Reduction costs
- Get the design right the first time
- Ensure that the part can be manufactured

## The project

Simulations are performed primarily to understand how the edger and preform configuration will help fill the blocker and finisher cavities and to maintain a uniform flash around the parting line. The designs require careful consideration to ensure complete die filling to avoid folds, overlaps and cracks in the part and to control an advanced temperature to ensure the part can be forged. If the part cools too much during the many blows required, reheating is necessary to continue the material deformation without breaking the metal.

## Challenge

On one of Demshe Forge's latest projects, forging a large clamp measuring 18" (45 cm) long and weighing 220 pounds (100 kg), a fold occurred in a critical area of the clamp, Figure 1. The fold was 1/4" deep and the part had to be rejected and redesigned. The original part was forged using a three-step process: An Edger, Blocker and Finisher process. During the blocker stage, material is spread to ensure proper filling of the finisher dies.





Figure 1: A fold occurred during the production of a forging that had to be rejected

## Solution

The process was redesigned and optimised with Simufact Forming. Mr. Ramachandran, Engineering Manager at Demshe Forge, is an expert in performing design work, and with the help of simulation, he was able to set up a forming process where there were no folds in critical areas and the part ended up with the perfect shape.

The key to eliminating the overlap was to use a different design for the blocker, which could be defined through simulation. The initial blocker design distorted the u-shaped feature, while the new blocker design did not and the u-shaped feature is fully forged during the finisher process. The simulation showed that the new, redesigned process formed the clamp correctly and without defects. The modified process is now being used in production.

Simufact Forming is an established software solution for the simulation of metal forming manufacturing processes. The software covers all essential areas of forming technology: forging, cold forming, sheet metal forming, all major incremental processes and mechanical joining.

## Results / Benefits

Thanks to the simulation, the forging process could be redesigned and the previously existing fold eliminated. This allowed Demshe Forge Inc. to successfully forge parts during the first physical trial, resulting in cost and time savings. The process will be implemented for future projects to avoid a time-consuming trial process.



**We have fully integrated simulation into our design process. This helps us to successfully forge parts during first physical try-out, which was not possible without simulation.”**

**Patrick Demers,**  
Plant Manager Demshe Forge Inc



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