

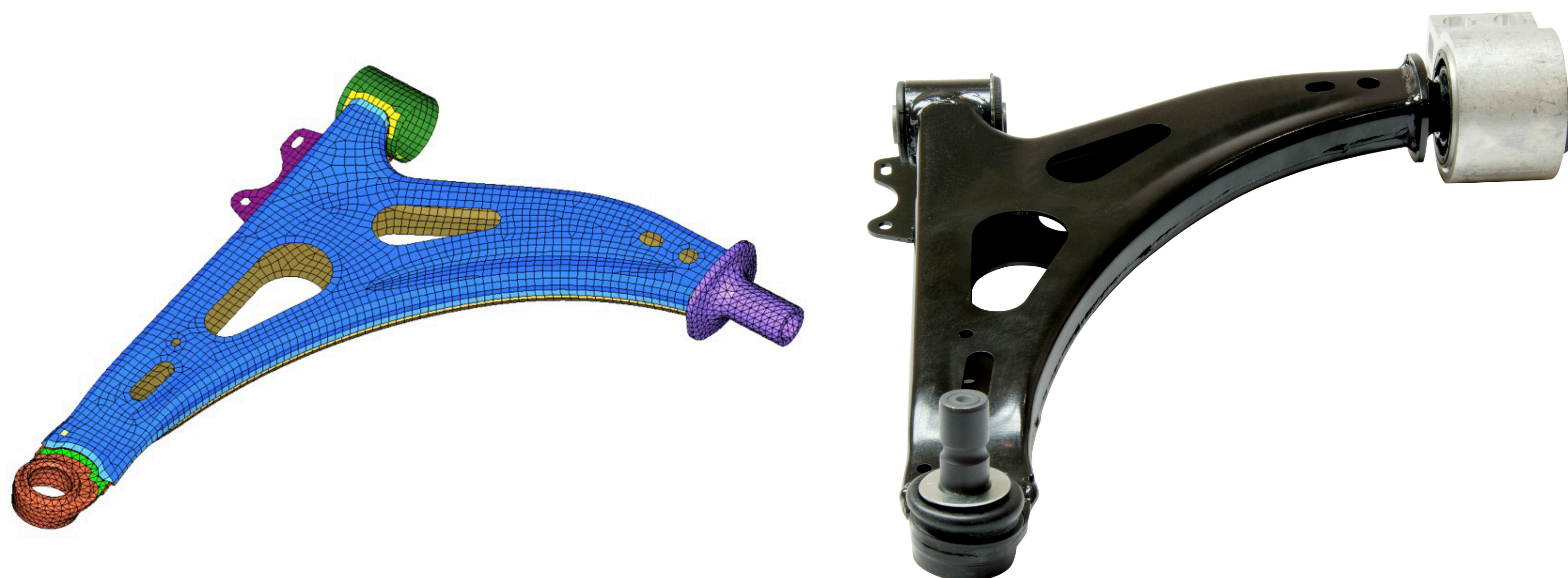
NOMINEE



## Multimatic Inc.

# Passenger Car Steel Front Lower Control Arm

Front lower suspension control arm for a passenger car. Stamped clamshell design with forged ball joint housing and handling bushing pin.



- Achieved a mass neutral arm relative to a forged aluminum design implemented on other platform variants. Given the material density difference, up to 30% mass reduction for a more conventional steel arm.
- Cost reduction potential estimated at 34% relative to forged aluminum design, increasing with production volume.
- Early topology optimization studies were used to come up with a mass efficient overall shape. Shape optimization was used to refine details in the curvature, lightening holes, and joint configurations where the predicted fatigue life was sensitive.
- The development approach for a stamped steel clamshell front lower control arm, or other suspension members, is highly relevant for many vehicles.
- Compared to the reference aluminum arm, a higher stiffness and equivalent or better strength and durability results were achieved.



Presented in collaboration with:

**CAR**  
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