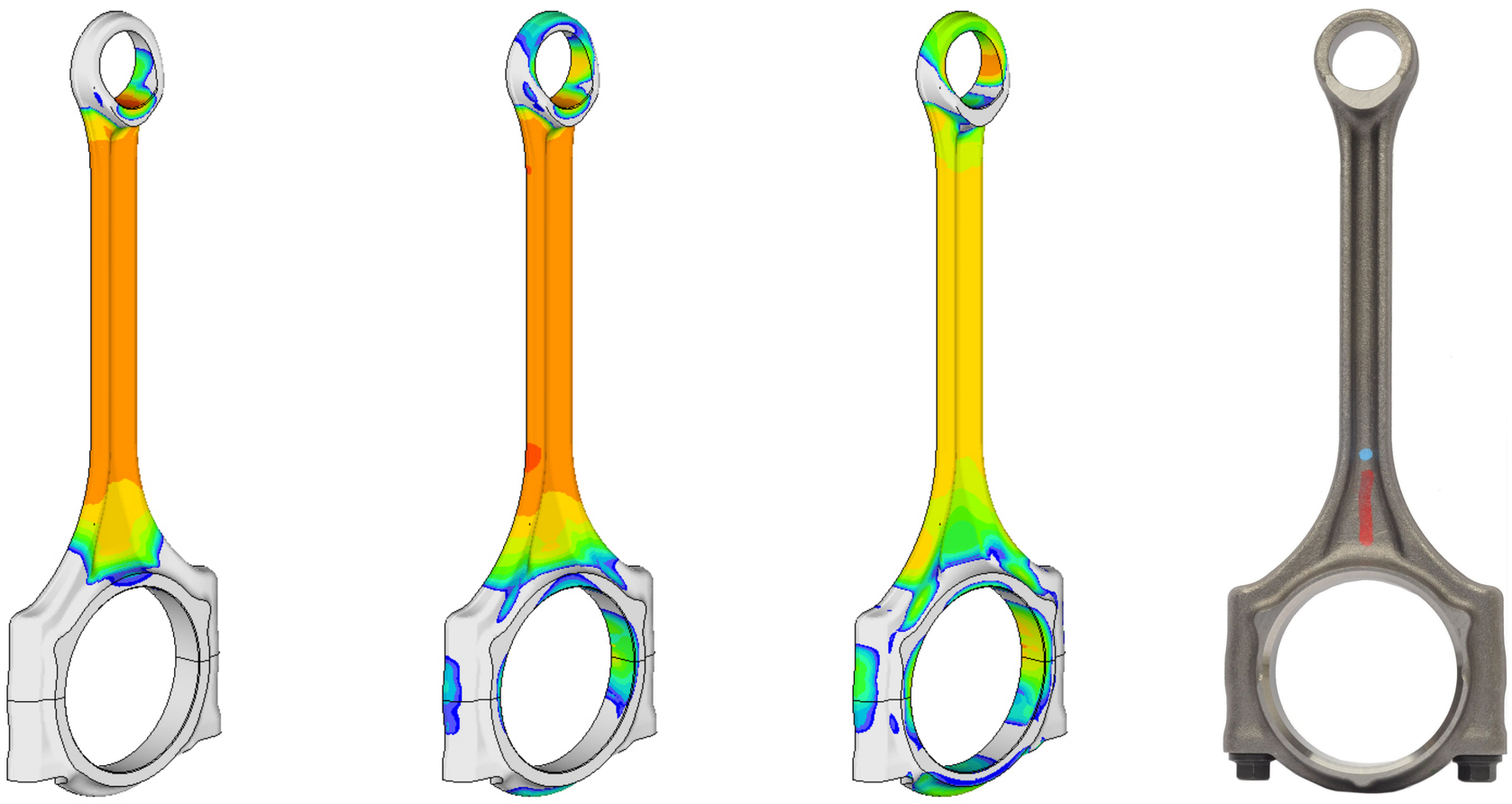
NOMINEE

Altair enlighten award

# MAHLE North America
# Connecting Rod for Polaris Indian Motorcycle

The connecting rod is part of the engine combustion system. It transfers the resulting forces of the combustion energy from a translational (up and down) movement into rotational movement of the crankshaft. The lower these oscillating masses, the better the NVH (Noise Vibration Harshness) behavior; the lighter the masses the better the impact on friction and fuel consumption.



- The weight of the new connection rod was reduced by 31%. The old connecting rod total mass was 1488 grams (two rods) and the new MAHLE design is 1020 grams (two rods). Additional weight reduction will be achieved by adjusting the crankshaft counterweights for mass balancing (customer responsibility).

- The baseline conrod set was developed as a fully machined component out of steel. The new set of rods is aligned to a modern, highly sophisticated steel forging process where cycle time, rough part tolerances and machining process are state of the art. This also has a positive impact on cost. In addition, the old design included a pinbore bushing for the small end which was removed and replaced with a profile. Another benefit is the reduced material cost because of the ligher conrod. This also saves cost over the base design.

- This re-design of the connecting rod to a lightweight application requires an additional re-balancing of the crankshaft so that the free masses are reduced to a minimum.

- This is the first lightweight connection rod of its kind that is in production and meets all the customer requirements. Design and process feasibility will drive further developments in the automotive industry.

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