

### APPLICATION

- Oil Filter Adapter for Heavy-Duty Diesel Engine

### CHALLENGE

- Combine as many of the existing iron and aluminum components (six total) as possible into a single piece aluminum casting.
- Provide maximum weight savings.
- Eliminate need for cores.
- Improve mechanical properties by eliminating leak points and mechanical joints.
- Prototype and test the design prior to production runs



### METHODS

- Review assembly of existing adapter to find parts that could be eliminated or combined
- Design part as full three-dimensional model to show concept and review in context of engine assembly.
- Using reviewed and approved model data develop a functioning prototype using fabricated foam pattern methods and cast in aluminum.
- Have end user field-test parts and modify design accordingly.

### RESULTS

- Combined all six iron and aluminum parts into a single piece aluminum casting.
- An overall weight reduction of 48 pounds was achieved.
- No cores are required in the casting process.
- All production castings passed leak inspections during first casting run.
- By using fabricated foam prototypes, critical design elements were refined without any additional tooling cost and the part was field tested prior to production runs.

