The basis of this project is to compare the efficiency of a General Motors 4-cylinder engine running on gasoline to its efficiency when optimized to run on ethanol blended fuel. This engine has 2.0 liters of displacement, a directly injected fuel system, dual variable camshaft timing, and a turbocharger. The team from last year did baseline efficiency testing with the engine in its stock condition running on gasoline and E85. Then they installed larger pistons in the engine to raise the compression ratio from 9.2:1 up to 12.12:1. The first step this year will be to obtain efficiency data of the engine on E85. Next, the engine will be calibrated to run on E50 and testing will be completed with this fuel. The data from these tests can then be analyzed and compared to the baseline data to determine the efficiency of the engine on E85 and E50. The hope is to find that the engine can be equally as efficient on E50 as it was in the baseline tests on regular gasoline. Lastly, the engine will be installed into a chassis to continue testing its efficiency on the road.

Objectives:
- Test engine on E85 to compare new pistons to stock
- Calibrate the engine parameters and optimize for efficiency on E50
- Test engine on E50 to compare efficiency with gasoline
- Experiment with different engine calibrations to see effects on efficiency
- Analyze data to compare efficiency of gasoline, E50, and E85
- Install the engine into a Pontiac Solstice

2011-2012 Ecotec Efficiency
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