

University of Alaska Fairbanks Design Report

Sam Brewer
Tachit Chairat
Ian McKee
Robert Russell

Presentation Outline

- Base Machine
- Performance
 - Ideal
 - Actual
- Noise
- Emissions
- Cost
- Durability
- Resale Value
- Environmental Impact
- Conclusion

Base Machine

- 2007 Yamaha Phazer
- 500cc, two cylinder, four stroke engine
- Liquid cooled
- 8.1 gallon fuel tank



Performance (Ideal)

- 120 to 130 horsepower
- Increase torque
- Increase acceleration and towing capacity
- Fuel economy
- Environmentally friendly

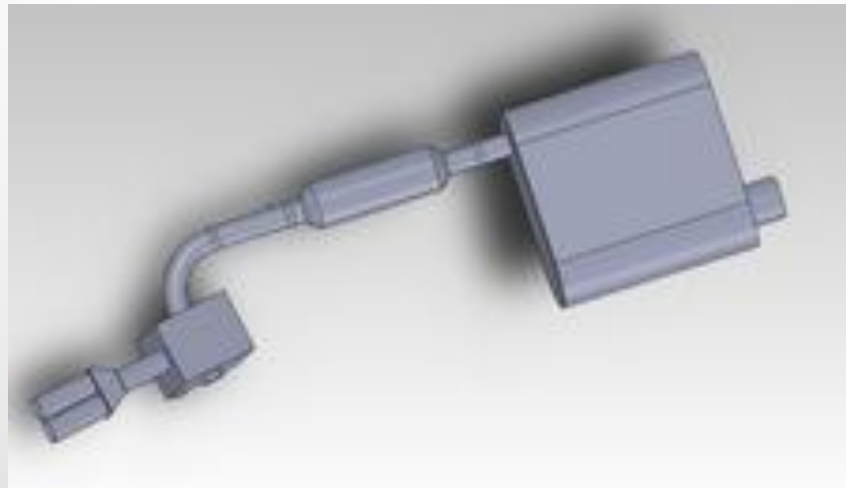


Performance (Actual)

- Runs good: 0 - 8,500 rpm
- Needs fuel mapping adjustments: 8500 rpm - 12,000 rpm
- Completed 50 out of 100 miles in Endurance Event
 - 45 mph on hardpack
 - 35 mph on soft groomed trail
- Camoplast track
 - Decent Acceleration
 - Good braking

Noise

- Garrett Turbocharger
- Catalytic Converter
- Stock muffler
- Secured exhaust system
- Silicone
- Electrical tape



Emissions

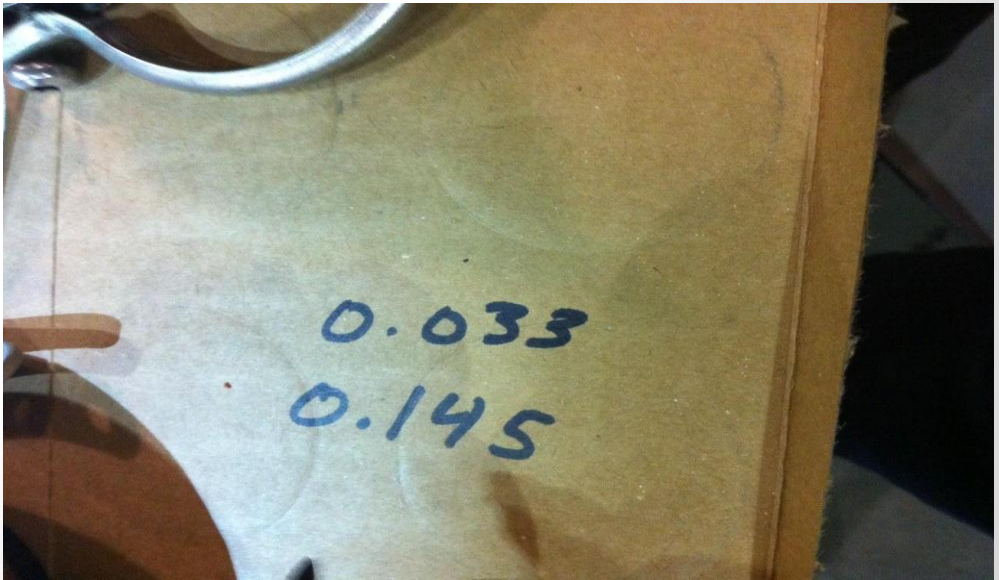
- Emitec Catalyst
- Exhaust heat tape to catalyst
 - Keeps exhaust gasses hot through turbo for efficient operation of catalyst
- Run leaner fuel mapping using Dynojet and Boondocker controllers to reduce fuel consumption

Cost

- Budget: \$2,200.00
- 2012 Yamaha Phazer MSRP: \$8599.00
- Garrett GT12 Turbocharger: \$800.00
- Tools: \$700.00

Durability

- 499 cc four stroke motor
 - Low maintenance, long life
- Garrett GT12 turbocharger
 - Disassembly and repair can be performed quickly with a power drill, socket set and hammer.



Resale Value

- Kelly Blue Book retail value: \$3,310
- MSRP: \$10982.84

Environmental Impact

- Reduce carbon footprint
- Reduce noise
- Short track does not trench deep
 - One inch paddles
 - No studs

Conclusion

- 2007 Yamaha Phazer 499 cc four stroke
- Garrett GT12 turbocharger
- Performance
- Noise
- Emissions
- Cost
- Durability
- Resale Value
- Environmental Impact