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Internal Combustion Engines and Ammonia

(Second Report)

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Hydrogen Engine Center, Inc.

Company Progress

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- HEC has raised new operating capital to expand its operations
- HEC is building the first phase of a 140K square foot facility, hydrogen approved, devoted to engine manufacturing
- The new building will be available in December, 2005
- HEC is publicly traded as HYEG

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New Facility

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Engine Progress

- HEC is producing engines today to run on alternate fuels
- HEC has developed a proprietary engine controller that supports all alternative fuels
- HEC has trademarked *Oxx Power* as the trade name for all new HEC engines
- HEC will produce 1200 engines in 2006

Ammonia Fueled ICEs

- 1967 Army demonstration of ammonia fueled diesel and spark ignited diesel engines
  - demonstration was successful
  - spark ignition was superior
  - high efficiency (>diesel) via high compression (>20:1) shown
  - modern engine controller required to reach full potential

HEC Ammonia Fueled ICEs

- HEC has a proprietary controller that can run a fuel injected spark ignited ICE fueled by ammonia
- *OXX Power* engine modifications are designed to take advantage of the special needs of ammonia fueling
- Hydrogen fueled engine technology aids the transition to ammonia

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Ammonia: why do we care?

- Kyoto Accord (lower greenhouse gas emissions) is now law in 140 countries
- Fossil fuel prices have soared and future availability is in question
- Hydrogen gas for fuel is in limited availability
- Hydrogen storage is and will continue to be a major problem

ICE Gas Emissions (eliminate the carbon and reduce the NOx with Ammonia ICEs)

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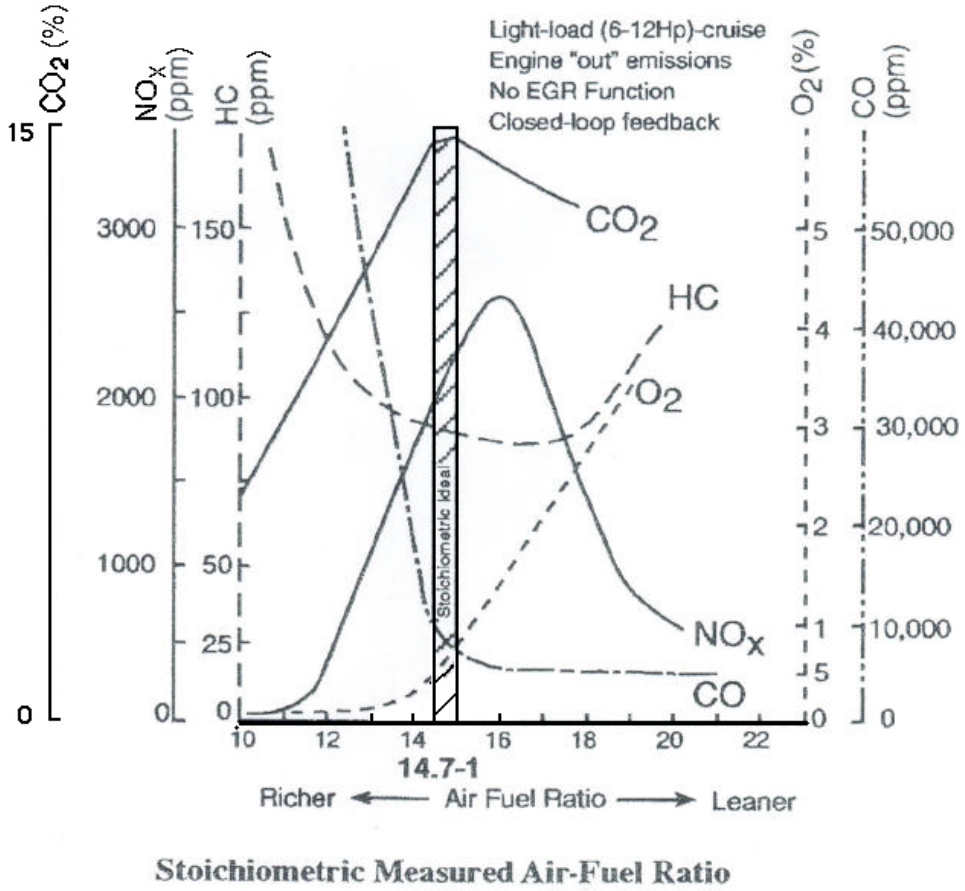

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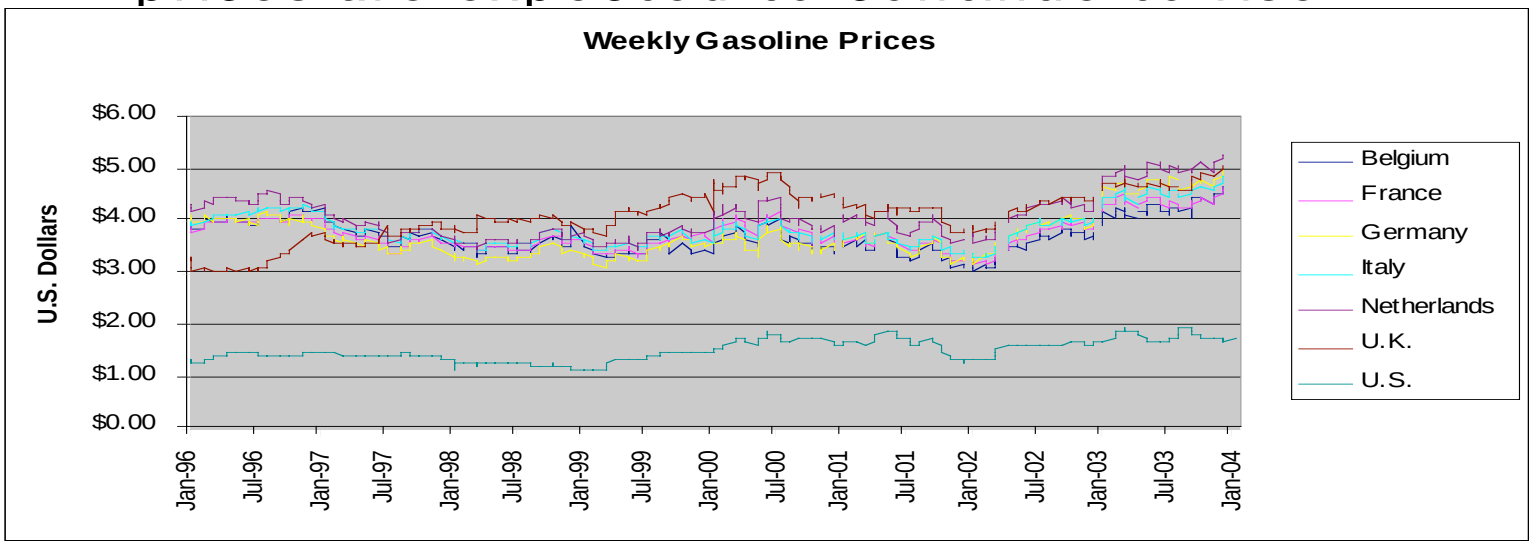
The Other Need (from last year)

How times have changed.

- Reduced dependence on foreign oil
  - The world oil production is about to peak and prices are expected to continue to rise.



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Ammonia as a solution

- Contains no carbon (NH3) therefore has no carbon based emissions
- Ammonia has the highest storage density of any hydrogen source
- Ammonia is the second most prevalent chemical in the world
- Every agricultural community has ammonia available

Other Advantages of Ammonia ICEs

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- Eliminates the need for reformers
  - Simplifies design
  - Reduces cost
  - Shrinks size
  - Speeds up market entry
  - Form, Fit, Function compatibility with existing ICE engines

HEC Product Timing

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First Ammonia fueled engines available in 2nd quarter of 2006

First Ammonia Engine Details

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- 4.9L inline 6 ***Oxx Power*** engine
  - Fuel injected
  - New ***Oxx Boxx*** engine controller
- 7.5L V8 ***Oxx Power*** engine
  - Available in 4th quarter of 2006
  - Fuel injected
  - New ***Oxx Boxx*** engine controller

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Conclusion

We will provide

Cleaner Power . . . . Sooner

Ammonia ICEs in 2006

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Thank you