



THE LINEAR ENGINE PATHWAY OF TRANSFORMATION

Nigel Clark, Parviz Famouri, April Covington, Matthew
Robinson

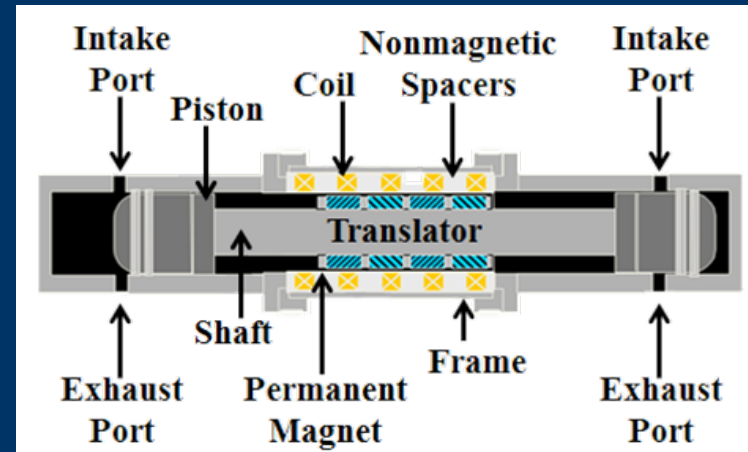
Center for Alternative Fuels, Engines and Emissions
West Virginia University

March 22, 2012

Overview

Concept:

Internal combustion engine where power is translated in a linear fashion as opposed to traditional rotational translation



Linear Engine Advantages:

Minimal moving parts

- Reduced maintenance
- Simplified lubrication

Higher power density

- No flywheel, crankshaft, camshaft(s)

Increased efficiency

- Low piston skirt / friction forces

Adjustable compression ratio

- Multi-fuel operation
- Employment of new combustion regimes

WVU 3rd Gen Linear Engine:

- Compression ignition
- Two opposed pistons on a common linking shaft
- Permanent magnet linear alternator
- 250 Watt charging system
- Independent cooling (air-cooled)
- Low temperature combustion
- Direct in-cylinder injection (piezoelectric injectors) or homogenous charge port injection
- Spring-assist (operating frequency control)