Innovative Hydrogen
SOLUTIONS

IHS Background

- Founded in December 2004
- Management team has over 140 years of combined experience with Hydrogen Fuel Injection
- Province of Ontario recognizes Hydrogen Fuel Injection. The ***i-Phi***™ is the only Hydrogen Fuel Injection System to qualify for the Ontario Green Vehicle Grant for Transportation in North America
- Company Management has over 150 million miles of on-road experience with Hydrogen Fuel Injection
- Established manufacturing/assembly facility in Aurora, Ontario

Innovative Hydrogen SOLUTIONS

THE PROBLEM

- Equipment is operating at minimum profit
- Maintenance costs continue to rise as new pollution controls are implemented
- We are contributing to the GHG Emissions

Innovative Hydrogen SOLUTIONS

THE OPPORTUNITY

Enhance combustion by introducing small amounts of Hydrogen using the ***i-Phi***™ System

Hydrogen - *the Solution*

INTRODUCTION OF SMALL AMOUNTS OF HYDROGEN IN COMBUSTION HAS THE FOLLOWING EFFECT:

- Enhances combustion characteristics of gaseous or liquid hydrocarbon fuels
- Significantly extends the lean flammability limit of the carbon-based fuel results in:
  - Greater thermo efficiency
  - A more complete burn
  - Increased fuel mileage
  - Decreased emissions
- Many independent tests dating back to the 1970s have validated this effect

Source: United Nations Framework Convention on Climate Change

The question has always been

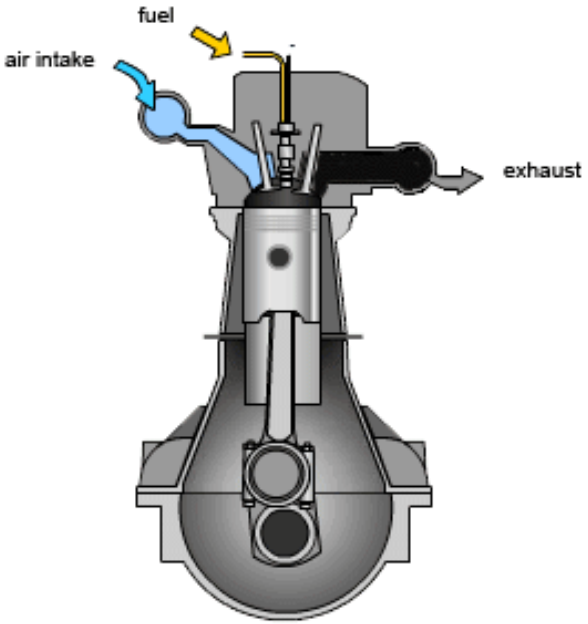
How to deliver the hydrogen in a

SAFE, EFFICIENT and RELIABLE manner?

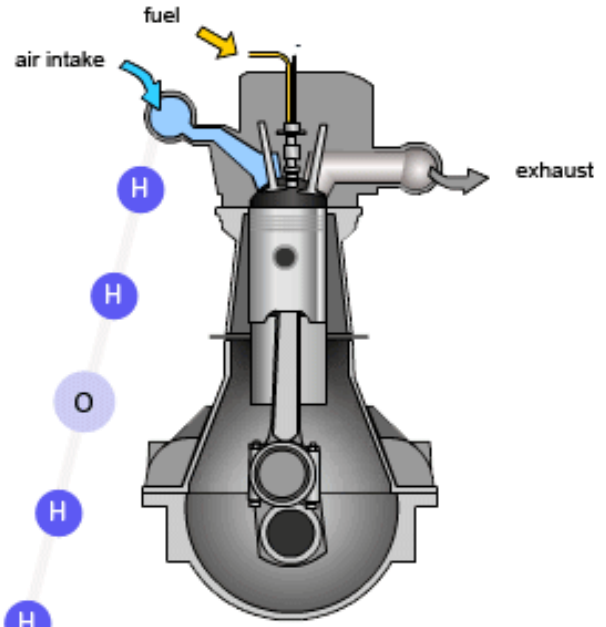
i-Phi™ - Overview

- An aftermarket retrofit device designed to work on any internal combustion engine
- Converts distilled water into hydrogen and oxygen gases through electrolysis
- Injection of hydrogen and oxygen into air / fuel mix prior to combustion
- Operates on demand only when the engine is running
- Eliminates the need for on-board hydrogen storage and addresses safety concerns

Diesel Engine



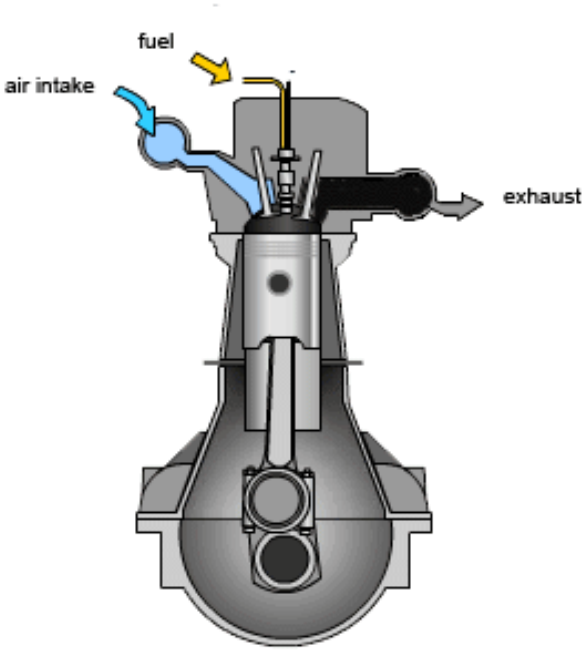
Diesel Engine With IHS *i-phi*



The ***i-phi***™ produces Hydrogen & Oxygen Gases from water using electrolysis.

Distilled Water

Diesel Engine



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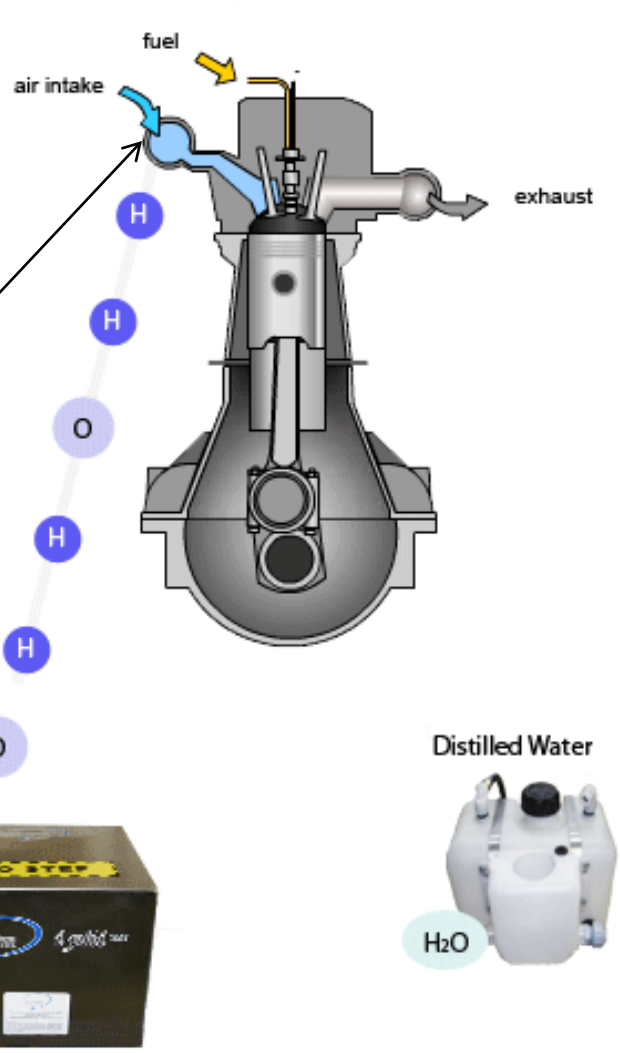
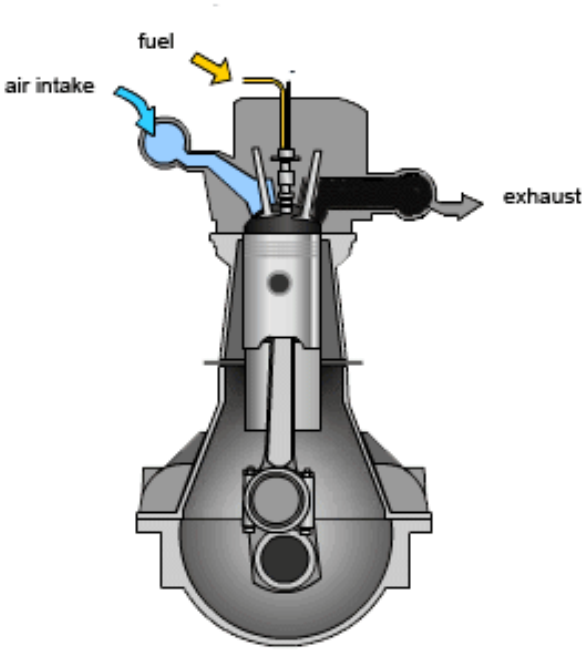


Adding Hydrogen & Oxygen gasses to the air intake enhances the combustion process.

Diesel Engine



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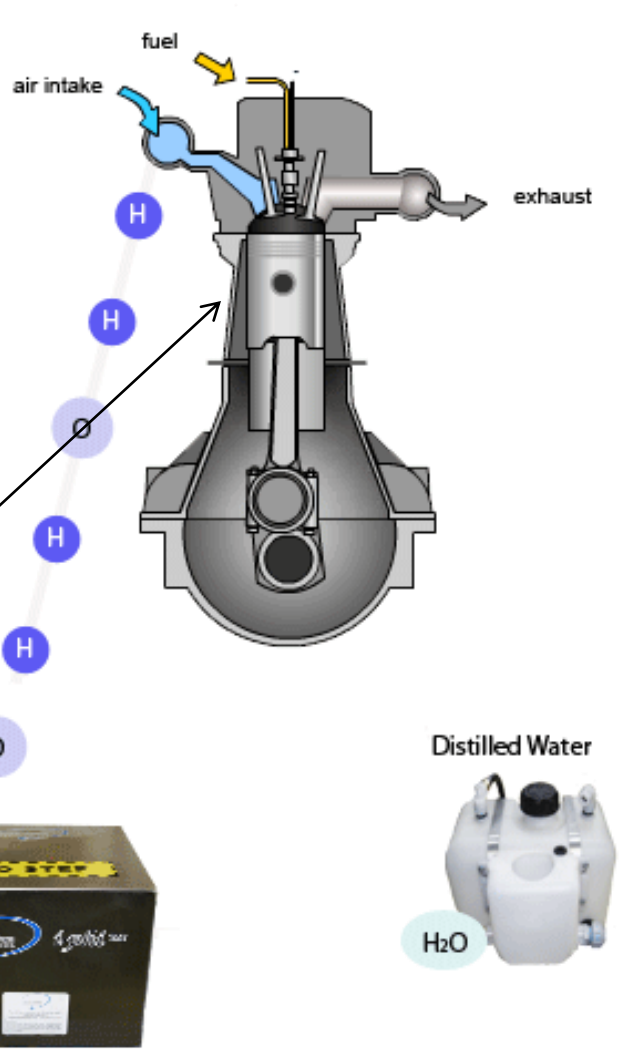
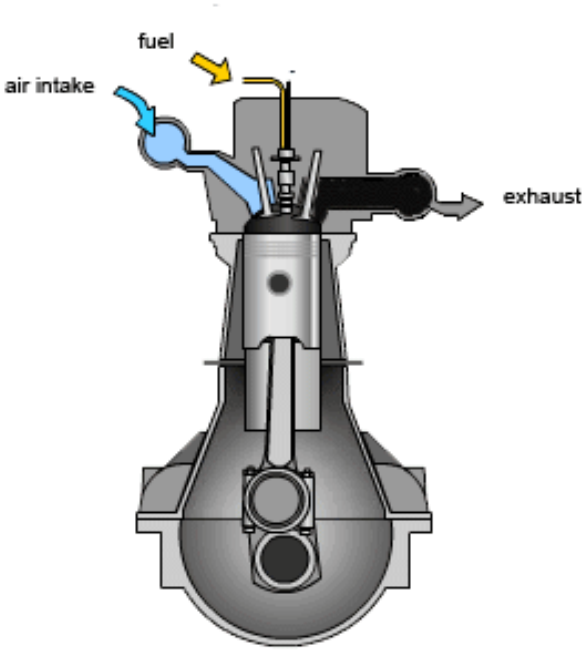


The Hydrogen burns faster than the diesel fuel spreading the flame faster and producing a more complete burn of all the fuel.

Diesel Engine



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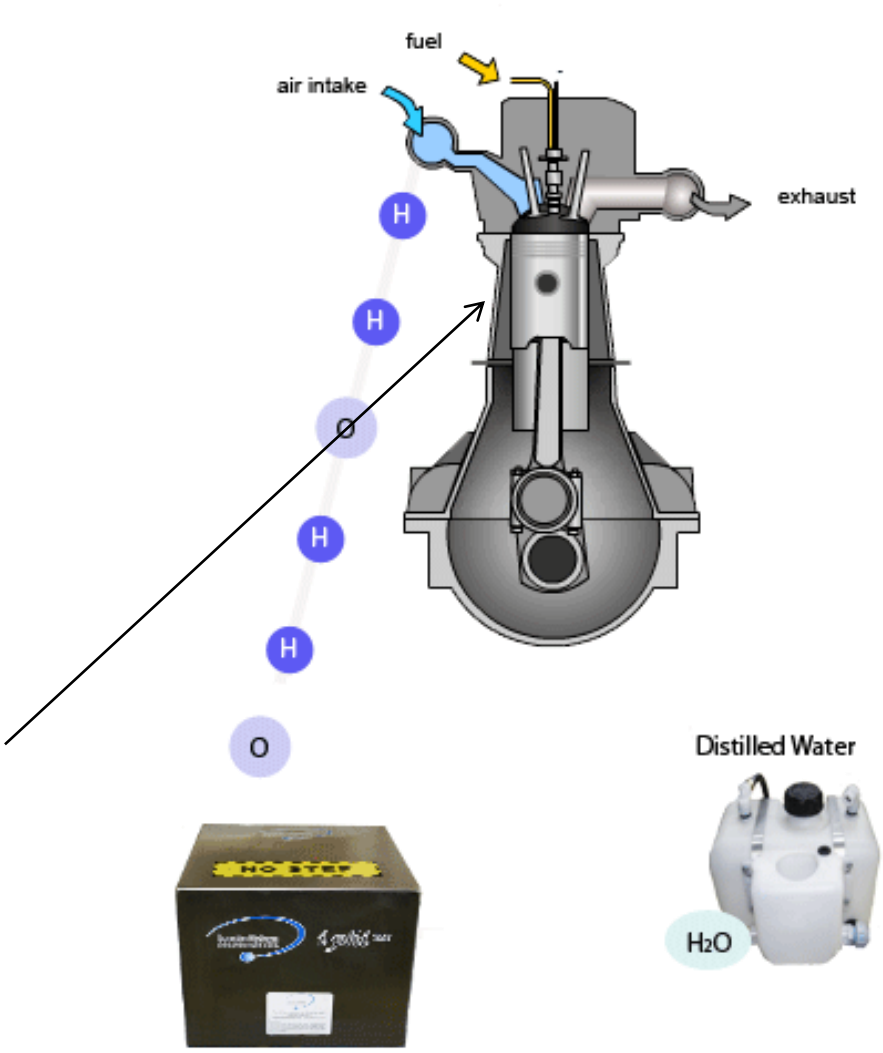
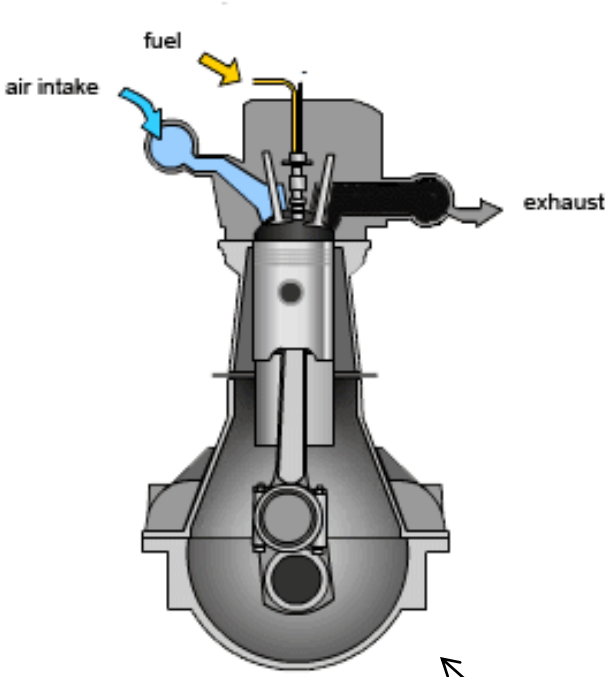
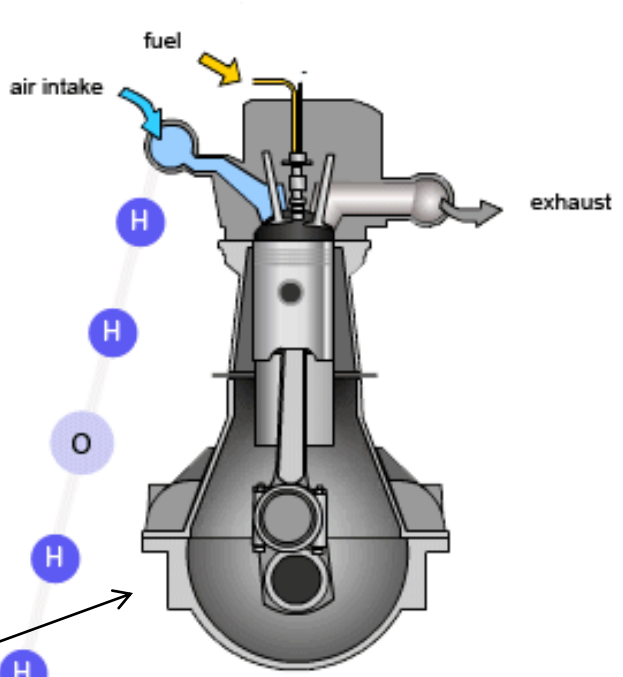


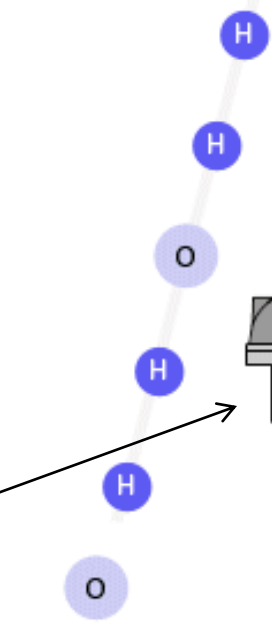
Burning More Fuel increases the output per Liter of Diesel Fuel.

Diesel Engine



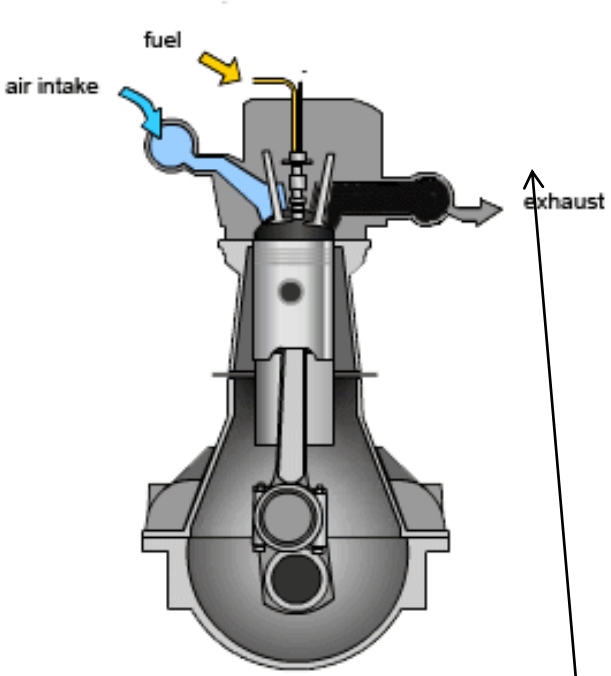
Diesel Engine With IHS *i-phi*





Burning More Fuel increases Engine Power and Torque

Diesel Engine



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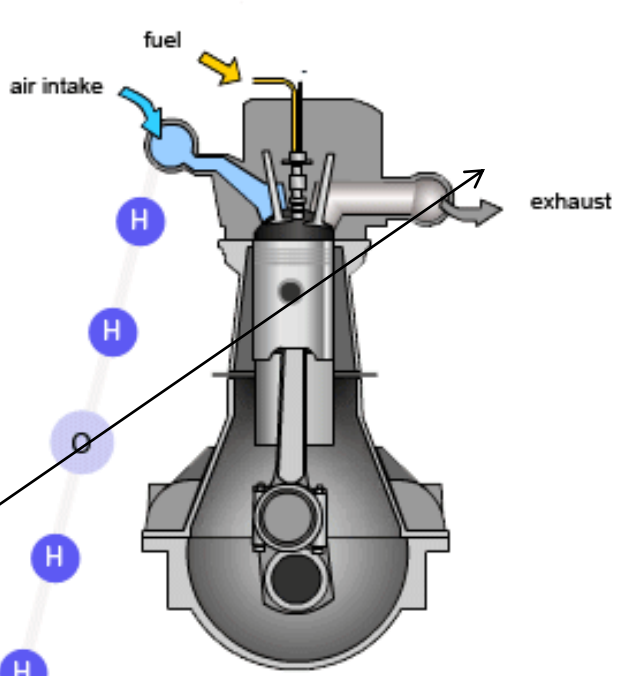
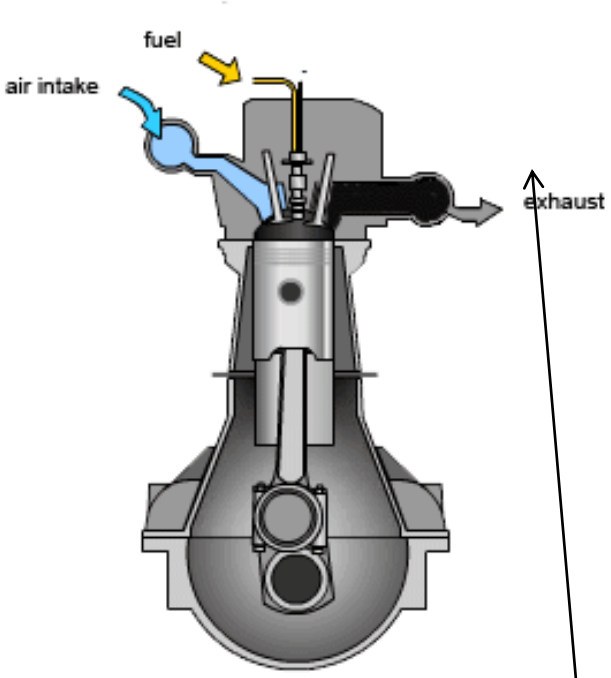


Burning More Fuel results in less soot and other pollutants

Diesel Engine



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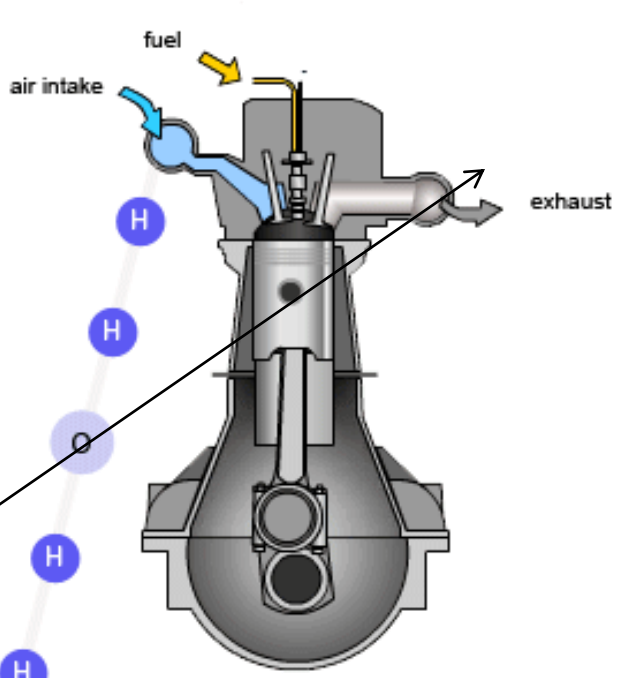
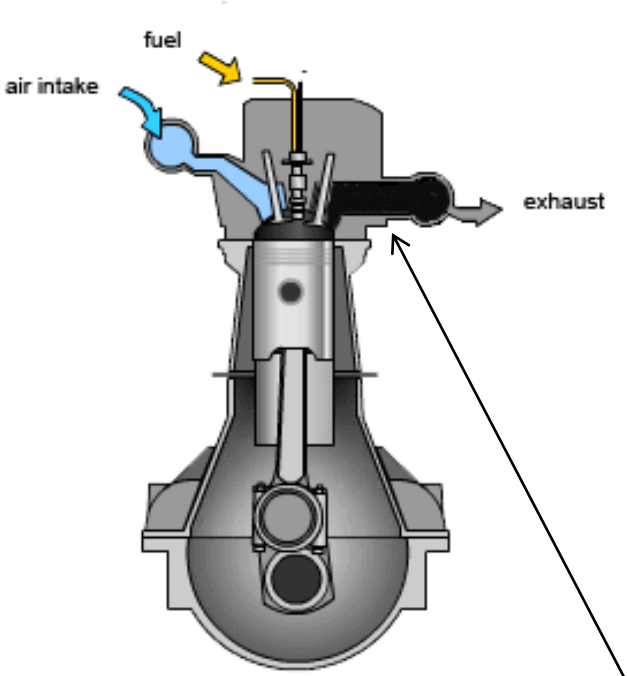


Less Soot
produced extends
the life of the oil and
the engine

Distilled Water

Diesel Engine



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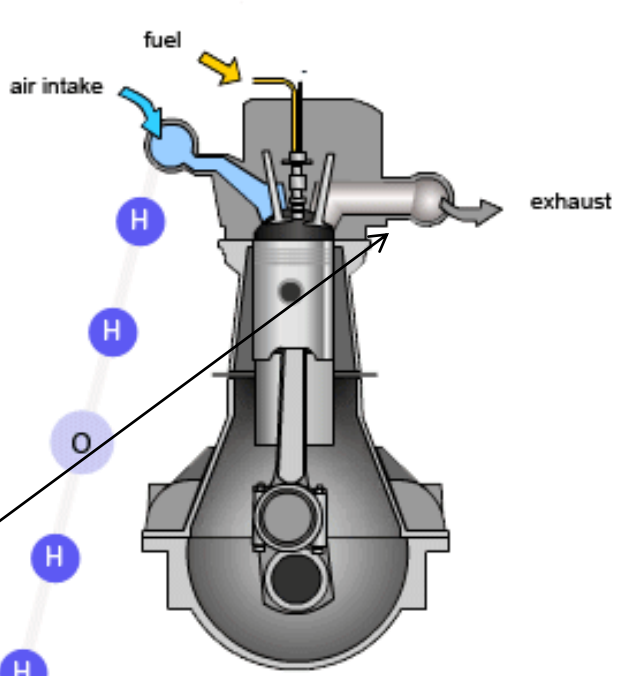
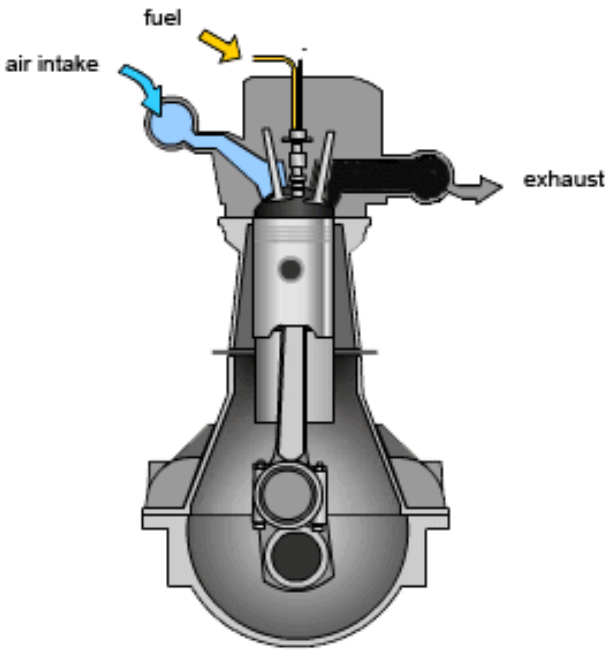


Hydrogen helps to clean up the carbon deposit buildup in the engine.

Diesel Engine



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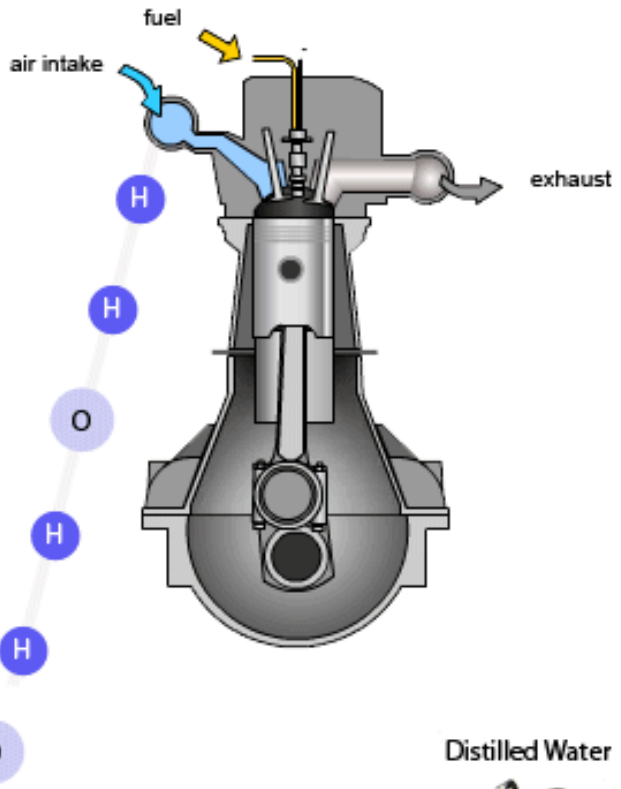

The ***i-phi***™ saves money!

The ***i-phi***™ cleans the environment!

Our Commitment

- Quantify
- Verify
- Certify

I-PHI™ - Benefits

- Long term multiple third-party testing has confirmed:
  - Reduced fuel consumption
  - Lower GHG emissions
- Additional benefits:
  - Longer engine life
  - Reduced maintenance costs
    - Less frequent oil & filter changes
    - DPF Regen cycles extended
    - Fewer EGR replacements
- Easy installation with virtually no downtime or maintenance
- 5 Year Parts and Labour warranty

Fuel Savings

- On average, diesel engines save 15% to 25% of their fuel bill.

- Fuel metering devices are installed on each engine to measure the actual fuel savings achieved.

Emission Reductions

- We are positioned for the future with a full ISO 14064-2 Green Print Assessment performed by Jomini Environmental Inc. Project already registered on CSA Registry.
- I.H.S. registered with Province of Ontario for CAP and TRADE
- CARB Testing successfully completed May 2016. CARB Number issued June 2016 .