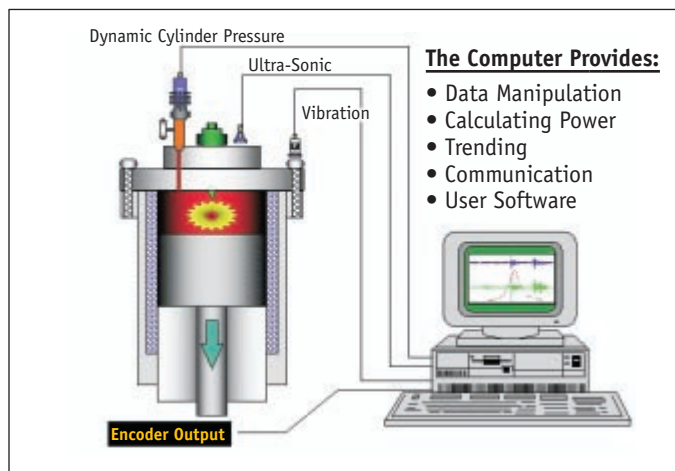


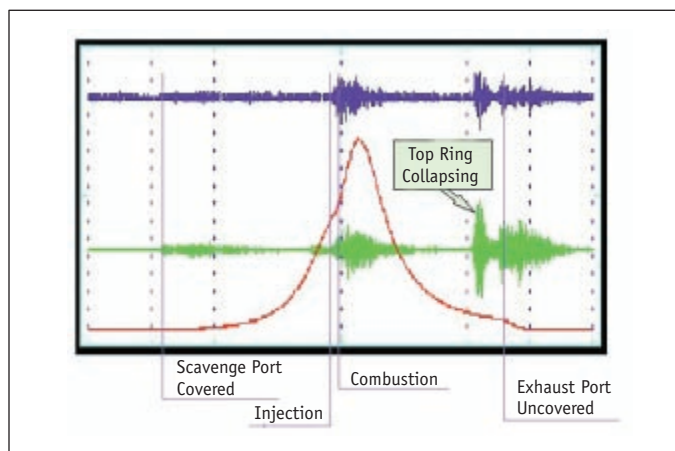
Reciprocating Engine Analysis

Overview

Reciprocating engine analysis acquires cylinder pressure, vibration, and ultrasonic data in reference to crank angle to assess performance characteristics and detect anomalies due to engine component wear, damage or deterioration. IMPACT Engineering combines this analysis with other technologies to allow for reduced maintenance and operational costs, decreased fuel consumption, extended service intervals and increased reliability.



System Setup Diagram



Typical Diagnostic Trace



CARMA® 8 – Equipment Setup

Detailed reciprocating engine analysis now allows the following deficiencies to be evaluated for a Predictive Maintenance program:

Mechanical Condition Analysis

- Injector/Fuel Pump Malfunctions
- Piston Ring Blow-by
- Cracked Heads & Crowns
- Leaking Valves
- Leaking Head Gaskets
- Deteriorating Piston Rings
- Combustion Problems
- Improper Valve Closures
- Piston Slap
- Piston Ring to Liner Activity
- Excess Bearing Clearances

Engine Performance Analysis

- Cylinder Power Balance
- Early Combustion
- Late Combustion
- Detonation
- Pre-Ignition
- Pre/Post Overhaul Conditions