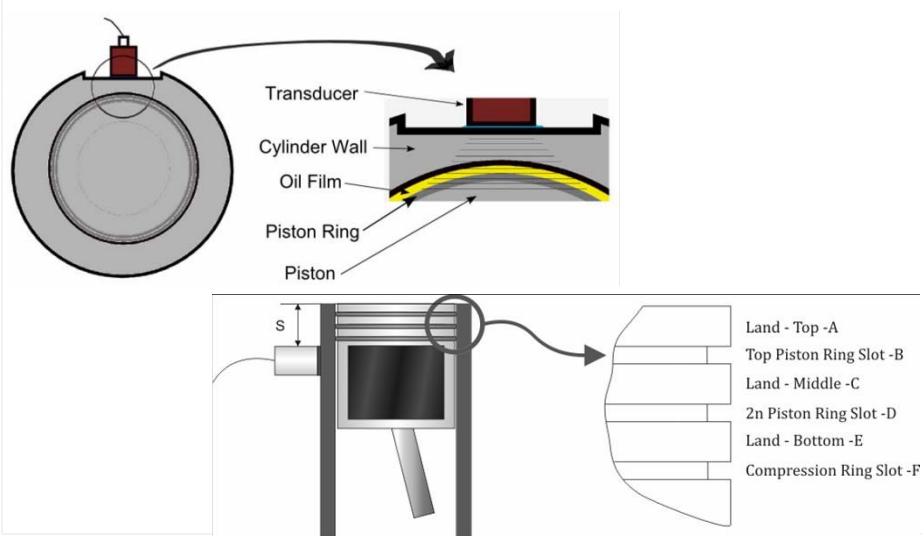
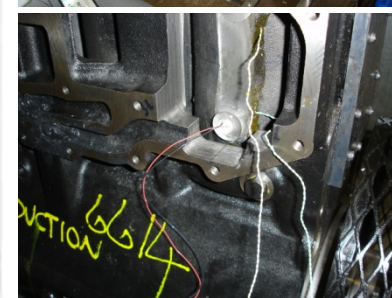
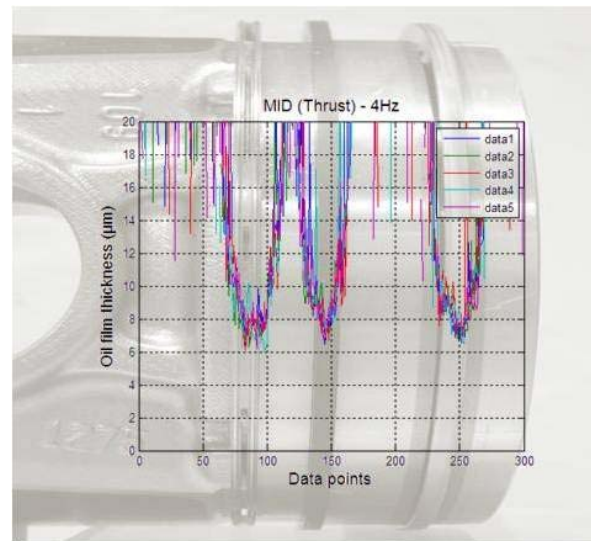


## Novel Sensors for Tribology

- An ultrasonic sensor is glued to the water jacket side of the cylinder
- When the sensor is excited, an ultrasonic pulse propagates through the cylinder
- A proportion of the pulse is reflected back from the liner-ring oil film layer



## Conclusions

- Ultrasonic reflection pulses are recorded when the rings pass over the transducer location
- The proportion of a pulse that is reflected varies with material properties & oil film thickness
- The method is portable, non-invasive and is currently being extended to fired automotive engines