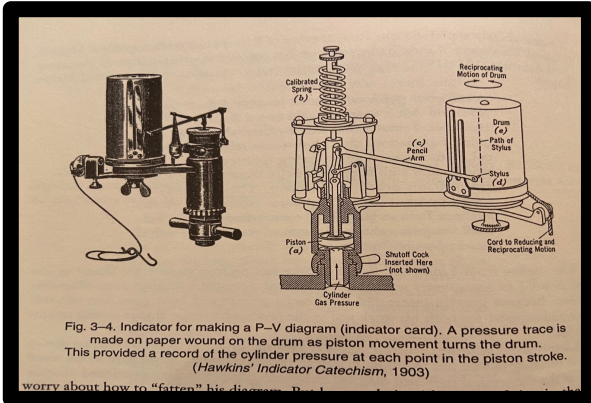


## History of Balancing



## Balancing Methods

**Peak Firing Pressure (PFP)** is the most common balancing method – probably due to the history of balancing – it was easy to measure. It is accomplished by measuring the peak firing pressures of all the cylinders, calculating the mean of those pressures, and adjusting the firing pressures as close to that mean pressure as possible

**Peak Pressure Ratio (PPR)** is a method suggested in EPPL / SWRI / DOE study in 2008. In this method, the PFP and the unfired Compression Pressure ( $C_p$ ) of each cylinder is measured. The PFP is divided by the  $C_p$  and the PPR Ratio is calculated.

The compression pressure is an indication of how much air is trapped in the cylinder. Since we cannot change that, by inputting the proper amount of fuel into each cylinder, we can control the equivalence ratio, which greatly influences the combustion process.

## Engine Concerns

- Ignition
- Fuel
- Combustion
- Mechanical condition
- Lubrication
- Cooling

## Combustion Types (2&4 Stroke)

- Normal ignition
- No ignition
- Early ignition
- Late ignition
- Detonation
- Pre-ignition
- Intermittent firing



SCAN for Presentation Handout

# Balancing Slow Speed Reciprocating Engines

## Notes

## Presenter

**Kent Petersen** has over 15 years of experience with engines and compression. He was one of the original founders of MMS and was instrumental in the design of Snapshot, ProBalance and ProBalance Plus. Kent is Product Manager for Machinery Monitoring Systems, LLC

## RCT/MMS Press Release

Vienna, VA and Knoxville TN, July 15, 2022,

**Radical Combustion Technologies, LLC (RCT) and Machinery Monitoring Systems, LLC (MMS)** are pleased to announce they are entering a partnership to improve engine health, reduce engine emissions and improve operating performance for natural gas pipeline compressor engines.



Press  
Release