7. Observe the Turbocharger sound. 8. Check the power swing character of the GENSET.
8. Check the phase current of the generator.
9. Check the power factor of the generator.
10. Check the generator winding temperatures.
11. Check the oil level in the sump the engine sump and add if necessary as per instruction in the manual.
12. Ensure that there are sufficient quantities of lubricating oil in stock.
13. Check the cooling efficiency (inlet and outlet temperatures).
14. Check and record all temperature of the engine like exhaust gas, along with all temperature of the gen sets.
15. Check the oil level in the sump the engine sump and add if necessary as per instruction in the manual.
16. Ensure that there are sufficient quantities of lubricating oil in stock.
17. Check the cooling efficiency (inlet and outlet temperatures).
18. Check and record all temperature of the engine like exhaust gas, along with all temperature of the gen sets.

MILLER VALVE TIMING

- The process is based on shorter compression stroke and lower charge temperature cylinder.
- Miller process means early inlet valve closure, normally before BDC.
- Shorter compression stroke compared to STD timing. Expansion remains unchanged.
  -lower fuel consumption
- Process gas temperature lower
  -lower NOX
  -lower component temperatures
  -lower cooling losses
  -lower exhaust temperature
- Higher boost required

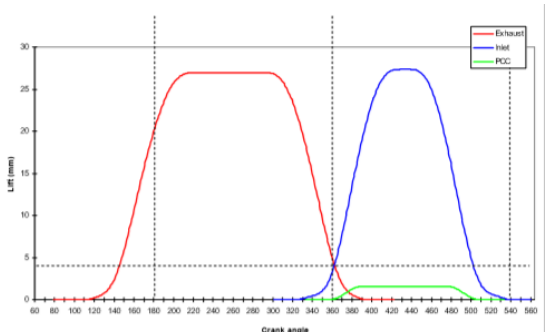

Fig: Miller valve timing

COOLING WATER ANALYSIS

ACIDITY:

The pH value expresses the alkalinity or acidity of water indicates the concentration of hydrogen [H+] ions pH value is the negative value of the Briggs logarithm, -log [H+]

[H+]=10-7=>pH=-log[10-7]=7

-pH< 7=> acid water

-pH=7> neutral water

-pH>=7> alkaline water

-Corrosion rate of cast iron / copper is the lowest When pH is 8-10

HARDNESS:

Typical hardness water is present as calcium [Ca] and Magnesium [Mg] Salts, like bicarbinates [HCO3]2.

- Too high hardness leads to scale formation in coolers engine component, water pump surfaces etc.
- Ca and Mg salts in small amounts as such protect component surfaces against corrosion.

Several scale exist,

how to measure hardness. Wärtsilä refers to hardness measured in German degrees [°dH].

- Classification of hardness:
  - 0-4 °dH => Very soft water
  - 4-8 °dH => soft water
  - 8-20 °dH=> Hard water