SNS COLLEGE OF TECHNOLOGY
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DEPARTMENT OF AGRICULTURE ENGINEERING

COURSE CODE & NAME: 16AGT301 & HEAT POWER ENGINEERING

III YEAR / V SEMESTER

UNIT : 2 CLASSIFICATIONS AND PRINCIPLES OF IC ENGINES
TOPIC 5 : Two Stroke Diesal Engine

Two stroke cycle Diesel Engines- Construction

Construction :

- Two stroke cycle diesel engines require air supply
- This air is used to blow out the exhaust gases and to fill the cylinder with clean air
- This air is supplied by a blower or air compressor which is driven by engine itself.
- These engines may be valve or port type.
- A plate is provided in the crank case to admit air into the crank case.
- Transfer and exhaust ports are provided in the cylinder.
- These ports are covered and uncovered by the moving piston.

Two stroke cycle Diesel Engines- Working

First Stroke (Upward Stroke of the piston)

(a) Compression and inductance:

- The piston moves upwards from Bottom Dead Centre (BDC) to Top Dead Centre (TDC).
- Both transfer and exhaust ports are covered.
- Air which is transferred already into the engine cylinder is compressed by moving piston.
- The pressure and temperature of the air increases.
- At the same time, fresh air is admitted into the crankcase through the plate valve (reed valve)

Two stroke cycle Diesel Engines- Working

First Stroke (Upward Stroke of the piston)

(b) Ignition and inductance.

- Piston almost reaches the top dead centre.
- The fuel is injected into the hot compressed air inside the cylinder. The fuel mixed with hot air and burns.
- The admission of fresh air into the crankcase continues till the piston reaches the top centre.

Two stroke cycle Diesel Engines- Working

Second Stroke (Downward Stroke of the piston)

(c) Expansion and crank case compression:

- The burning gases expand in the cylinder.
- Burning gases force the piston to move down. Thus useful work is obtained.
- At the same time, the air in the crank case is compressed by the movement of the piston.
- All the ports and the plate valve are in closed position

Two stroke cycle Diesel Engines- Working

Second Stroke (Downward Stroke of the piston)

(d) Exhaust and Transfer:

- At the end of expansion, the exhaust port is uncovered.
- The burnt escape to the atmosphere through the exhaust port.
- Transfer port is also uncovered shortly after the exhaust port is opened.
- The partially compressed air from crank case enters the cylinder the transfer port.
- This air is deflected upwards by the deflected shape of the piston.
- Thus the entering air helps in forcing out the combustion products from the cylinder
- The plate valve remains during this period.

Scavenging

Scavenging :

- It is the process of forcing out the burnt exhaust gases from the cylinder for admitting the fresh charge into the cylinder.
- This action takes place in the two stroke cylinder.

Scavenging Process

- The charge (air fuel mixture or air) enters the engine cylinder from the crank case at a pressure higher than the exhaust gases.
- This fresh charge forces the exhaust gases to the atmosphere through the exhaust port.
- During the period both the transfer and exhaust ports are kept open for a short period.
- Hence there is a possibility of the fresh charge escaping out with the burnt gases.
- This is over come by designing the piston to have a deflected shape.
- This shape of piston deflects the fresh charge upward in the engine cylinder.
- It also helps out in forcing out the exhaust gases to atmosphere.
- This process is known as **Scavenging.**

THANK YOU...