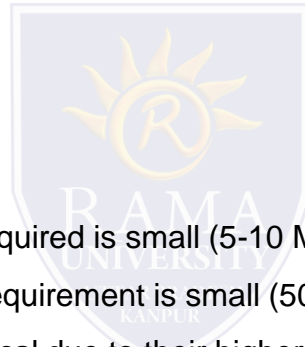


Applications •

The diesel power plant finds wide application in

1. Peak load plant (2-50 MW)
 2. Mobile plant
 3. Stand by units
 4. Emergency plant
 5. Nursery plant
 6. Starting stations
 7. Central stations-where capacity required is small (5-10 MW)
 8. Industrial concerns-where power requirement is small (500kW)
- Diesel power plant are more economical due to their higher efficiency.



Site selection-Factors

1. Foundation sub soil condition
2. Access to the site
3. Distance from the load center
4. Availability of water
5. Fuel transportation

Diesel Power Station

- For generating electrical power, it is essential to rotate the rotor of an alternator by means of a prime mover. The prime mover can be driven by different methods. When prime mover of the alternators is driven by diesel engine, the power station is called diesel power station.
- The mechanical power required for driving alternator comes from combustion of diesel. As the diesel costs high, this type of power station is not suitable for producing power in large scale in our country. But for small scale production of electric power, and where, there is no other easily available alternatives of producing electric power, diesel power station are used.
- Steam power stations and hydro power plants are mainly used to produce maximum portion of the electrical load demands. But for steam power station, sufficient supply of coal and water are required
- For hydro power station, plenty source of water and big dams are required. But where all these facilities are not available, such as no easy way of coal transportation and no scope of constructing dam, there diesel plant is established.
- Diesel power plants are also popularly used as standby supply for different industries, commercial complexes, hospitals, etc. During power cut, these diesel power generators are run to fulfill required demand.

Heat Engines

- Any type of engine which derives heat energy from the combustion of the fuel or any source & converts this energy into mechanical work is heat engine
- E.C. Engines-steam engines, hot air engines, closed cycle gas turbine
- I.C. Engines- Gas engines, S.I and C.I engines.

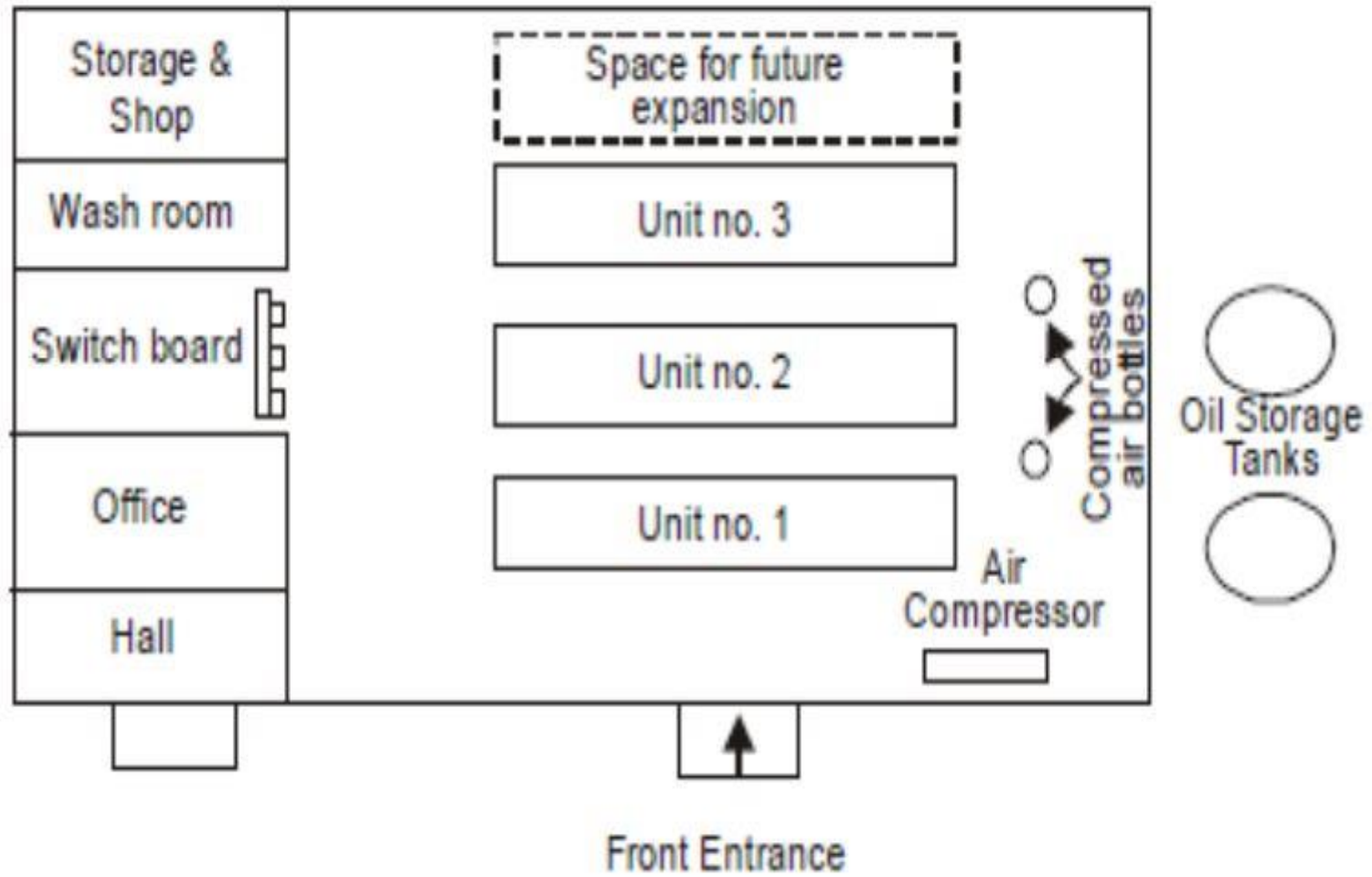
Classification

1. Acc to cycle of operation- 2, 4 stroke
2. Acc to cycle of combustion-Otto (constant volume), Diesel (constant Pressure), Dual
3. Acc to arrangement of cylinder-horizontal vertical, radial, V-Type
4. Acc to use- Stationery, Portable, Marine, Automobile and Aero engine.
5. Acc to fuel employed- Oil, Petrol, Diesel, Gas, Kerosene.
6. Acc to speed- low, medium and high
7. Acc to method of ignition- S.I, C.I.
8. Acc to method of cooling- Air, water
9. Acc to method of governing- Hit & miss, Quality, Quantity
10. Acc to valve arrangement- Overhead, L-head, T-head and Fhead.
11. Acc to no.of cylinders- single, multi



FACULTY OF ENGINEERING & TECHNOLOGY

GENERAL LAYOUT OF DIESEL POWER PLANT



Layout of Diesel Power Plant

- The most common arrangement for diesel engines is with parallel centre lines, with some room left for extension in future.
- Sufficient space around the units should be provided for repair and maintenance works.
- Air intake, filters and exhaust mufflers are located outside the building or separated from the main engine room by partition wall, but second option is not vibrate free.
- Adequate space for oil storage, office and switch board etc. should be provided close to the main engine room.
- Bulk storage of oil may be outdoor.
- The engine room should be well ventilated

Performance of the diesel engine

- The performance of the diesel engine means the power and efficiency.
- The two usual conditions under which I.C. engines are operated are:
 - (1) constant speed with variable load, and
 - (2) variable speed with variable load. The first situation is found in a.c. generator drives and the second one in automobiles, railway engines and tractors etc.
- A series of tests are carried out on the engine to determine its performance characteristics