Sample output for a diesel engine.

Select Engine Type:

1. Diesel Engine

2. Petrol Engine

Enter choice (1 or 2): 1

Selected Engine: Diesel

Enter number of load readings: 4

----- ENTER OBSERVATION DATA -----

--- Reading 1 ---

Load (W): 0

Voltage (V): 200

Current (A): 0

Speed (RPM): 1591

Time for 10cc fuel (sec): 77

Manometer h1 (mm): 28

Manometer h2 (mm): 25

Cooling water inlet temp (°C): 25

Cooling water outlet temp (°C): 35

Exhaust gas temp (°C): 31

Cooling water flow rate (kg/s): 100

--- PERFORMANCE RESULTS ---

Brake Power = 0.000 kW

Indicated Power = 0.750 kW

Mechanical Efficiency = 0.00 %

Brake Thermal Efficiency = 0.00 %

SFC = 0.000 kg/kWh

BMEP = 0.000 bar

--- HEAT BALANCE ---

Heat Input = 4.845 kW

Cooling Water Loss = 4187.000 kW

Exhaust Gas Loss = 0.040 kW

Unaccounted Loss = -4182.195 kW

--- Reading 2 ---

Load (W): 500

Voltage (V): 200

Current (A): 2.11

Speed (RPM): 1570

Time for 10cc fuel (sec): 71

Manometer h1 (mm): 34

Manometer h2 (mm): 25

Cooling water inlet temp (°C): 31

Cooling water outlet temp (°C): 36

Exhaust gas temp (°C): 169

Cooling water flow rate (kg/s): 100

--- PERFORMANCE RESULTS ---

Brake Power = 0.527 kW

Indicated Power = 1.277 kW

Mechanical Efficiency = 41.29 %

Brake Thermal Efficiency = 10.04 %

SFC = 0.788 kg/kWh

BMEP = 0.729 bar

--- HEAT BALANCE ---

Heat Input = 5.255 kW

Cooling Water Loss = 2093.500 kW

Exhaust Gas Loss = 1.020 kW

Unaccounted Loss = -2089.793 kW

--- Reading 3 ---

Load (W): 1000

Voltage (V): 200

Current (A): 4.14

Speed (RPM): 1590

Time for 10cc fuel (sec): 61

Manometer h1 (mm): 52

Manometer h2 (mm): 0

Cooling water inlet temp (°C): 31

Cooling water outlet temp (°C): 37

Exhaust gas temp (°C): 185

Cooling water flow rate (kg/s): 100

--- PERFORMANCE RESULTS ---

Brake Power = 1.035 kW

Indicated Power = 1.785 kW

Mechanical Efficiency = 57.98 %

Brake Thermal Efficiency = 16.92 %

SFC = 0.468 kg/kWh

BMEP = 1.413 bar

--- HEAT BALANCE ---

Heat Input = 6.116 kW

Cooling Water Loss = 2512.200 kW

Exhaust Gas Loss = 1.069 kW

Unaccounted Loss = -2508.187 kW

--- Reading 4 ---

Load (W): 1500

Voltage (V): 200

Current (A): 6.23

Speed (RPM): 1551

Time for 10cc fuel (sec): 53

Manometer h1 (mm): 22

Manometer h2 (mm): 24

Cooling water inlet temp (°C): 31

Cooling water outlet temp (°C): 36

Exhaust gas temp (°C): 204

Cooling water flow rate (kg/s): 100

--- PERFORMANCE RESULTS ---

Brake Power = 1.558 kW

Indicated Power = 2.308 kW

Mechanical Efficiency = 67.50 %

Brake Thermal Efficiency = 22.12 %

SFC = 0.358 kg/kWh

BMEP = 2.179 bar

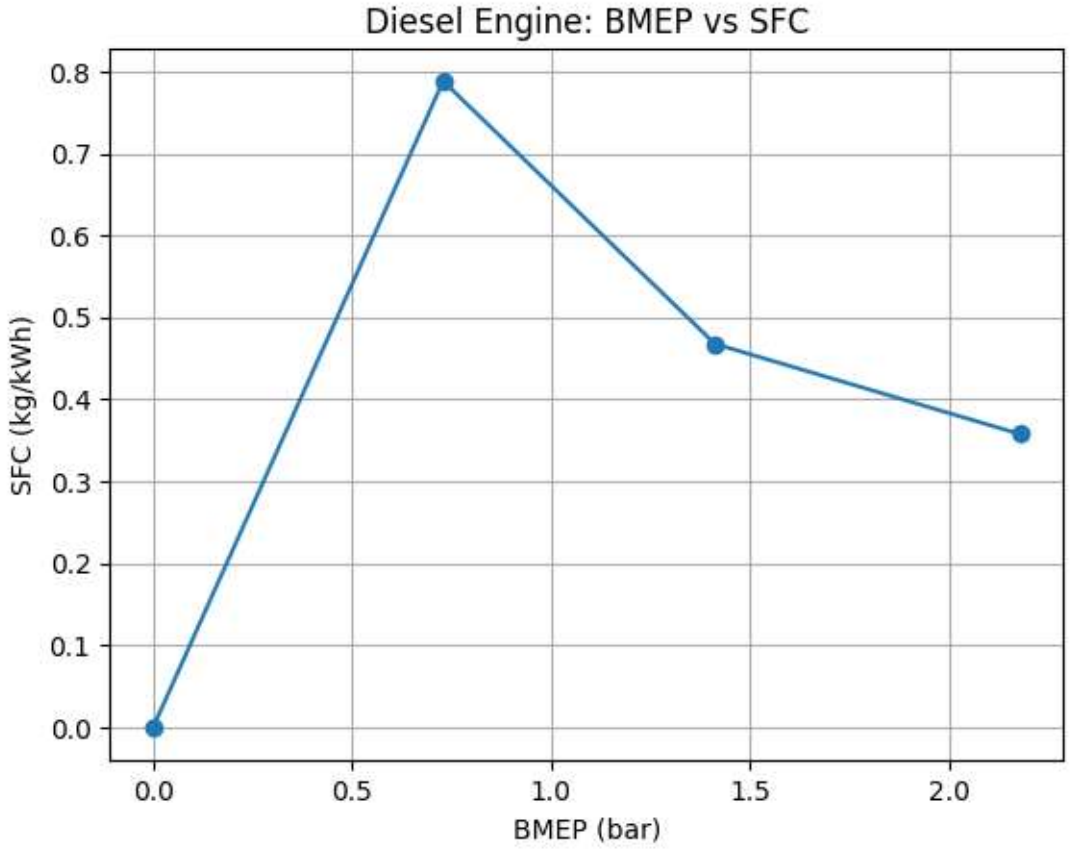
--- HEAT BALANCE ---

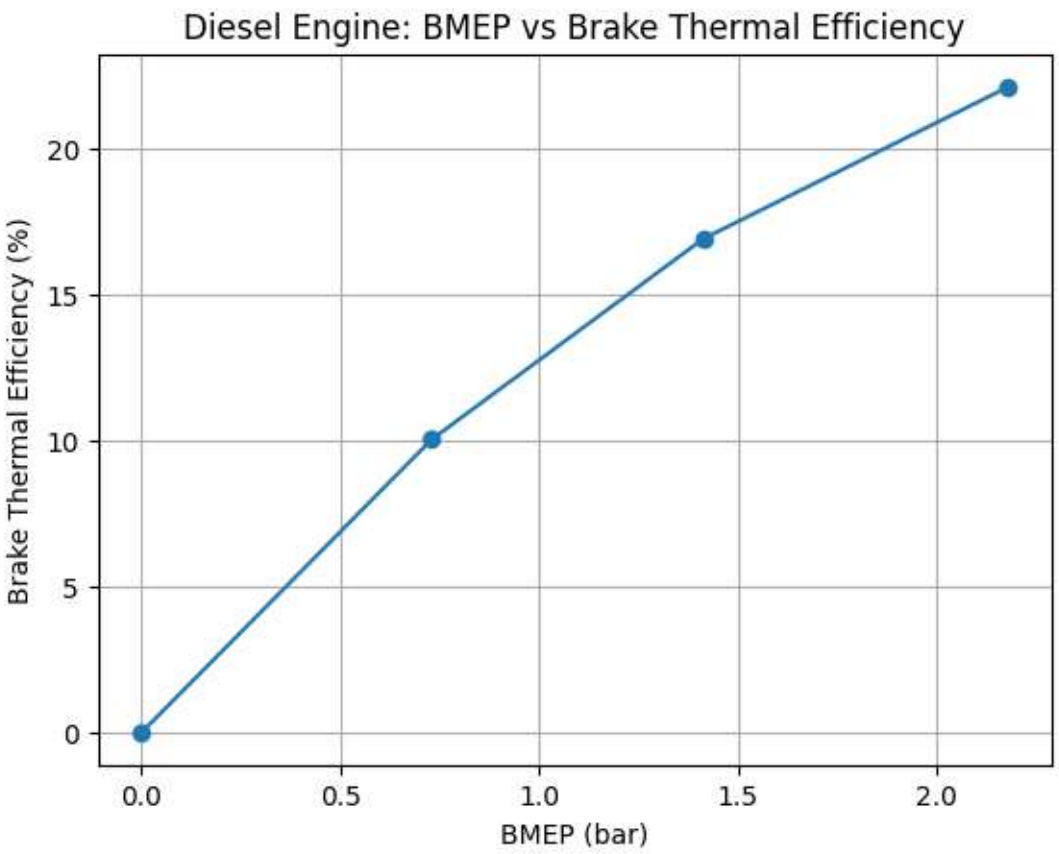
Heat Input = 7.040 kW

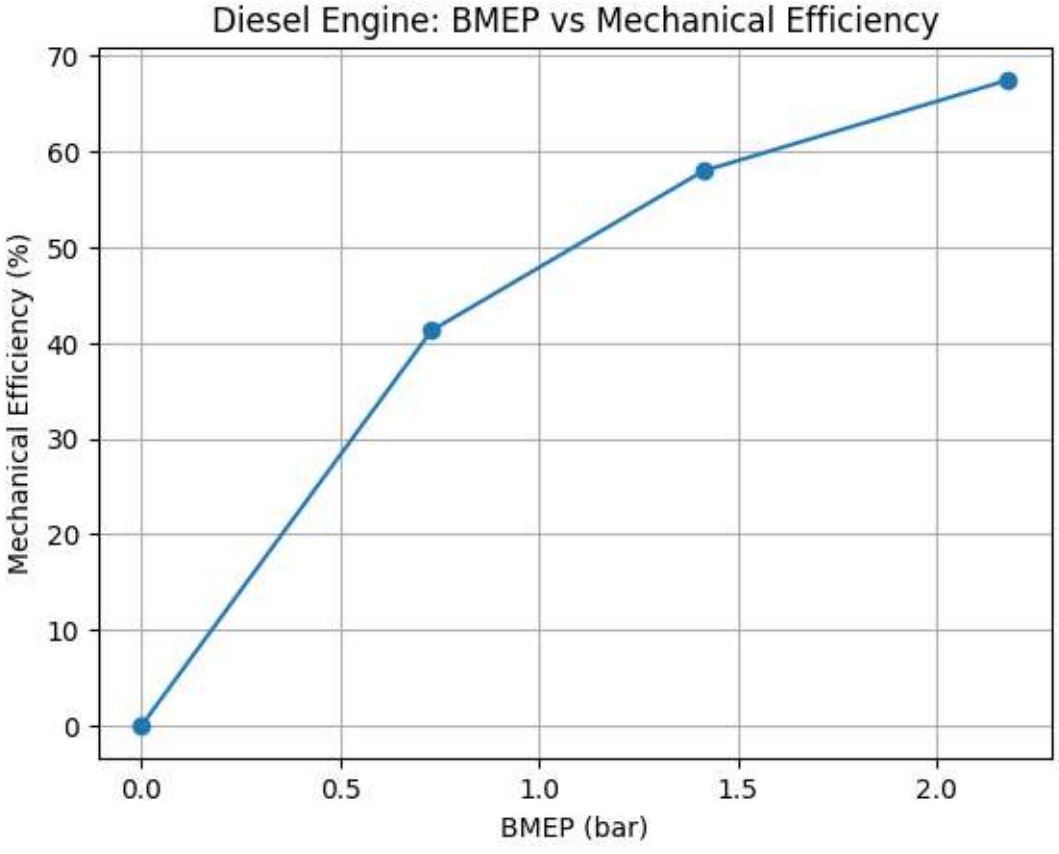
Cooling Water Loss = 2093.500 kW

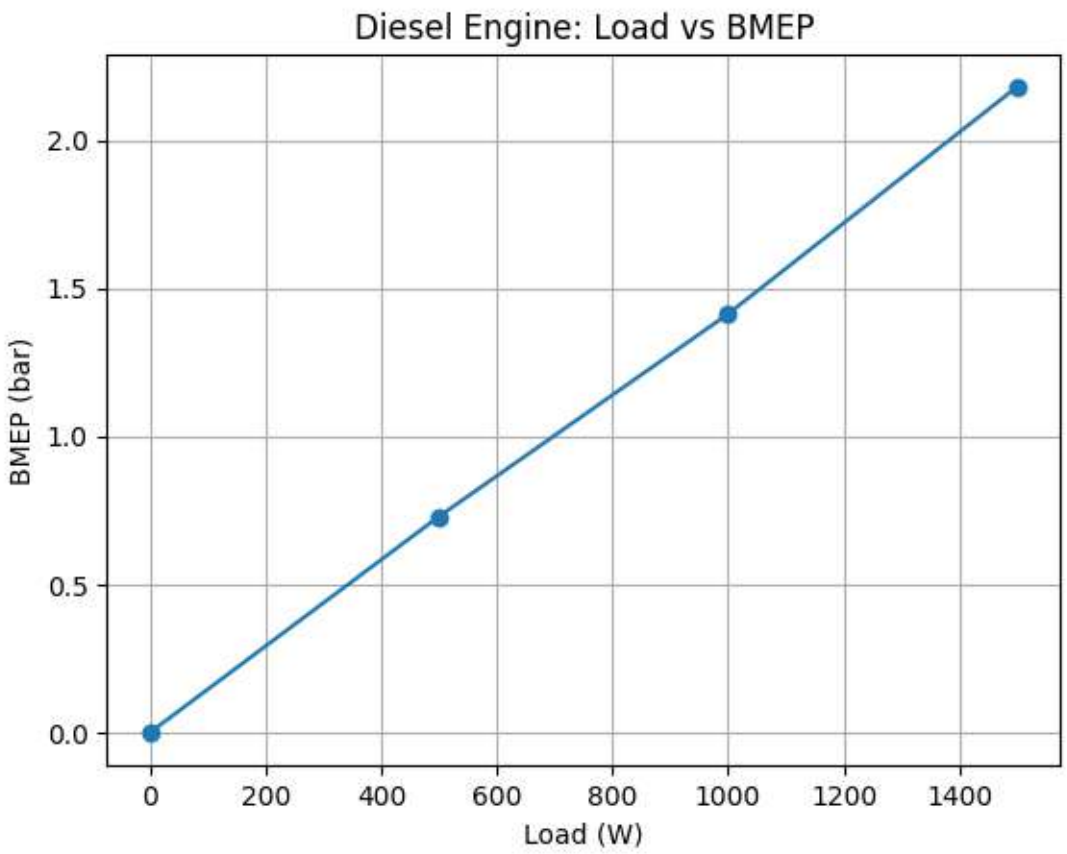
Exhaust Gas Loss = 1.130 kW

Unaccounted Loss = -2089.147 kW




Diesel Engine: BMEP vs Brake Thermal Efficiency
Brake Thermal Efficiency (%)
0
5
10
15
20
0.0
0.5
1.0
1.5
2.0
BMEP (bar)


Diesel Engine: BMEP vs Mechanical Efficiency
Mechanical Efficiency (%)
0
10
20
30
40
50
60
70
0.0
0.5
1.0
1.5
2.0
BMEP (bar)


Diesel Engine: Load vs BMEP
BMEP (bar)
Load (W)
0.0
0.5
1.0
1.5
2.0
0
200
400
600
800
1000
1200
1400