Michigan Tech
MEEM/EE 4295: Introduction to Propulsion Systems for Hybrid Electric Drive Vehicles

Topics: IC Engine Sizing

Typical values for naturally aspirated, Spark Ignition, IC Engines (from Heywood, Internal Combustion Engine Fundamentals)

$850 \leq bmep \leq 1050$ kPa

Engine speed ≈3,000 rpm at peak (max) torque

At maximum rated power, *bmep*≈85-90% of *bmep* at peak torque.

Typical values for turbocharged, SI, IC Engines

$1250 \leq bmep \leq 1700$ kPa

At maximum rated power

$900 \leq bmep \leq 1400$ kPa

Now for the naturally aspirated, four stroke, Compression Ignition, IC Engines (diesels)

$700 \leq bmep \leq 900$ kPa

At maximum rated power, use a reduced *bmep*≈700 Kpa

Remember for all of the basics, $\bar{S}p = 2LN$ and N is the rotational speed of the crank shaft in rev/sec. $\bar{S}p$ is the mean speed of the piston.