

Course outline

How does an NPTEL online course work?

Module 1 - Overview of Electric Vehicles in India

Module 2 - Vehicle Dynamics

Module 2 and 3 - Vehicle Dynamics and EV Subsystems

Module 4 - Storage for EVs

Module 4 - Storage for EVs (contd)

Module 5 - Fundamentals of battery pack design

Module 5 and 6 - Battery Pack Design, Motors and Controllers

Lecture 46 - BMS Design of Electric Vehicle - Part 1

Lecture 47 - BMS Design of Electric Vehicle - Part 2

Lecture 48 - BMS Design of Electric Vehicle - Part 3

Lecture 49 - BMS Design and Embedded System - Part 4

Lecture 50 - BMS Design and Embedded System - Part 5

Lecture 51 - Cell Testing and Characterization - Part 1

Lecture 52 - Cell Testing and Characterization - Part 2

Lecture 53 - EV Motors and Controllers - Vehicle Dynamics - Part 1

Lecture 54 - EV Motors and Controllers - Vehicle Dynamics - Part 2

Lecture 55 - EV Motors and Controllers - Understanding Flow - Part 1

Lecture 56 - EV Motors and Controllers - Understanding Flow - Part 2

Lecture 57 - Power and Efficiency

Quiz: Week 7: Assignment 1

Quiz: Week 7: Assignment 2

Quiz: Week 7: Assignment 3

Week 7 - Lecture notes

Week 7 - Feedback form: Electric Vehicles and Renewable Energy

Week 7: Solutions

Module 6 - EV Motors and Controllers

Module 7&8 - Battery Charging and Swapping, Analytics

Module 9: Renewable Energy - Introduction

Module 10: Renewable Energy - Solar and Wind Energy

Lecture 55 - EV Motors and Controllers - Understanding Flow - Part 1

Lecture 56 - EV Motors and Controllers - Understanding Flow - Part 2

Lecture 57 - Power and Efficiency

Quiz: Week 7: Assignment 1

Quiz: Week 7: Assignment 2

Quiz: Week 7: Assignment 3

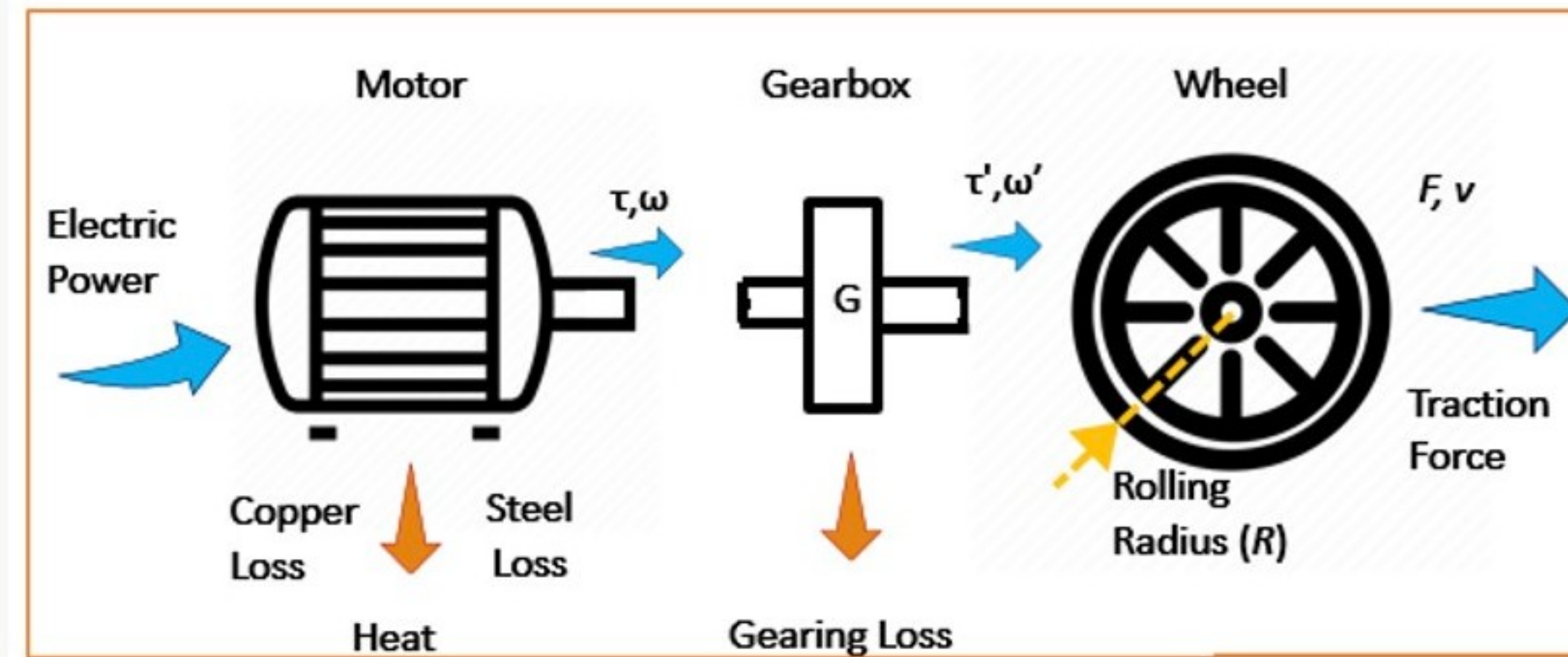
Week 7: Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-09-15, 23:59 IST.

As per our records you have not submitted this assignment.

A motor delivers 5kW at 3500 rpm. Its efficiency is 90%. Half the losses are due to steel, the rest are due to copper. It is coupled to a constant load. Assume steel loss is proportional to ω^2 . Neglect all other losses.



1) How much power does the motor consume? (round-off to nearest whole number)

1 point

- 5556 W
 5500 W
 5000 W
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
5556 W

2) How much heat does it generate? (round-off to nearest whole number)

1 point

- 500 W
 556 W
 350 W
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
556 W

3) When speed is reduced to 1000 rpm, what is the efficiency of the motor? (round-off to nearest whole number)

1 point

- 26%
 94%
 83%
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
83%

4) The motor running at 3500 rpm is coupled to a gearbox (ratio 10, efficiency 80%). The output torque from the gearbox is (round-off to nearest whole number)

1 point

- 109 Nm
 11 Nm
 136 Nm
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
109 Nm

5) The motor speed is maintained at 3500 rpm and the output shaft of the gearbox is coupled to a vehicle whose wheel is of radius 0.3m. The speed of the vehicle is

1 point

- 11 Kmph
 40 Kmph
 20 Kmph
 None of the above

3) When speed is reduced to 1000 rpm, what is the efficiency of the motor? (round-off to nearest whole number)

1 point

- 26%
 94%
 83%
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
83%