

MIDDLE EAST TECHNICAL UNIVERSITY

Electrical & Electronics Engineering

Simulation Project #2

EE 463

Huzeyfe Hintoğlu – 2093920

Enes Ayaz –



Introduction

In this project, we are asked to design and simulate

Q1) Single Phase Diode rectifier is built for Turkish Grid (400Vl-l and 50 Hz) system. Since single phase diode rectifiers are connected to line to neutral, 230√2 ≈ 325Vpeak is applied to the system.

Figure 1: Single Phase Diode Rectifier with RLOAD = 100 Ω.

As seen from Fig.1, 4 diodes are used with load resistance 100Ω. At first, I was having trouble with simulation in Simulink because I did not add ‘powergui’ GUI into the simulation subblock. Powergui is used for simulating any Simulink model containing Simscape™ Electrical™ Specialized Power Systems blocks. It stores the equivalent Simulink circuit that represents the state-space equations of the model.

Q2) DC Motor Drive

a.

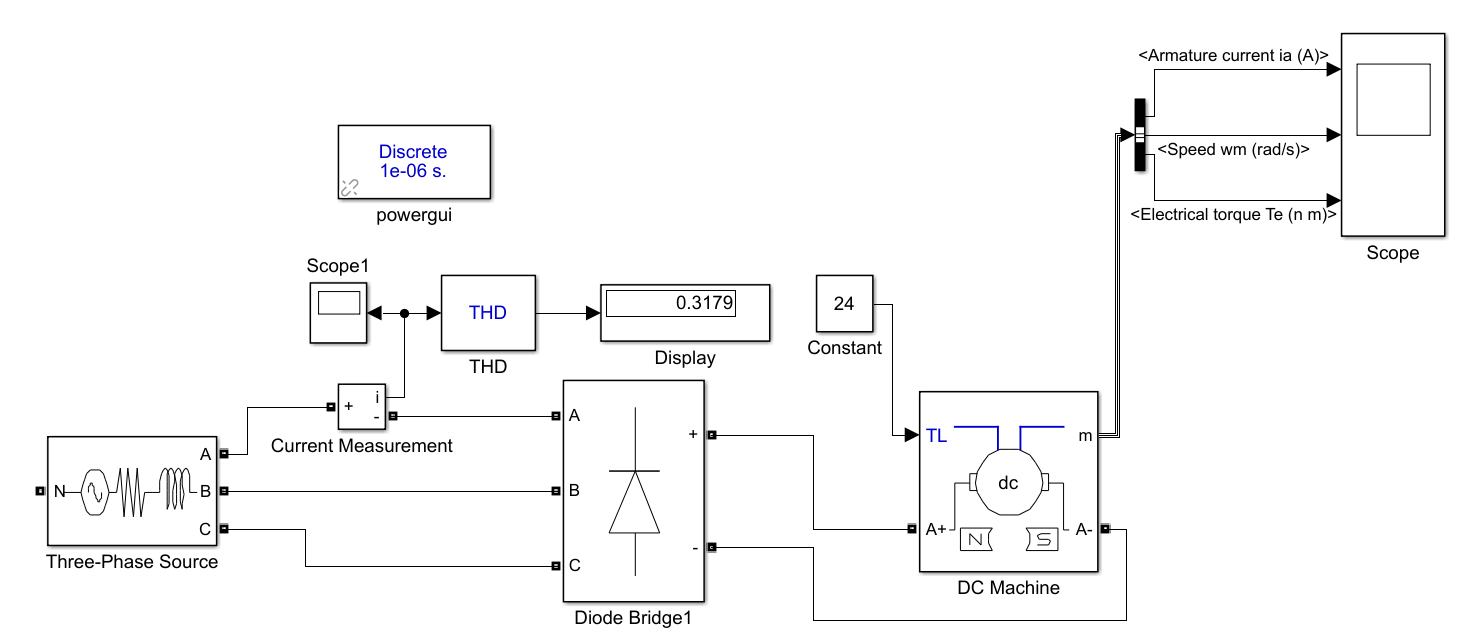


Figure : Circuit simulated DC motor drive

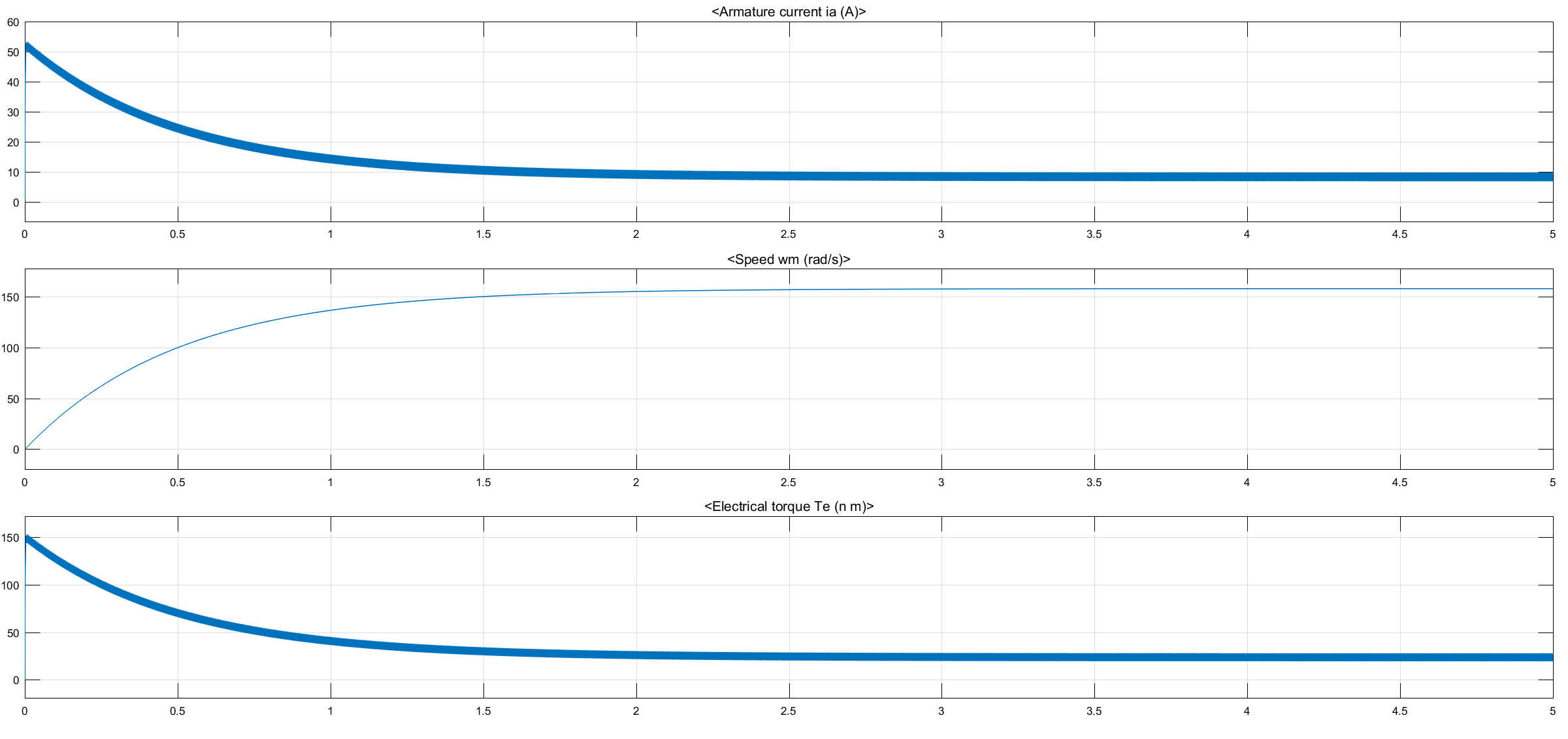


Figure : Armature Current, Speed and Electrical Torque waveforms

b.

(1)

From equation (1),

Q3)

References

[1] *Bridge Rectifier Ripple Voltage*. Retrieved from <https://www.electronics-tutorials.ws/diode/diode_6.html>

[2] Mohan, N., Undeland, T. M., & Robbins, W. P. (2002). *Power electronics: Converters, applications, and design*. New York: John Wiley.