**ELEC-E8405**

**Electric Drives**

**Assignment 2**

**Modelling and Simulation of DC Motor Drive**

**By**

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**Simulated DC Motor Model:**

DC Motor Model

Description automatically generated

A diagram of a machine

Description automatically generated

**Testing the simulated DC Motor Model**:

A screen shot of a graph

Description automatically generated

1. **Simulate the sequence corresponding to Figure 7. Modify the plotting script so that the per-unit current and the per-unit speed are plotted (use their rated values as base values and do not normalize time). Show this result in your report. Remember to change the axis labels. Explain why there is a very large peak in the current after the voltage step is applied**.

Ans:

p.u. plots of current and voltage:

A graph on a white surface

Description automatically generated

1. **Using the analytical motor model, calculate the values for the current and the rotor speed in the steady state, when the voltage and the load torque . Compare these values to your simulation results.**

Ans:

Simulation Results:

A diagram of a machine

Description automatically generated

1. **Limit the rising rate of the voltage to 120 V/0.1 s using the Rate Limiter block. Place this block between the voltage step and the motor model. Simulate the model and show the results in your report. Briefly comment on the current and speed responses.**

**Ans:**

Simulation Results:

A graph with blue lines

Description automatically generated

1. **Augment your simulation model with unipolar PWM and converter models. Simulate the model and show the results in your report. Briefly comment on differences compared to the previous simulation, where an ideal voltage source was assumed.**