

EXPO 2019

BACKGROUND

In order to meet the needs of different experiments, power supply is provided in the electric power laboratory. After rectifying the inverting the original power, the voltage and frequency are more stable than the traditional power generation system, the output waveform is clean, the harmonic content is less, and speed is insensitive..

GOALS

The goal of project is to design a variable frequency power generation system that can provide power for various experiments within the power lab.

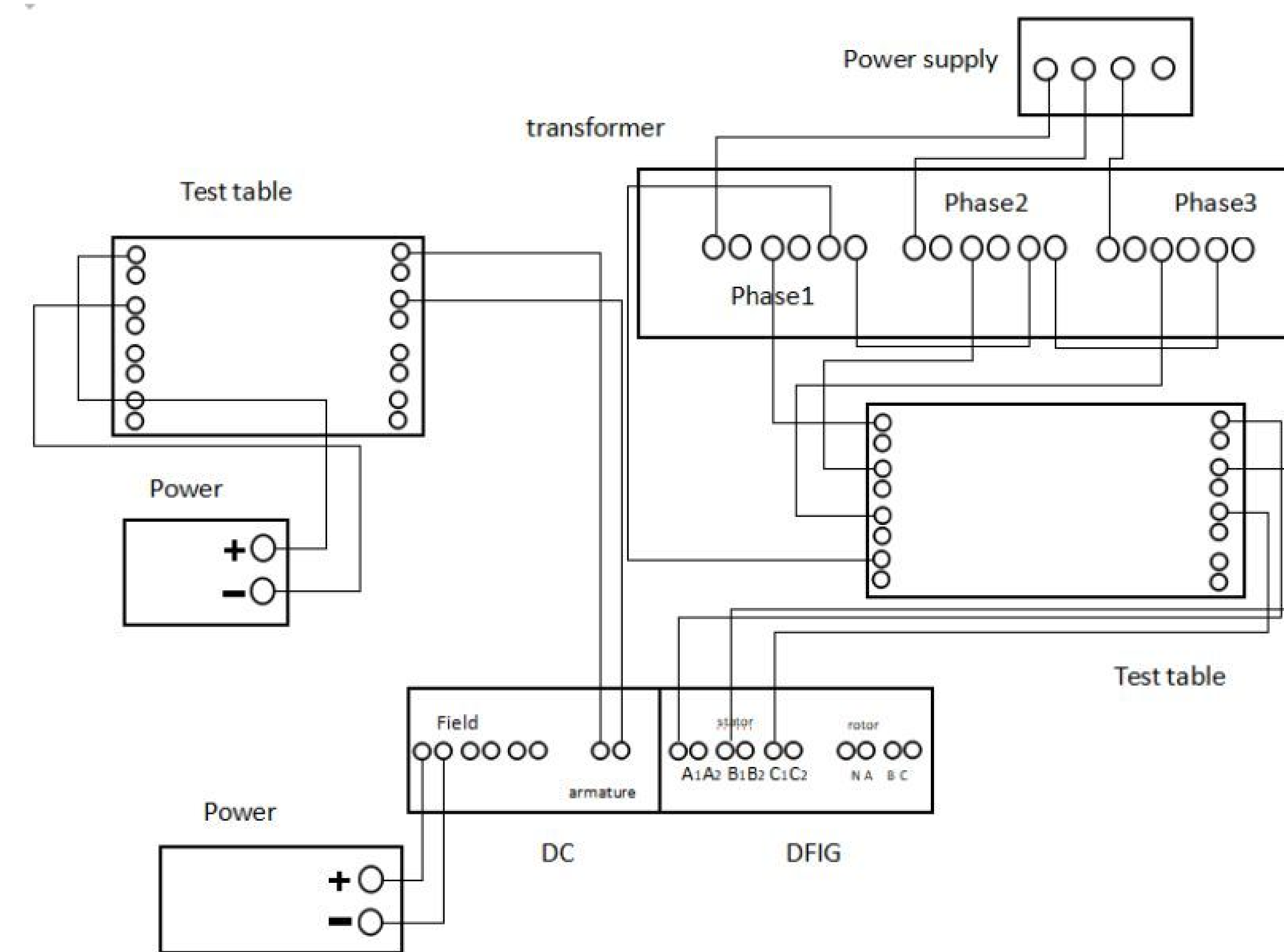
APPARATUS

- Test Tables
- DC machine
- DC Power Supply
- DFIG
- Phase Variac
- Tachometer
- Multimeters
- Load Bank

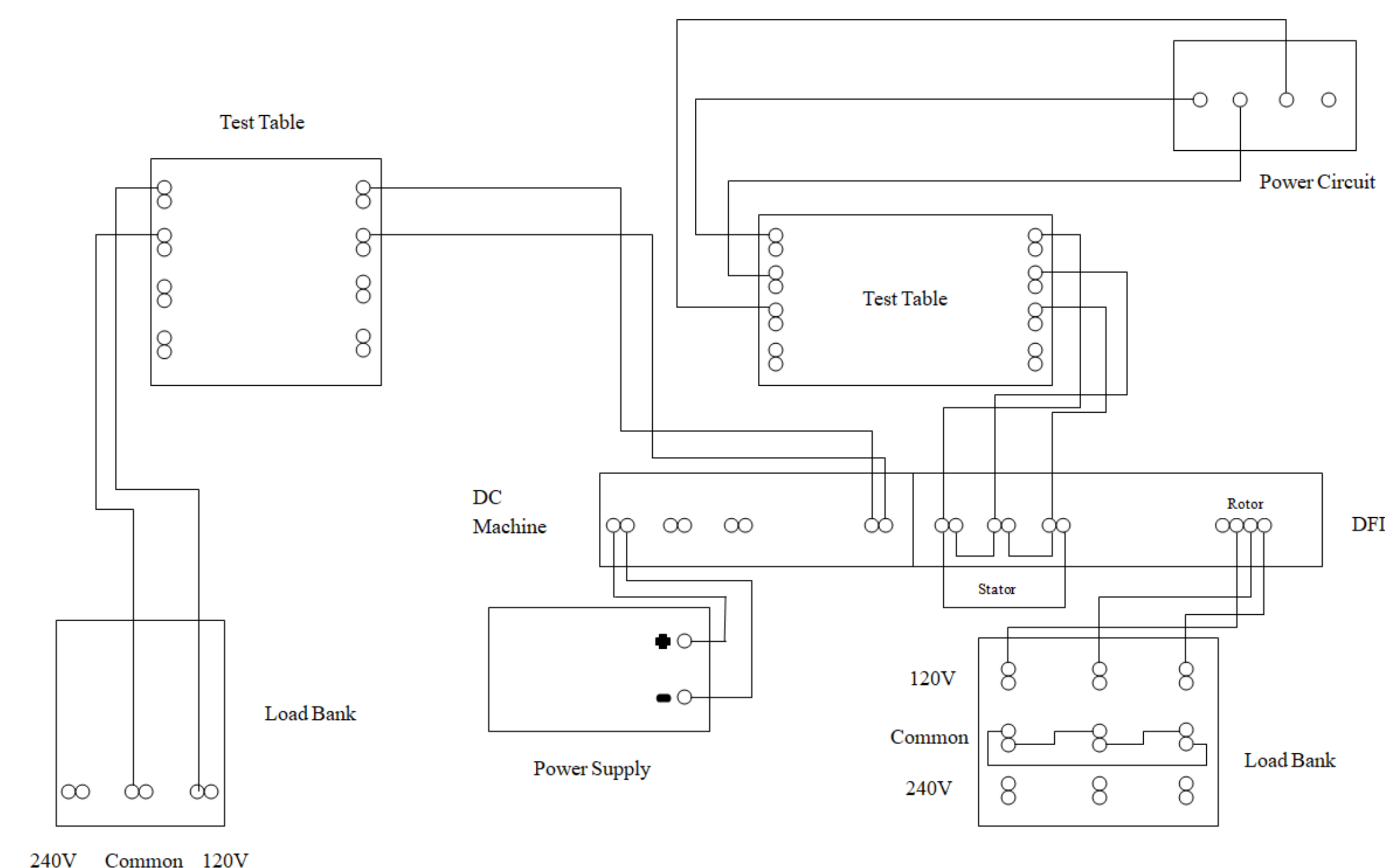
POWER LAB MOTOR DESIGN AND EXPERIMENT

EXPERIMENT I:DFIG AND DC MACHINE

$W_s - W_r = W_m$



EXPERIMENT II:ADD LOAD



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DATA I

Fs	RPM	Stator(60Hz)	rotor
45.6	1370	60	14.4
50.2	1506	60	9.8
54.7	1640	60	5.3
57.9	1737	60	0

DATA II

Current	Frequency (rotor)	Speed
-2.15	5.6	1630
-2.006	9.7	1509
-2.099	7.1	1587
-2.18	4.8	1656
-2.058	8.2	1555

CONCLUSION

This experiment is mainly used for experiments with DC and DFIG, and the knowledge learned from ECE420 is needed for experiments. The two experiments measured the relationship between speed and frequency.