

2018 SCADA Control Team

1. **Team name:** SCADA Control Team

2. **Team numbers:**

Dr. Brian Johnson(client/sponsor)

Hussain Beleed(TA)

Kevin King(team number)

Hui Ma(team number)

Xiang Chen(team number)

Ziang Xu(team number)

3. **Objective Statement:** We have a whole system called “SCADA”, including a Generator, Motor and a Power system basically. Here are the tablets of them.

<u>Data Plate of Electromagnetic Drive</u>				
R.P.M	16/0/100 REGULAR SPEED RANGE	TYPE	ACM-256-90	
MIN. R.P.M	0 WITH CONT FULL TORQUE	SERIAL	1567	
		PRO	52005	
<u>Coupling</u>				
VOLTS D.C	110	AMPS D.C	1.61	
	10	DUTY	COUTINUOUS	
CYCLES	60	50	VOLTS	220/440
R.P.M	1760	PHASE	3	
AMPS.	27/13.5	NEMA	B	
°C RISE	40	50	FARME	256
	1.25	1.0	STYLE	ABFL
220 VOLT MOTORS MAY BE USED ON 208 VOLTS-AMPS AT 208 VOLTS				

Data Plate of Synchronous Generator			
FRAME	526U	TYPE	GP
KVA	5	STYLE	23 5448'
PHASE	3	EXC AMP	71/1.45
%PF	60		
65 CYCLES 50 °C	RISE CONT		50 °C 50 CYCLES
90	VOLTS		135
32.1	AMP		21.4
1950	RPM		1500

4. Design Goals:

- (1) Learning the principle and operation of Synchronous motor generator and SACADA Control system.
- (2) Using PC software (which is little relative to the Programmable Logic Controller) to control the rotation speed of the generator.
- (3) Able to adjust speed and frequency of the motor, and show the rotate frequency of the Synchronous motor in the scope successfully.

5. Estimated budget:

Capstone Project Budget Template - Summer/Fall										
Project:										
Last Updated 9/1/2018										
Expense Items	Year								Item Total	
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr		
Equipment/Tools:										\$ -
Travel:										\$ -
Supplies / Parts / Services:										
wires	\$ 300									\$ -
potentiometer	\$ 40									\$ 40
microcontroller	\$ 80									\$ 80
poster								\$ 200		\$ 200
meeting notebook	\$ 30									\$ 30
										\$ -
Shop Usage (est. Hrs):										Hours
										0
										#REF!
										Graduate Student Support
										Shop Overhead
										University Overhead
										\$ -
										\$ -
										\$ 350
										Totals
										\$ 18
										\$ 368

Swenson, Matthew (swenson@uidaho.edu):
 This is the amount of budget remaining. If this number is negative, the project is OVER budget.

6. Questions in the interview:

Q1: How much is the budget and how could we use?

A1: We have \$2300 and we need save about \$200 money for making poster.

Q2: Where and how can we get the key for lab?

A2: We can get key at EC office and borrow from it.

Q3: What is the frequency of the meeting? Is there a exact time or place for the meeting?

A3: At least Once a week. Also It depends on our schedule and the place would always be the lab.

Q4: Does the equipment have a protection?

A4: Yes, all equipment would be safe with the protection. For example, the fuse protection and improve the safety of the electrical wire of the equipment.

Q5: What should we do if we have a emergency? Who should we contact first?

A5: Calculating the equation correctly, connecting the wires correctly, reviewing the answers are the important steps before doing the lab. If the emergency happen, turning off the power firstly on time, then we can get help from professor Laze.

Q6: Do we have human insurance if something goes bad?

A6: Yes, because of the high electrical current and the power transmit. In case of the emergency happens, the insurance included in the tuition and we have paid for that.

Q7: What we use for logbook?

A7: At the end of the project, we would have a exhibition, so we use some images to show our final achievements by logbook and simulation connect from the MATHCAD.

7. Additional information:

The steps of turn on/off the whole system:

- Make sure all breakers are off before getting the power (Circuit Breaker Control in green means turn off)
- Make sure the circuit is right and everything is in good condition.
- Get keys of two boxes, then unlock.
- Pull up the following three switches in red circles.



- Turn the power system on (Push the DC voltage switch to right and pull up four power system switches)
- Use the lights to test if there is something wrong in the circuit.
- Use the "Speed" and "Voltage" buttons to control "Cycles" and "Synchroscope" (Following pictures in red circles)



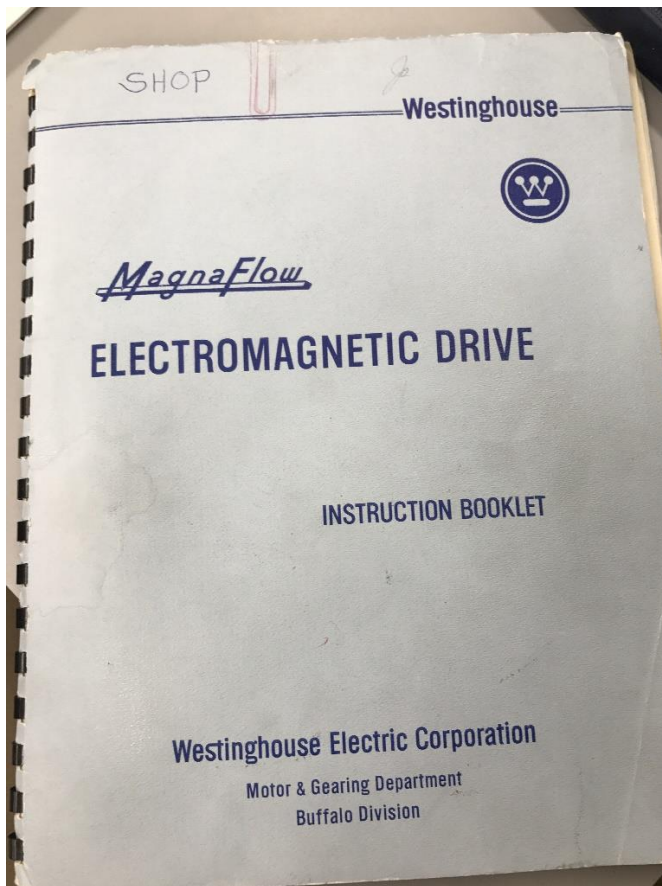
- Turn all the breakers off (In red light)
- Turn off four power switches first
- After the motor stop, then push the DC voltage switch to left and pull down the switches of boxes in following picture. At last, lock the boxes.



The control of impedences.



My client and teammates are learning the basic knowledge of the whole system seriously.



The book "Electromagnetic Drive" is an instruction book for us to know some information of Motor and Gearing Department.