

DRAFT - IFEC 2019 Evaluation Guidelines

Madison, WI, USA

April 29, 2019

1 TEST SCHEDULE

Testing will occur over 3 days.

	Test Description	Allotted Time	
		Per Team	Points
Day 1	Elevator Pitch	10min	10
	Functional Tests a. Cable Pull b. Insulation Resistance c. Basic Operation d. Free Acceleration	20min	15
Day 2	Performance Tests e. Efficiency Map f. Hill Climb	45min	50
Day 3	Field Test	60min	25

1.1 TEAM QUEUE ORDER

The Day 1 queue order for Functional Tests evaluation will be randomly assigned and announced during the introduction. The queue order on day 2 will be in descending point order, with the highest scoring team first. The queue order on day 3 will be in ascending point order, with the highest scoring team last.

It is the responsibility of each team to monitor their place in the test queue and have their hardware ready when they are called. Teams who are not ready and miss their time slot will be penalized 1 point for each bypassed time slot. Exceeding the allotted test time will be considered a second attempt and will be penalized accordingly.

1.2 TEST PARTICIPATION AND OBSERVATION

Only undergraduate team members are permitted to execute the testing. Faculty or graduate student advisors are permitted to observe. Only the field test will be open for public observation.

2 POINT SYSTEM

Each test is assigned points based on the following table.

	Points	Point System	2 nd Attempt Penalty
<i>Spec Sheet & Pitch</i>	5	Graded	N/A
<i>Elevator Pitch</i>	5	Graded	N/A
a. <i>Cable Pull</i>	2	Pass/Fail	1
b. <i>Insulation Resistance</i>	2	Pass/Fail	1
c. <i>Basic Operation</i>	2	Pass/Fail	1
d. <i>Free Acceleration</i>	9	Pass/Fail	2
e. <i>Efficiency Map</i>	25	Ranked	5
f. <i>Hill Climb</i>	25	Ranked	5
g. <i>Field Test</i>	25	Ranked	N/A
<i>Total</i>	100		

2.1 TEST ATTEMPTS

A second test attempt can be requested for any individual test (a. through f.) excluding the Field Test. Additional attempts will occur after all teams have completed their first attempts. Each additional attempt will be penalized according to the table above.

2.2 POINT DISTRIBUTION

Points will be assigned to results of each test as follows:

2.2.1 Spec Sheet

Each team must create a 2-page spec sheet for their controller. The spec sheet must be no longer than 2 pages and include the following sections: Features, Specifications, Description, Electrical Rating, Connection Diagram and Mechanical Drawing. See example [kbmg-212d_dat](https://www.galco.com/techdoc/kb/kbmg-212d_dat.pdf) (https://www.galco.com/techdoc/kb/kbmg-212d_dat.pdf)

Grade	Points
A	5
AB	4
B	3
BC	2
C	1
D	0

2.2.2 Elevator Pitch

Each team must present a 5min “[elevator pitch](#)” which will be judged based on the TBD rubric. No projector or other presentation equipment will be provided.

Grade	Points
A	5
AB	4
B	3
BC	2
C	1
D	0

2.2.3 a. Cable Pull

This test will be evaluated pass/fail.

2.2.4 b. Insulation Resistance

This test will be evaluated pass/fail.

2.2.5 c. Basic Operation

This test will be evaluated pass/fail.

2.2.6 d. Free Acceleration

This test will be evaluated pass/fail. Must complete accel up to max speed and trigger overspeed fault. No other faults maybe triggered during this event.

2.2.7 e. Efficiency Map

Performance will be ranked by the average electrical efficiency (controller input DC to DC rectified dyne output) measured at all 12 set points. Points will be assigned according to the following table:

	Rank	Points
	1	25
	2	20
Most	3	16
Efficient	4	14
↓	5	12
Least	6	10
Efficient	7	8
	8	6
	9	4
	10	2

2.2.8 f. Hill Climb

Performance will be ranked by the highest average speed over 30 sec. Points will be assigned according to the following table:

	Rank	Points
	1	25
Highest	2	20
Average	3	16
Speed	4	14
↓	5	12
Lowest	6	10
Average	7	8
Speed	8	6
	9	4
	10	2

2.2.9 g. Field Test

The top 5 teams will be invited to compete in the field test. Performance will be ranked by elapsed time to complete the 4-person relay race. Two attempts are permitted without penalty, within the 60 min allotted test time. No additional attempts beyond the allotted test time are permitted.

Rank	Points
1	25
2	20
3	16
4	14
5	12
No Finish	0