



**2009-2010 MESA USA  
National Engineering Design Competition  
Wind Energy Challenge (WEC)  
Device Performance  
150 points**

Inspection and Performance Datasheet

MESA Center: \_\_\_\_\_

MESA School – Level (MS/HS): \_\_\_\_\_

Advisor/Teacher: \_\_\_\_\_

Student Team: \_\_\_\_\_

**Inspection**

Sole Energy Source Box Fan ONLY ..... Y / N  
 Vehicle Mass (200 grams or more)..... Y / N  
 Generator: KidWind.org – Wind Turbine Generator, SKU KWM001A..... Y / N  
 Electrical Load: Radioshack - 6-Volt Color Mini Lamps, Catalog #: 272-1098 ..... Y / N

**Performance**

**Mechanical Power**

Trial 1	Trial 2
_____ mass (grams)	_____ mass (grams)
Start: _____ Stop _____ (sec)	Start: _____ Stop _____ (sec)

**Wind-to-Vehicle**

Trial 1:	Trial 2:
_____ vehicle mass (grams)	_____ vehicle mass (grams)
Start: _____ Stop _____ (sec)	Start: _____ Stop _____ (sec)

**Electrical Power & Wind Direction (high school only)**

Trial 1:	Trial 2:
10-second measurements	10-second measurements
Position 1 Voltage: _____ (volts)	Position 1 Voltage: _____ (volts)
Position 1 Current: _____ (mA)	Position 1 Current: _____ (mA)
70-second measurements	70-second measurements
Position 2 Voltage: _____ (volts)	Position 2 Voltage: _____ (volts)
Position 2 Current: _____ (mA)	Position 2 Current: _____ (mA)



# TECHNICAL PAPER SCORING CRITERIA

2009-2010 MESA USA National Engineering Design Competition

**TEAM:**

**SCHOOL:**

**LEVEL: MS or HS**

<b>Discussion</b>	<b>Abstract</b>	<b>Introduction</b>	<b>Conclusion &amp; Recommendations</b>	<b>Written Presentation</b>
a-Physical Phenomena, b-Experiment Procedures, c-Data & Analysis, d-Tables & Charts e-Results	a-Length b-Purpose & Key Features c-Conclusions & Rec. d-Non-technical e-Informative & Interesting	a-Purpose b-Scope c-Background Information	a-Inferences & Evidence b-Further Work & Reasoning	a-Length b-Font c-Spacing d-Key Sections e-Supporting Sections f-Grammar, Spelling, etc.
Level 4 - 4 points each a. Very thorough discussion of Physics, Math and/or Engineering concepts, including advance concepts if used. b. Very complete description of experimental/testing procedures including diagrams or pictures c. Thorough description of analysis tools used d. Highly relevant tables, graphs, charts, etc. e. Very clear explanation of results w/graphics	Level 4 - 4 points each a. Length: 200-250 words b. Very clearly restates Purpose & Key Features of report c. Very clearly restates Conclusions and Recommendations of report d. Written very clearly in non-technical terms e. Engages and informs the reader	Level 4 - 4 points each a. Purpose: Very clearly states why project undertaken AND why report developed b. Scope: A very thorough description of parameters, methods, limiting factors & technical terms c. Background: Share key facts, conditions, events prior to project AND previous work on this topic	Level 4 - 4 points each a. Conclusion: Inferences follow very logically from discussion evidence No new material included b. Recommendations: Further work/best solution well identified Written in first person w/ active verbs	Level 4 - 4 points each a. Length: 5-15 pages cover & title page not included b. Font: 12, Times New Roman c. Spacing: double spaced d. All Key Sections included: Title page, Abstract, Contents, Introduction, Discussion, Conclusion, Recommendations e. All Supporting Sections included: References, Acknowledgments, Appendix f. Proper grammar, spelling and sentence structure used throughout the paper.
Level 3 - 3 points each a. Effective discussion of key concepts, including advanced concepts if used. b. Effective description of procedures including diagrams or pictures c. Good description of analysis tools d. Tables, graphs, charts, etc. useful to report e. Good explanation of results w/graphics	Level 3 - 3 points each a. Length: 150-199 or 251-300 words b. Good restatement of Purpose/Key Features c. Good restatement of Conclusions & Recommendations d. Well written, but includes some technical terms e. Modestly engages and informs reader	Level 3 - 3 points each a. Effective/complete statement of purpose b. Effective statement of scope, 1 or 2 items appear missing or overlooked c. Effective and complete background details, 1 or 2 items appear missing or overlooked	Level 3 - 3 points each a. Conclusion: Inferences follow loosely from discussion evidence No new material included b. Recommendations: Further work/best solution not well identified	Level 3 - 3 points each a. Length: Slightly over or under length b. Font: Some inconsistency throughout c. Spacing: Some inconsistency throughout d. 1 Key Section not identified or missing e. 1 Supporting Section not identified or missing f. Some errors in grammar, spelling, etc.
Level 2 - 2 points each a. Limited discussion of key concepts, including advanced concepts if used. b. Limited description of procedures, with few diagrams or pictures c. Analysis tools poorly described or not used d. Graphics not well used to support report e. Very little discussion of results, no graphics	Level 2 - 2 points each a. Length: 100-149 or 301-350 words b. Poor restatement of Purpose or Key Features c. Poor restatement of Conclusion or Recommendations d. Many technical terms e. Uninteresting to reader	Level 2 - 2 points each a. Incomplete statement of purpose for project and report b. Incomplete statement of scope, multiple items missing or overlooked c. Limited background information included	Level 2 - 2 points each a. Conclusion: Inferences follow poorly from discussion, evidence not clear Some new material included b. Recommendations: Further work/best solution not well identified	Level 2 - 2 points each a. Length: too short/long b. Font: very inconsistent throughout c. Spacing: very inconsistent throughout d. 2-3 Key Sections not identified or missing e. 2 Supporting Sections not identified or missing f. Several errors in grammar, spelling, etc.
Level 1 - 1 point each a. Little or no discussion of key concepts, including advanced concepts if used. b. Little or no description procedures c. Data analysis not included d. Graphics do not support report e. No discussion of finding/results	Level 1 - 1 point each a. Length: <100 or >350 words b. Purpose or Key Features not included c. Conclusion or Recommendations not included d. Unclear to the reader e. Does not engage reader	Level 1 - 1 point each a. Very poor or no statement of purpose for project b. Very poor or no statement of scope, very little information included c. Very poor or no background provided, very little or no information provided	Level 1 - 1 point each a. Conclusion: Inferences do not follow from discussion or evidence present new material included b. Recommendations: Further work/best solution not identified	Level 1 - 1 point each a. Length: <5 pages or >15 page b. Font: incorrect throughout or not typed c. Spacing: incorrect throughout d. Most Key Sections missing e. Most Supporting Sections missing f. Poor attention to grammar, spelling, etc
<b>Points</b> <span style="float: right;"><b>Score</b></span> <b>16/20 x 40=32</b>	<b>Points</b> <span style="float: right;"><b>Score</b></span> <b>/20 x 20=</b>	<b>Points</b> <span style="float: right;"><b>Score</b></span> <b>/12 x 15=</b>	<b>Points</b> <span style="float: right;"><b>Score</b></span> <b>/8 x 15=</b>	<b>Points</b> <span style="float: right;"><b>Score</b></span> <b>/24 x 10=</b>
<b>Judge</b>			<b>Total</b>	
<b>Judge Feedback:</b>				





# ORAL PRESENTATION SCORING CRITERIA

2009-2010 MESA USA National Engineering Design Competition

TEAM:

SCHOOL:

LEVEL: MS or HS

<b>Technical Content</b> a-Physical Phenomena      b-Process & Procedures c-Data and Explanations      d-Observations e-Conclusions	<b>Overall Presentation</b> a-Introduction      b-Topic c-Flow      d-Content e-Engagement of the Audience	<b>Oral &amp; Visual Performance</b> a-Student Voice      b-Presence c-Eye Contact      d-Collaboration e-Visual Material	<b>Question Responses</b> a-Accurate & Specific      b-Depth of Knowledge
Level 4 - 4 points each a. Several examples of physical phenomena of topic well explained & understood, including advanced concepts if used b. Process & Procedures of development well described c. Data explanations very clear and tied to topic d. Observations follow direct from experiments, testing or research e. Conclusions well thought out and accurate	Level 4 - 4 points each a. Creative introduction of team members & responsibilities b. Very clear description of presentation topic c. Flow – moved very smoothly from point-to-point d. Content – stayed very focused on the topic e. Unique activities & discussion captured and maintained audience & judge attention very well	Level 4 - 4 points each a. ALL voices heard and understood throughout room b. Student demeanor & appearance well suited for event c. Eye contact is distributed throughout room d. ALL student share equally in presentation e. ALL visual aids contribute audience understanding	Level 4 - 4 points each a. ALL questions answered specifically and accurately b. ALL responses show thorough knowledge of project
Level 3 - 3 points each a. Some examples of physical phenomena of topic explained & understood, including advanced concepts if used b. Some of the design process well described c. Data presented/explained well, not related to topic d. Observations follow from experiences, but not clearly from experiments, testing or research e. Conclusions lack detail or include a misconception	Level 3 - 3 points each a. Includes a prepared introduction of team members b. Includes effective topic introduction c. Flow – 1 or 2 poor transitions between points d. Content – strays little from topic unnecessarily e. Activities and discussion engage audience & judges	Level 3 - 3 points each a. Few situations with poor voice projection b. 1 or 2 lapses in student demeanor & appearance c. Eye contact is distributed throughout room d. Some lapses in student collaboration & teamwork e. Most visual aids contribute effectively	Level 3 – 3 points each a. 1 or 2 responses inaccurate or lack detail b. Some responses lack thorough knowledge of project
Level 2 - 2 points each a. Very few examples of physical phenomena of topic, including advanced concepts if used b. Very little of design process described c. Unclear data, poorly explained, not related to topic d. Observations do not follow from experiences, limited evidence of experiments, testing or research e. Conclusions unrelated to technical content or includes misconception	Level 2 - 2 points each a. Team introduction poorly done b. Presentation topic not clearly stated c. Flow – several poor transitions between points d. Content – strays unnecessarily from topic repeatedly e. Some activities do not engage audience & judges	Level 2 - 2 points each a. Repeated lapses in voice projection b. Student demeanor & appearance questionable for event c. Quality eye contact sporadic or not used by all members d. One student dominant or excluded from presentation e. Visual aids unclear or cannot be clearly seen by audience	Level 2 – 2 points each a. 3-4 responses inaccurate or lack detail b. Knowledge of all project elements limited
Level 1 - 1 point each a. No discussion of physical phenomena related to topic, including advanced concepts if used b. No discussion of design process c. No data collection or analysis presented d. No Observations made, or do not follow from activities e. No conclusions or recommendations provided	Level 1 - 1 point each a. Lacks team introduction b. Lacks description of presentation topic c. Flow – erratic, no clear point-to-point discussion d. Content – strays from specific topic e. Does not capture audience/judge attention	Level 1 - 1 point each a. Voices very difficult to hear and understand b. Appearance not appropriate for presentation c. Very poor eye contact, focused on one person or none d. Presentation dominated by one student e. Visual material very difficult to see and understand	Level 1 – 1 point each a. Fails to answer questions or ask for clarification b. Students unprepared to respond to questions
Points <span style="float: right;">Score</span> $/20 \times 40 =$	Points <span style="float: right;">Score</span> $/20 \times 30 =$	Points <span style="float: right;">Score</span> $/20 \times 20 =$	Points <span style="float: right;">Score</span> $/8 \times 10 =$
Judge	Attire 5 point deduction MESA USA event shirts required	Time 5 point deduction for over time limit	Total

### Sample Questions

- What do you think would happen if ...?
- Describe a situation when you resolved a design problem.
- Please elaborate on your description or explanation of...?
- What were the most difficult parts of the paper, performance tasks or academic display? And why?

### Judge Feedback: