



4-H ENGINEERING EXHIBITS



Judges will use the criteria outlined in this tip sheet to **evaluate any engineering project** that attempts to **solve a practical problem in a novel way—regardless of exhibit class.**

For example:

If the purpose of the project is to design and build a new feed system, the project may be a Woodworking project, while a project to design and build a backyard wind turbine may be an Environment & Sustainability project, but they are both attempts at engineering and should be evaluated using this Tip Sheet. It is the engineering design process that is being evaluated.

If the exhibit is intended to inform its audience about an engineering topic—not solve a problem—use the **Poster Exhibits Tip Sheet** to evaluate it for that class.

What's the judge looking for?

For all exhibits, be prepared to explain:

- 1) What did you plan to learn or do? (What was your exhibit goal(s)?)
- 2) What steps did you take to learn or do this? Explain what you wanted to do so it is easily understood. The judge wants to know and understand the steps you used to make your exhibit.
- 3) What were the most important things you learned?

All engineering exhibits should include the following:

- Clearly defined problem
- Identified criteria for a successful product and constraints on production (e.g. cost or materials limitations)
- A careful design or plans created before beginning construction
- Notes on the brainstorming, design, testing, redesign, etc. processes used to improve the final product
- An organized notebook or other record of the design process
- Use of appropriate materials and techniques
- Prototypes (initial attempts at creating a product that may or may not become the final product) tested and results recorded
- Final product meets stated project criteria

4-H
GROWING TOGETHER



As youth become more advanced in engineering, look for the following:

- Background research was conducted to discover how others have solved similar problems
- Multiple possible solutions were considered before selecting one to attempt
- Choices and tradeoffs between criteria and constraints (e.g. materials, cost, production, aesthetics) are explained
- Data from prototype and final product testing is organized in a useful manner
- Youth understand what further testing is needed
- Final product is workable: acceptable to users, economically feasible, and potentially reproducible
- Design offers real improvements or significant alternative to other attempts to solve this problem
- Design represents creative, innovative solution to a real problem which could help others