Warman Student Design & Build Competition

Some Judges' Tips

The following tips have been provided by Allan Wightley, General Manager - Group Technology, Warman International Ltd. Allan has acted as a judge for many years for the Warman Student Design & Build Competition. The tips are provided to assist students and academic staff and, hopefully, will result in better designs and an overall better, more competitive, competition. More importantly, is hoped that the good ideas and concepts that are developed by students will have the best chance of success with the hope of a prize. The tips are as follows and are not in any particular order:

- Carefully, **read, mark and learn the specification** that is provided - every word means something.
- Ensure that your design and model **meet the specification in full**, both the letter of the word (in the specification) and anything that should reasonably be implied. For example, if the subject was to safely transport living beings, it would not be acceptable to have them all killed when the rescue device fell to the ground in a severe way.
- Ensure the model always gives **reproducible** results - test it several times.
- Consider the **stability** of the model in all likely conditions.
- Make the model transportable, so that when it is conveyed, usually by air to Sydney, it is not **damaged in transit**.
- Make sure that the model can be **maintained** or adjusted to give optimum performance.
- Understand the **physical properties of the materials** being used (elastic bands have a habit of stretching and losing their elasticity after two or three operations).
- Have a **fall back function** in your design should part of it not function correctly during the finals or the national competition.
- **Demonstrate your inventive aspects** of the design - often an award for innovation is made even if it otherwise fails.
- Consider **first the functionality aspects** and second, **simplicity and elegance** of the design - simple designs are invariably the most successful.
- Prior to starting the design, **list all assumptions** made (surface finish, damage to the surface, etc) this will help you to ask the right questions.
- **Check the assumptions against the rules** in the specification - if not absolutely clear get written confirmation and acceptance from the organisers.
- Each group must individually examine critically the specification and the rules. **Do not rely on local campus staff to make interpretations**.
- Keep the **design concepts and features secret** until the campus competition and from other National Finalists until the practice sessions start.
- **Make sketches of the design and its elements** and the rough position of the centre of gravity and predict how the elements will behave in motion.
- Remember the judges only have the **actual performance on the day**. They have no knowledge of the history or the background of the design or what assumptions people made at a local campus level.

- Sometimes there is an award for potential for improvement, **make sure your design clearly demonstrates a potential for improvement and innovation**.
- The judges invariably are experienced design personnel and instinctively favour designs that are elegant, simple and aesthetically pleasing. Therefore take some time in preparing a **model that meets these requirements and looks well constructed**. For example, small fasteners, or adhesives, always impress more and perform consistently better than sticky tape and elastic bands.
- Many designs falter during the set up stage because enough thought hasn't gone into **simplifying or eliminating the set up stage**. This can be done by building into the design means to accurately align and/or stabilise the model before it is placed on the set up table.
- Allocate **individual team members separate tasks** which they always perform so that there is maximum efficiency during set-up and will give more reproducibility of results.
- You will receive far greater satisfaction and achieve a better learning experience if you and your team **develop most of the design concepts and make the components yourself**. Do not ask academic staff, other students, or people not connected with the University, to produce the design for you. Even if you win a prize, there will be little, if any, satisfaction and no learning experience. However, that does not preclude you having academic staff or experienced practitioners review the design and pass comment provided the work is substantially done by the students.
- For those lucky enough to attend the national final, **study the other entries**, how they approached the problem, look for shortcomings and look for good design features and methods of construction, you will learn a lot - even the judges do.
- Be **competitive** in your entire approach to the project and take the exercise seriously, but always ensure that it is fun to do.

I trust that the above tips may be useful in your project and will result in a better competition.

Regards

Allan Wightley