

Cost Event Overview

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Agenda

- Event Objectives & Overview
- Changes for 2010
- The Cost Report
 - Format
 - BOM Structure
 - Make versus Buy
 - Published Materials
 - AIR's
 - Part Numbering System & Part Names
- Addenda
- Penalties
- "Real Case"
- Do's and Don't's

Cost Event - Event Objectives

S4.1 Event Objective

- The objectives of the Cost and Manufacturing Event are:
 - a. To teach the participants that cost and budget are significant factors that must be considered in any engineering exercise.
 - b. For teams to make trade off decisions between content and cost based on the performance advantage of each part and assembly.
 - c. To gain experience with creating and maintaining a Bill of Material (BOM).
 - d. For the participants to learn and understand the principles of Design for Manufacture and Assembly, lean manufacturing and Minimum Constraint Design.

Event Overview

- Event comprised of three parts
 - Cost Report
 - Cost Report/Vehicle Review at Competition
 - “Real Case” Scenario
- Cost Report and review remain fundamentally same as previous years (up to 2009) except now all costs come from SAE Cost Tables
- Real Case scenario similar to 2010, 2011 and 2012
 - Will vary year to year
 - More information available closer to competition
 - No design work is necessary, but
- Possible Cost Audit

Cost Event Changes in 2010

- Same Rules as 2010
- Content drives Cost → Tradeoff analysis very important
- Costs the same world over
- No receipts
- All costs from tables
- Tooling costs included
- No maximum cost - accuracy is focus
- “Real Case” added
- Costs missing from tables will be added after students submit an Add Item Request (AIR) Form – now done electronically at fsaeonline.com

Scoring

- Same Scoring Method and point allocation

3.7 Scoring

The points for the Cost and Manufacturing Event will be broken down as follows:

$\frac{40 \times [(P_{\max}) / (P_{\text{your}}) - 1]}{[(P_{\max}) / P_{\min}] - 1}$	40 Points	Lowest cost - each of the participating schools will be ranked by total adjusted cost from the BOM and given 0-40 points based on the formula on the left.
	40 Points	Accuracy, Clarity & Event Day/Visual Inspection - The cars will be reviewed for part content, manufacturing feasibility and accuracy of the cost information. Supporting documentation will be assessed based on its quality, accuracy and thoroughness. The range for the score is 0-40 points.
	20 Points	Event Day/Manufacturing Processes - The teams must be prepared to discuss in detail the "real case" scenario distributed prior to the competition. The materials will include more specifics about the goal and scoring of the scenario. The range for the score is 0-20 points.
Total	100 Points	

Where:

P_{your} is the adjusted cost of your car (with penalties) in dollars.

P_{\min} is the adjusted cost of the lowest cost car in dollars.

P_{\max} is the cost of the highest cost car in dollars.

- Rephrased three categories are: **Cost, Accuracy and "Real Case"**
- The actual Cost and Cost Accuracy determine majority of points

Cost Report

MUST

- Include **EVERY** part on the car, except....
- Use the “**actual manufacturing technique used on the prototype**”
- Include **tooling** costs for processes that require it.
- Have a cover sheet
- Have a Cost Summary page, listing each section’s cost and total, vehicle cost
- Use the eight commodity report sections per Appendix C-3.
- Have tabs for each section.
- **Use the part numbering system per Appendix S-2.**

Cost Report - Cont'd

- **Include** in the Cost Report
 - **Data Acquisition systems** including display screens, sensors and wiring
 - **Preservative finishes** to “preserve the appearance or function” of a part, e.g. anodizing and paint for basic protection
- **Do NOT** include in the Cost Report
 - “Rain” tires (and wheels)
 - Extra sets of “dry” tires
 - Paint or polish for “beautifying” the car
 - On-board fire systems
 - Transponders
 - Video and radio systems

Cost Report Format

- There is currently no rule defining report format but a sample format is listed on fsaeonline.com
- BUT it **must be accurate and easy to understand**, i.e. logical
- Hard copy will be very similar to previous years with exception of
 - No receipts
 - No length limit
- **Regardless of submission format you will need good, clear supporting documentation for your designs to justify the cost data submitted**