

Homework #2: Critical Reading

Describe each of the elements of a System Engineering Analysis (in the table below) for analysis described in the technical paper *Tradeoff Analysis of Regenerative Power Source for Long Duration Loitering Airship* (Lubkowski, Jones, Rojas, Morris, 2010).

Notes:

1. Read the paper first, then complete the table.
2. Keep in mind, the paper is not perfect and elements of an SEA may be incomplete or missing. If an element is missing, note that it is missing and describe what you think should have been done.
3. Keep descriptions short. Bullet points or short paragraphs
4. List the source of your description by page number and paragraph no. (e.g. page 1, para 1,2,3 and 4)

Elements of a System Engineering Analysis	Description	Page number and paragraph number.
1. Context	<ul style="list-style-type: none"> • High altitude airship (HAA) provides platform for sensors • Long duration at altitude requires regenerative power source 	
2. Stakeholders in the Power Source decision	<p>Not explicitly described in the paper.</p> <p><u>Consumers</u>: Designers of HAA</p> <p><u>Service Providers</u>: Power supply provides, power management providers</p> <p><u>Bill Payers</u>: HAA owners</p> <p><u>Beneficiaries</u>: Power supply and power management suppliers with compatible system. HAA owners get to put more sensors on ship.</p> <p><u>Victims</u>: Power supply and power management suppliers with incompatible system. HAA owners get to put fewer sensors on ship.</p>	
3. Problem Statement	Evaluate alternative regenerative	

	(i.e. solar) power supply systems	
4. Proposed Solutions	<ol style="list-style-type: none"> 1. Photovoltaic flat panels 2. Thin film photovoltaic panels 3. Stirling dish concentrator 4. Trough Solar concentrator 5. Luminescent solar concentrator 	
6. Method Analysis/Simulation	<ul style="list-style-type: none"> • Aerodynamic model of HAA • Value Hierarchy • Sensitivity Analysis 	
7. Design of Experiment	<p>Not explicitly described in the paper.</p> <p>Constant Velocity/Accelerating for each alternate technology</p>	
8. Results	<ul style="list-style-type: none"> • Utility vs Costs for each alternate technology • Performance and Cost improvements for each technology to become competitive. 	