

Application 5: Describe alternative system designs

This is a team assignment; every member of your team must take part in doing this assignment. Only one member of your team needs to submit this form.

You are asked to describe two alternative system designs for heating the Battery Box: electric heating, and convection heating, outlining their respective functions (input and output systems) and outcomes (stakeholders, problems, benefits, and detriments). To do this, you can use the SAFO (system architecture-function-outcome) framework.

Please note that for each heating method, some functions and outcomes may be the same as each other and some may be different from each other.

The architecture of the system of interest is already provided to you in a boxes and arrows diagram below.

You can view and download the student presentation [here](#). The relevant pages for the electric/induction heating method are 15-37, while for the the convection heating method these are 40-58.

You can view and download the introduction to systems thinking and the SAFO framework [here](#).

You may use additional online sources for this assignment.

hllin@mit.edu [Switch account](#)



* Indicates required question

Email *

Your email



Select your team letter.

A

B

C

D

System Architecture-Function-Outcome (SAFO) framework



System*
Technological
Engineered



Architecture
Structure
Behavior



Function
The system of interest's
interactions with boundary
systems**:
Input systems
Output systems



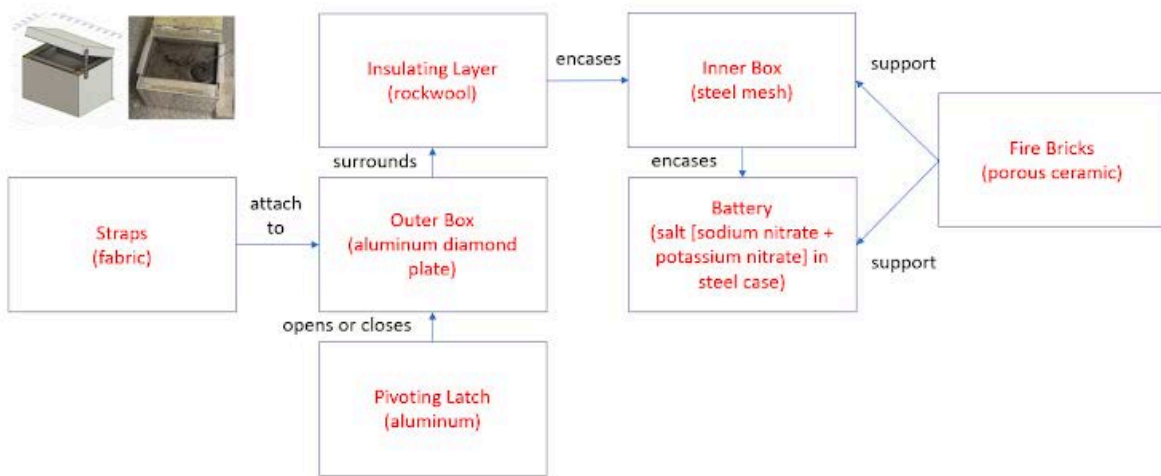
Outcome
Problem
Stakeholders
Benefits
Detriments

** System of interest*

*** Boundary systems do not have to be technological.
A boundary systems can serve as input, output, or both.*



System of interest (Battery Box) architecture



Electric heating - System Function: Input

Describe two essential input systems related to this heating method and their respective interactions with the architecture of the system of interest.

Your answer

Convection heating - System Function: Input

Describe two essential input systems related to this heating method and their respective interactions with the architecture of the system of interest.

Your answer



Electric heating - System Function: Output

Describe two essential output systems related to this heating method and their respective interactions with the architecture of the system of interest.

Your answer

Convection heating - System Function: Output

Describe two essential output systems related to this heating method and their respective interactions with the architecture of the system of interest.

Your answer

Electric heating - System Outcome: Stakeholders and Problem

Describe two groups of stakeholders related to this heating method and to the the system of interest, and the respective problems the system function solves for them.

Your answer

Convection heating - System Outcome: Stakeholders and Problem

Describe two groups of stakeholders related to this heating method and to the the system of interest, and the respective problems the system function solves for them.

Your answer



Electric heating - System Outcome: Benefit and Detriment

Describe a benefit and a detriment which affect the stakeholders of the system and which are related to this heating method.

Your answer

Convection heating - System Outcome: Benefit and Detriment

Describe a benefit and a detriment which affect the stakeholders of the system and which are related to this heating method.

Your answer

If you used additional sources, please add them here.

Your answer

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