

# UTILIZING SHEET METAL PROCESSING TO BUILD HIGH STRENGTH/WEIGHT RATIO BICYCLE FRAME

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## ABSTRACT

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Sheet metal is defined as any metal that is formed into thin and flat pieces of varying thickness. This form of metal can be used in metalworking because it can be cut and bent into various shapes and sizes using specialized tools.

Unprocessed sheet metals are easily bent when a load is applied on it. This is because it has a high surface area and low thickness which reduces its tensile strength. However, when the sheet metal is folded into a triangular shape and another sheet is welded at the bottom for support, it will be able to withstand the same load. Therefore, this can be said that by simple manipulation of the sheet metal, its strength to weight ratio can be increased greatly.

Sheet metals are very light and easily workable and due to this property it is used in various industries such as in the airplane industry to make airplane wings and in the car making industry to make the car door.

In this project, pre-processed aluminum sheets will be used to build bicycle frame and the weak frame will be strengthened by manipulating the sheet metals to increase its strength to weight ratio. The percentage in reduction of the weight of the bicycle will then be calculated.