Team Number _____

Product Type:  

Motor bike

1. Market Description

This bicycle is to be designed for the mass consumer market. The expected sales volume is 100,000 per year. Affordability, excellent performance/cost ratio and light weight are most important to be successful in this market.

2. Requirements

Manufacturing Cost (C):  

C ≤ 5.7 $ /part

Performance (δ₁, δ₂, f₁):  

Displacement δ₁ ≤ 0.056 mm  
Displacement δ₂ ≤ 0.009 mm  
First natural frequency f₁ ≥ 250 Hz

Mass (m):  

m ≤ 0.34 lbs

Surface Quality (Q):  

Q ≥ 3

Load Case (F):  

F₁ = 50 lbs / F₂ = 75 lbs / F₃ = 100 lbs

The part has to conform to the interface requirements and geometrical boundary conditions shown on page 2 of this document. This requirement cannot be waived.

3. Priorities

Structural performance is the first priority for this product. Next, the customer cares about manufacturing cost and thirdly, mass should be as low as possible. These priorities are shown in the Ishii-matrix below:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Constrain</th>
<th>Optimize</th>
<th>Accept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td></td>
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</tr>
<tr>
<td>Performance</td>
<td>■</td>
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<tr>
<td>Mass</td>
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</tbody>
</table>

Modifications to these requirements have to be negotiated with Management.