The UAE is currently undergoing industrialization which increases demand for energy and thus increases the usage of fossil fuels to cover this increasing demand for energy [1].

Fossil fuels are limited and gradually depleting, so it is not considered a reliable source of energy [2].

The recycled rubber-surfaced tile is expensive to manufacture for mass production.

A concrete surfaced-tile would be heavier therefore, it requires more support.

The placed piezoelectric material should be of optimum characteristics for the project.

The tiles should be placed in a densely-populated location in order to get high rate of footfall.

Replacing the recycled rubber surface tiles with concrete surface tiles.

Substituting springs with new stainless steel springs that will withstand the force applied by the concrete tiles.

Laying out three major criteria for choosing the right piezoelectric material [3].

Placing the tiles at the entrances and exits of the two engineering buildings.

Decreasing the manufacturing cost of the reinforcement tile from $12.4 to less than $2 per tile.

Increasing the life span of the tile from 5 years to 7 years.

Preventing the failure of the tile by increasing the support of the structure [4].

Minimizing energy loss due to resistance in the wires.

Choosing PZT (Lead Zirconate Titanate) as the suitable piezoelectric material for this project.

Maximizing the amount of energy generated due to the greater amount of footfall.

Boosting overall efficiency of the tiles, thus generating more electricity per unit time.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Zirconate Titanate (PZT) (100g)</td>
<td>55.82</td>
</tr>
<tr>
<td>Concrete Tile</td>
<td>1.90</td>
</tr>
<tr>
<td>Springs (x4)</td>
<td>2</td>
</tr>
<tr>
<td>Total price</td>
<td>59.72</td>
</tr>
</tbody>
</table>

Table 2: Cost analysis

References


