DESIGN AND ANALYSIS OF AN AERIAL WORKING PLATFORM, 2012

Yasin AKSUNGUR            Muhammet Y. NAYİR            Ebubekir GÜNEŞ
Supervisor: Assoc. Prof. Dr. Mehmet Ali GÜLER

Abstract
Nowadays, in many industrial areas, aerial working platforms are increasingly used instead of non-technological products intend of lifting any kind of loads. In this project, an aerial working platform is examined on request of HIDROKON company. Mechanical analysis and design modifications are made on this product according to company’s demands and regulations. For these analyses and modifications, SolidWorks, ANSYS,AutoCad Inventor and HyperMesh are used. The results which are taken from these programs are compared with analytical solutions’ results. Finally, the product design is optimized depending on compared results.

Design and Analysis
- SolidWorks
SolidWorks software lets to draw 3D CAD parts and assemblies. It introduces data management and it has a wide range of library. SolidWorks offers to simulate the assemblies. Nowadays, most of the companies used SolidWorks for designing.
- ANSYS
ANSYS offers a wide range of engineering simulation solution sets assuring access to virtually any field of engineering simulation that a design process requires. Companies use ANSYS to reach the best results for their engineering simulation software investment.
- HyperMesh
HyperMesh is a program that components can be meshed easily. HyperMesh has a lot of choices to mesh. It saves the time while changing thickness of the geometry with its midsurface method.

Product Specification

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>10 m</td>
</tr>
<tr>
<td>Working Height</td>
<td>12 m</td>
</tr>
<tr>
<td>Capacity</td>
<td>350 kg</td>
</tr>
<tr>
<td>Standards</td>
<td>TS EN 280</td>
</tr>
</tbody>
</table>

Conclusion
In this project, examined studies for an aerial working platform are given below:
- Force changes in between min. and max. position of the aerial working platform
- Stresses on each profile
- Total Deformations on each profile
- Safety Factors on each profile
- Analysis for different mesh size of a profile
- Different profile thickness
- Different bushing thickness
- Loading on different points
- Optimization of the system