

Trolley crane design

Design



The way that the crane operates is by having a person pull a chain. This chain is connected too drive shaft which in turn is connected to a pinion and two wheels. These wheels allow the crane to move horizontally along the I-beam whilst sustaining a load. For our crane design, as mentioned above, the I-beam must be able to support the load of 1. 5 tones without falling under the load and the beam length must be 4 meters long. The trolley crane must also be manually operated with one person pulling the chain to operate it.

The way that we can ensure that the trolley crane and I-beam will support the specified load is by using some of the basic beam bending theory in strength of trials and by using different tolerance and bearing data from previous notes. 2. 0. Research As a group we researched many trolley cranes currently on the market, this gave us an idea of the competently for our trolley crane and helped clarify the workings of such mechanisms. (See appendix) 3. 0. Product Design Specification 3. 1.

Design Brief The aim of this project, is through the researching of other products, is to produce a design for a geared trolley crane which fits the given specification for our group. 3. 2. Performance The trolley crane should be capable of sustaining a load of 1. tones with a safety factor of 20%. Should run along a 4 meter I-beam. Trolley crane should be operated and manually moved via a chain/gear system. The weight of the trolley must provide stability along the selected I-beam. The Trolley should be removable from the beam for maintenance and re- installation. The trolley will be available to a global market.

Being used in a diverse environment, the trolley crane will be subject to a humid/ wet environment and as such will need to be treated in order to resist corrosion. The trolley will be stored in suppliers' warehouses before sales. 3.

4. Product life span The product will be on the market for 7 years. Spare parts will be available for a further 3 years 3. 5. Life in service Should withstand an operating period of 1 her uninterrupted use per day for 3. 5 years. Life in service should be assessed against the criteria outlined in the Performance and Environment categories. . 6. Shelf life The product may be stored on-site for up to 2 weeks before being dispatched. Distributor may additionally store the product for several months. 3. 7. Target costs The product should have an end-user cost of IEEE within Britain. Cost of manufacture should not exceed 50% of this cost. The cost of packaging and shipping should be no more than 15% of the manufacturing cost. 3. 8. Quantity Dependent on market demand 3. 9. Maintenance To be maintenance free except for light lubrication once a month and a recommended service every two years.

Parts requiring lubrication should be accessible within 10 minutes without the use of special tools or equipment. All fasteners used should comply with OBSESS. Spares should be available for 3 and a half years after the product is replaced with a new model. No special tools should be required for maintenance. 3. 10. Marketing The trolley crane should be used in competition with other models. Some markets which will use the trolley crane are:- small car garages, storage warehouses, workshops etc. The trolley should be light and therefore be able to be moved easily by no less It should allow for operation by one man.