



Final Year Project Showcase for Batch-2016

Department of Mechanical Engineering		
1	Project Idea	Design and Fabrication of Impact Testing Machine (ASTM D256)
2	Process	The machine is used for determining the Izod type impact resistance of plastics followed by the standards of ASTM D256. The Izod impact test fixes one end of a notched specimen in a cantilever position by means of a vice. A striker on the arm of a pendulum or similar energy carrier then strikes the specimen. The energy absorbed by the specimen in the breaking process is known as the breaking energy.
3	Outcome	It is a procedure for evaluating the toughness and notch sensitivity of engineering specimen. It also finds the amount of energy absorbed by a material during fracture. This energy dissipated is a measure of a given material's toughness and acts as a tool to study temperature-dependent brittle-ductile transition.
4	Evidences (Theoretical Basis)	ASTM D256 ASTM E23 ISO_180_EN ISO_148_EN
5	Competitive Advantage or Unique Selling Proposition (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over competitor. In summary, any striking aspect of the project which compels industry to invest in FYP or purchase it. Some detail description is required in terms of how, why when what. You can select one or more from following dropdown and delete rest of them)	
a	Cost reduction of existing Product	The aim was to make it not by spending more than 60-70 thousand rupees as the same machine cost is up to 1.2 lac, when imported from China and 1.4 lac when imported from Germany. The whole machine was fabricated within 40 thousand rupees range without compromising on the quality since the machine was fabricated using a Stainless Steel material. Even the nuts and bolts are of SS.
b	Process Improvement which leads to superior product or cost reduction, efficiency improvement of whole process (e.g. What is issue is current process and what improvement you suggests)	It seems like there is no technical issue with this machine, but so far, testing has been done only on Acrylic material. For better improvement, this machine can be used to test not only Acrylic but other materials as well as Phenolic, Acetal, ABS plastic, etc.
c	Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region)	After thorough research and literature review, initially, a 3D design of an Impact Testing machine was made on SOLIDWORKS software. Right after its completion an analysis (FEA and DYNAMICS) was performed on different types of specimens using ANSYS software. The results thus obtained, are summarized in graphical form and

		<p>a detailed explanation for each trend is provided in this report. Then, fabrication of machine as well as specimen was done. At last, successful testing was performed. The department of Material and Metallurgy already has impact testing machine for metals therefore providing NED University with a machine that can perform impact testing of non-metals will be fruit full.</p>								
6	Team Members (Names & Roll No.)	<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Zaheer Ali</td> <td>ME-16017</td> </tr> <tr> <td>M.Wasif Khan</td> <td>ME-16039</td> </tr> <tr> <td>Hafiz Huzefa Javed</td> <td>ME-16046</td> </tr> <tr> <td>M.Ali Tahir</td> <td>ME-16052</td> </tr> </table>	Zaheer Ali	ME-16017	M.Wasif Khan	ME-16039	Hafiz Huzefa Javed	ME-16046	M.Ali Tahir	ME-16052
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8	Pictures									