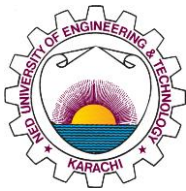




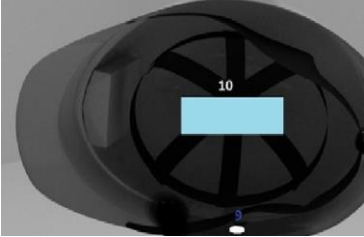


Final Year Project Showcase Batch-2016

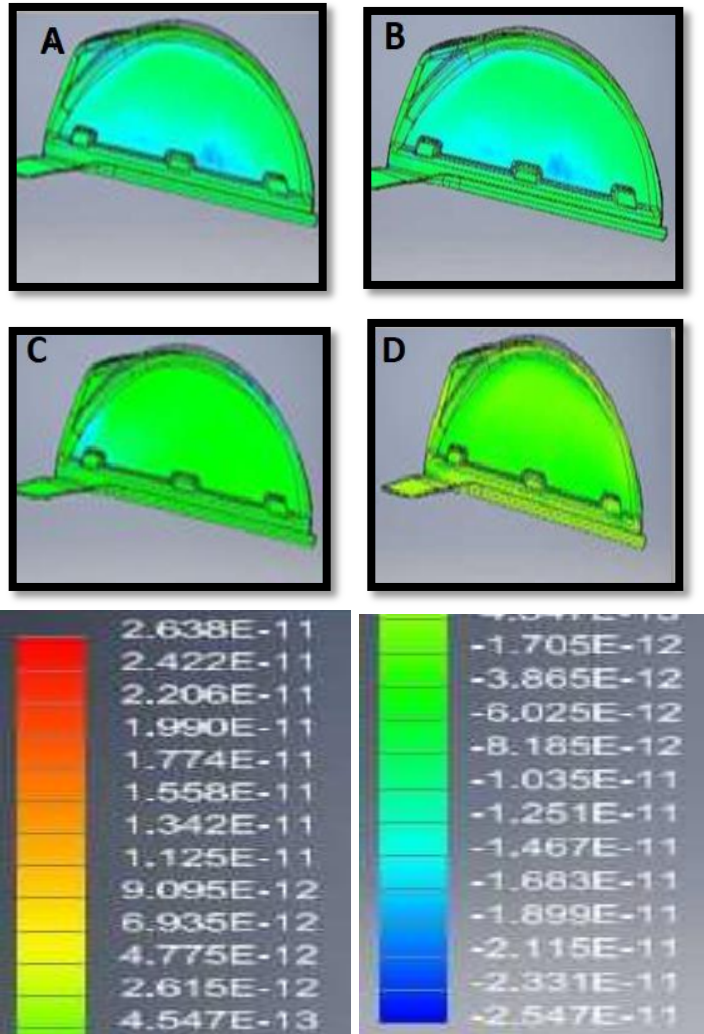
<p style="text-align: center;">Department of Civil Engineering Civil Engineering Program</p>		
1	Project Idea	Development of Smart Protective Headgear System
2	Process	Report for Theoretical and detailed simulation of helmet are enclosed as a supportive document for the project Idea, but only the implementation is required.
3	Outcome	<p>The result generated with the aid of the simulation on the helmet yet showing the assessment regarding ABS plastics helmets and Kevlar for the strength where the helmet with ABS helmet fails earlier than the Smart Protective Headgear System It additionally comprises the result of the detection of excessive sound and dust particles. It also included the comparison of the thermal properties of both the ABS plastics helmet and the Smart Protective Headgear System.</p> <p>Secondly, it is also observed that no helmet is present in the market with the advanced features altogether through our market Survey</p>
4	Evidences (Theoretical Basis)	<p>In Pakistan, 7.3% of the all-out work power is utilized by the construction business; nonetheless, its mishap rate is 14.1%, which is higher than that in different industries (PBS, 2014). No huge decrease has been seen during the most recent seven years, as the injury rate remained practically reliable at more than 14% (PBS, 2007, 2014). Most construction accidents are caused by a fall from a height, followed by those caused by lifting activity (Zahoor, 2020).</p> <p>It is apparent from the above talk that there are advantages of normalized benefits of the executive frameworks, remembering a decrease for mishaps and dangers. What's more, there is a move towards coordinating various kinds of executive frameworks into a solitary framework that manages safety, business targets, and hierarchical objectives. There is some proof to propose that the advantages of these frameworks as a mishap diminishing instrument can be momentary just except if the board is focused on the framework and know it's a benefit for their business. It includes education and proper training of workers. This concluded that in order to increase the efficiency of work and to provide safety to laborers smart helmet is necessary where it provides effective contact with the labour and their supervisor to predict the accidents, which can result in reducing head injuries in the future.</p>
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



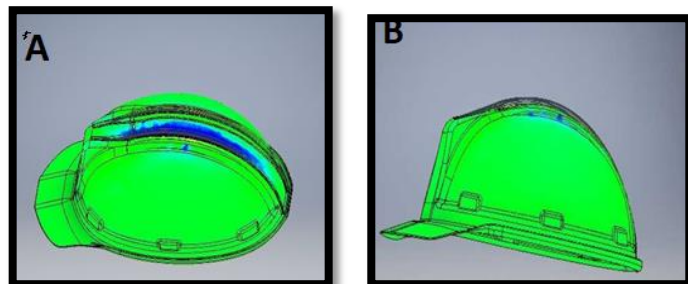
	<p>the project which compels industry to invest in FYP or purchase it. Some detail description is required in terms of how, why when what. You can select one or more from following dropdown and delete rest of them)</p> <p>Please keep relevant options, delete rest of them and correct the sequence</p>	
a	<p>Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region)</p>	<p>A complete methodology is defined, from the preliminary stage which include market and site survey to know the need and the requirements of labor till the completion phase (for the implementation of sound and dust sensors) and there programming to make them work and the implementation of Kevlar material, later test to be arranged for determining the strength of Protective Headgear System.</p> <p>This project will support SDG 03 which say about the healthy lives and promote well-being. The Smart Protective Headgear System will help labour to protect their safety and to avoid such head injuries, workers must wear a safety helmet all the time whose job is to protect the head from getting injured. It has been considering over the years that the usage of safety helmet has become essential. Still, lack in it like usage of heavy materials has reduced the labour productivity of the labourers and has increased the incidence of accidents at the construction sites. Therefore, smart safety helmets are designed to look after the comfort of workers. The existing helmets do not provide much strength, and several head-related injuries in the construction industry are reported every year.</p>
B	<p>Expanding of Market share (e.g. how it expand and what is problem with current market</p>	<p>No helmet is recently available with all the features which can assure the safety of workers, it can easily be expand by endorsing and realizing the need and importance of wearing helmet while executing the site work to ensure the safety& head protection by using social media apps and conducting seminar</p>
C	<p>Capture new market (e.g. Niche market or unaddressed segment)</p>	<p>Market and labor Survey is already performed in order to design the helmet so that the needs of the users can be fulfilled</p>
D	<p>Any Other Aspect</p>	
6	<p>Target Market (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about user of the product, process or service</p>	<p>Civil Engineers, Construction Labor, Site Engineers, Site Inspector</p>
7	<p>Team Members (Names & Roll No.)</p>	<p>Rubisha Zaki (CE-16004) Kashmala Shafqat (CE-16010) Muhammad Khurram Shaikh (CE-16016) Sameed Mohsin (CE-16022) Muhammad Arham Mallick (CE-16024)</p>
8	<p>Supervisor Name</p>	<p>Engr. Muhammad Saqib (Supervisor) Assistant Professor Department of Civil Engineering NED University of Engineering and</p>

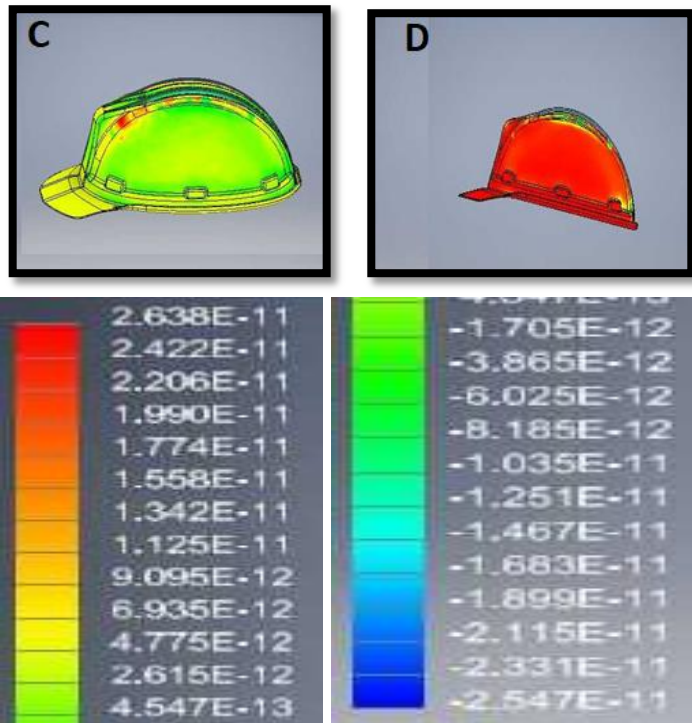
		<p>Technology, Karachi</p> <p>Engr. Muhammad Umer (Co-Supervisor) Assistant Professor Department of Civil Engineering NED University of Engineering and Technology, Karachi</p>
9	Supervisor Email Address	<p>msaqibm@neduet.edu.pk</p> <p>emumer@neduet.edu.pk</p>
10	Pictures	<div style="display: flex; flex-wrap: wrap;">      </div> <ul style="list-style-type: none"> • Torch of 2 volts fitted in the lamp at position 5 • Position of sound sensor and dust detector fitted at the read side of the helmet, position 6 for mic of sound sensor and position 7 for dust sensor • The right side of helmet includes three buttons for turning off and on sound sensor, dust detector and torch. Position 1 is for dust detector button, position 3 is for sound sensor button and position 4 is for torch • The left elevation has two Light Emitting Diode (LED) lights at position 2 is green LED and at position 8 red LED • The inner shell of the helmet consists of battery case and cooling strap, position 9 is for batteries and

position 10 is for cooling strap

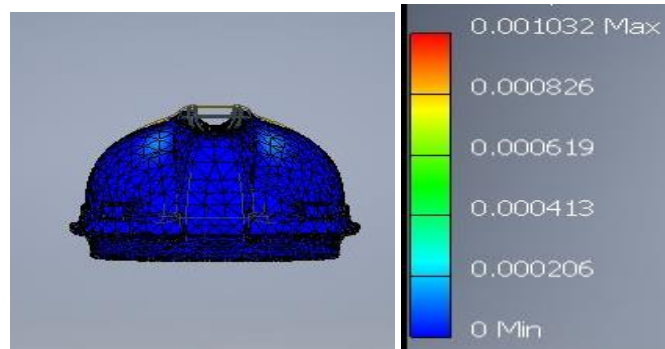


Thermal simulation of Smart Protective Headgear System
 (A) At 10 °C, (B) At 30 °C, (C) At 40 °C, (D) At 50 °C

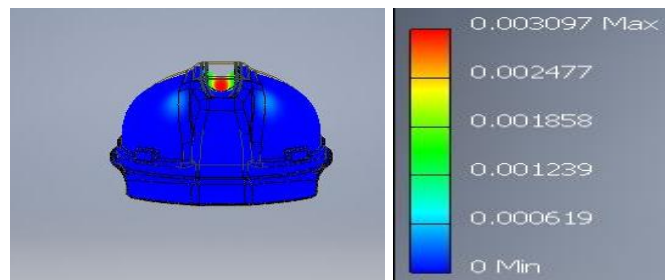




A Figure of Thermal Simulation of ABS Plastic Helmet (A) At 10 °C, (B) At 30 °C, (C) At 40 °C, (D) At 50 °C



10 lb Load on Centre (Kevlar)



30 lb Load on Centre (Kevlar)

