



**DESIGN AND DEVELOPMENT OF AN OBSERVATORY DOME AND
SHUTTERS STRUCTURE**

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“I declared that this thesis is the result of my own work except the ideas and summaries which I clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in the candidature of any degree.”

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ABSTRACT

The main objective of this study is to design and develop an observatory dome and shutters structure. The dome has been designed to improve and innovate the current design structure. The design of an observatory dome is able to rotate 360° azimuth rotation whereby its dome and shutters opening and closing are designed by using geodesic structure which is different from the current and common shutters design. Basically, geodesic structure is a joining of hundred or more triangles in obtaining a hemisphere shape. The structure has a better strength and toughness compare to the other structures. Thus, the structure has lower possibility to fail, bend or collapse due to the structure design. The designs of the observatory dome and shutters structure were done using CATIA V5R14 software. The material used is mild steel for the structure and aluminum plate as the roof cover. This design and development of an observatory dome and shutters structure will contribute a lot to the aerospace industry indirectly and will also give benefits to the engineering field.

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