Calculation of heat gained by the vertical walls of a biogas reactor is an important step for design of such reactors. However, most of the reactors designs are limited to the vertical cylindrical shape. Although convex walls ($W_{cvex}$) are becoming common in many architecture designs such as commercial buildings, hotels etc., there is a lack of information in literature how to model/predict the solar radiation on convex surfaces. This is mainly because of being a hard task of prediction of direct solar radiation by convex walls due to the curved shape of the surface. Thus, a computerized model developed by splitting whole reactor wall to a number of rectangular elements.

The main objectives of this work are; (i) to develop a computerized model for prediction of solar radiation on a convex wall of a biogas reactor for the conditions of Isparta, Turkiye, (ii) to compare the model results with most common methods for calculation of solar radiation of $W_{cvex}$ such as (1) surface area method; (2) half surface area method; (3) similarity of polygonal surface (an octagon), (iii), and to determine the effects of height/diameter ratio on solar radiation.