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## **An integrated life cycle assessment of different façade systems for a typical residential building in Ghana**

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### **Highlights**

- A framework incorporating BIM, Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) is designed.
- The environmental and economic performance of three new façades are compared with the conventional façade for residential buildings in Ghana.
- The different life cycle stages are evaluated to provide valuable insights for designers.
- Various life cycle scenarios are identified to improve the performance of all four façades.

### **ABSTRACT**

This study performs a comparative environmental and economic assessment of four different façade systems for low-cost residential buildings in Ghana. A framework is designed to incorporate BIM, Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) to perform a holistic comparison of a Shotcrete Insulated Composite Façade (Shotcrete ICF), Galvanised Steel Insulated Composite façade (G. Steel ICF) and Stabilised Earth Block Façade (SEBF) against the conventional Concrete Block and Mortar Façade (CBMF). BIM models are

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