IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 3, March 2025

BIM-Driven Optimization: Transforming Gigafactories into Data-Centric Hubs for Efficiency

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Abstract: *Building Information Modeling (BIM) has emerged as a transformative technology in the development and operation of gigafactories, revolutionizing how these large-scale manufacturing facilities are designed, constructed, and managed. This comprehensive article explores the evolution of data-centric manufacturing through BIM implementation, examining its impact on operational efficiency, cost management, and facility optimization. The article investigates how BIM integration enhances collaboration among stakeholders, streamlines procurement processes, and enables the creation of digital twins for improved facility management. Through a detailed examination of standardized BIM practices and their implementation in industrial settings, this article demonstrates the significant improvements in project delivery, cost control, and long-term operational benefits achieved through BIM adoption in gigafactory development.*

Keywords: Building Information Modeling, Gigafactory Development, Digital Twin Technology, Construction Optimization, Facility Management Integration