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| **Title:** | Sustainable design of machine components: a critical review of carbide/steel laminate composite | | |
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| **Abstract:** |  |
| With the evolution of Industry 4.0, sustainable design of machine components has been playing a significant role in manufacturing industries as never before. Machine components are required to exhibit adequate stiffness, fracture toughness and structural strength to withstand heavy and versatile loading even in hazardous environmental conditions. To meet this continuously growing global demand, monolithic materials have shown their limit and thus the required properties cannot be achieved. Hence, composite materials have opened new avenues to meet the requirements. Carbide/steel laminate composite materials have the potentials to attain extreme metallurgical properties to meet the demand of sustainable machine design. However, to the best knowledge of the author, there is no reported article that reviews the techniques of fabricating carbide/steel laminate composites. In this work, recent advancements of fabricating carbide/steel composite materials have been reviewed. A categorization has been made based on bonding mechanisms, bonding technique, substrate materials and manufacturing techniques. The pros and cons of these methods and techniques have been discussed. Their cutting edge advancements, modern applications and future prospects have been outlined in order to satisfy the demand of sustainable machine design. | |