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Utilization of Composite Components for Land Vehicle Systems: A Review

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Abstract : In recent years, composite materials are more frequently utilized not only in aviation but also in automotive industry due to its high strength to weight ratio, fatigue and corrosion resistances as well as better performances in specific environments. The market demand also favors lightweight design for wheeled and tracked armored vehicles due to the increased demand for land and amphibious mobility features. This study represents the current application areas and trends in automotive, bus and armored land vehicles industries. In addition, potential utilization areas of fiber composite and hybrid material concepts are being addressed. This work starts with a survey of current applications and patent trends of composite materials in automotive and land vehicle industries. An intensive investigation is conducted to determine the potential of these materials for application in land vehicle industry, where small series production dominates and challenging requirements are concerned. In the end, potential utilization areas for combat land vehicle systems are offered. By implementing these light weight solutions with alternative materials and design concepts, it is possible to achieve drastic weight reduction, which will enable both land and amphibious mobility without unyielding stiffness and survivability capabilities.

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