

Mitigation of Wear Damage by Laser Surface Alloying Technique

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ABSTRACT

Today's increasingly extreme and aggressive production environments require that machine components be made with materials having specific surface properties such as good wear resistance. Unfortunately, nature does not provide such materials, and alloys having these specific properties are usually very expensive and their use drastically increases components and production costs. Moreover, the economic implications of wear, in form of detrimental effects – and waste, are severe. This includes replacement costs, and all downtime costs related to such replacement. Consequently, companies will increasingly need to look to wear reduction as a direct, immediate avenue for maintaining output quotas and for cutting production costs. Laser coating of engineering alloys with wear resistant materials is one efficient and economical means of increasing the wear resistance of these alloys. This work discusses laser coatings for wear prevention. Different wear mechanisms are discussed and the coatings for specific environment are identified. This will provide information for combating wear.