

PROCEEDINGS

A Review of Differential Form Meshfree Methods for Industrial Applications

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ABSTRACT

This report documents the application and development of differential form meshfree methods for the numerical simulation and modeling in engineering applied problems. Some of the features of this family of methods include its good numerical stability, the ease boundary condition incorporation, the approximation of the governing equations directly in the nodes that discretize the domain and the ease with which they can be numerically implemented [1-2]. Moreover, their meshless nature gives them the advantage of dealing with fragmentation and highly distorted domains without the use of computational expensive remeshing approaches. All these characteristics have promoted its application in different industrial problems over the years [3]. Therefore, some details about its numerical implementation, as well as the common features found in this family of methods will be presented, followed by a description of the different applications in industrial problems, comparisons with other numerical techniques as well as an analysis of the different results obtained in order to demonstrate the potential of this family of methods for dealing with different engineering problems and to introduce promising future fields of application.

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