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Hybrid Integrated System for Air Bending Optimal Design

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***Abstract*— Genetic algorithm (GA) is widely accepted method for handling optimization problems. GA can find optimal solutions for large and irregular search spaces. However, finding optimal solutions using GA is associated with high computational time when coupled with finite element (FE) code, since FE analysis should be applied to each individual of GA populations. A neural network metamodel (NNM) is introduced to reduce the computational time.GA utilizes the NNMas an approximation tool instead of FE. Application examples results show that the metamodelcan be used efficiently to obtainthe optimal process parameters of metal forming operations with large saving in time.**

***IndexTerms*—GA, metamodel, neural networks, springback.**