

Finite Element Analysis of Static and Dynamic Loading on Ballastless Rail Track

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Outline

- 1 Introduction
- 2 Literature study
- 3 Motivation
- 4 ABAQUS work-flow
- 5 Finite element modeling
- 6 Results and inferences
- 7 Conclusions

Introduction

Rail track systems can be classified as:

Ballasted track system

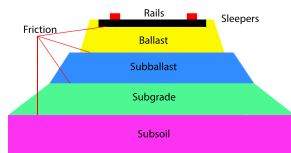


Figure : Schematic diagram of ballasted track system

Ballastless track system

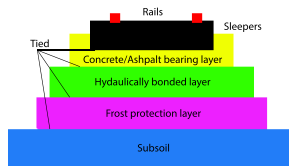


Figure : Schematic diagram of ballastless track system

Literature

Literature study is done in three parts:

- 1** Mathematical models of rail track system
- 2** Experimental analysis in field and Laboratory
- 3** Software simulation models

Mathematical models on rail track analysis

Literature study on mathematical models on rail track analysis:

- 1 Maheshwari
- 2 Shukla
- 3 Mallik

Experimental analysis in field and Laboratory

Literature study on experimental analysis in field and Laboratory:

- 1 kjorling
- 2 Hohnacker
- 3 Indraratna

Software simulation models

Literature study on software simulation models :

- 1 Feng
- 2 Michas
- 3 Swomiya
- 4 Karthiga

ABAQUS work-flow

- 1 Introduction : Composite Materials
- 2 Background : Machining of Composite Materials
- 3 Previous works
- 4 Objective and Motivation
- 5 Milling-Schematic Model
- 6 Experimentation
- 7 Results and discussions
- 8 Drilling
- 9 Experimentation
- 10 Results and discussions
- 11 Optimization
- 12 Conclusions

Finite element modeling

Finite element modeling is used for analysis of given models.

- 1 Validation of model
- 2 Static load model
- 3 Moving load model

Validation of model

Validation of model is designed on the basis of RHEDA derivative used by Michas.

- 1 Validation of model
- 2 Static load model
- 3 Moving load model

Static load model

Static load model is similar to GETRAC system.

- 1 Validation of model
- 2 Static load model
- 3 Moving load model

Moving load model

Validation of model is designed on the basis of RHEDA derivative used by Michas.

- 1 Validation of model
- 2 Static load model
- 3 Moving load model

Results

Results of analysis are shown below:

- 1 best
- 2 better
- 3 Good