FEMFAT Technical Seminar India - 2021

Title: EV Powertrain Cradle development using FEMFAT

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Company:

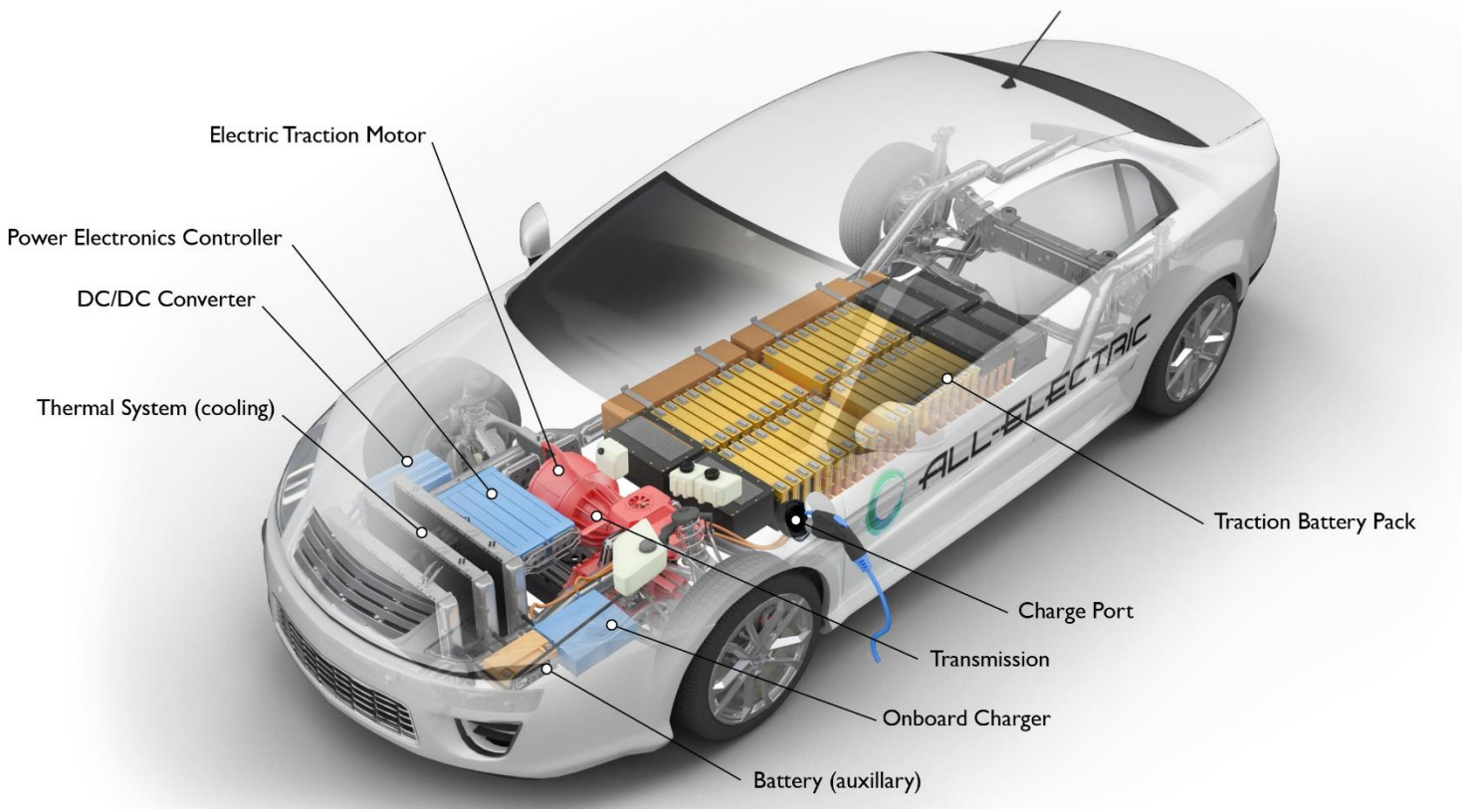
TATA MOTORS LTD.

Outline

- Introduction
- Need for Cradle development
- CAE Model Setup and Process Flow
- CAE co-relation with test results
- Summary
- Acknowledgements

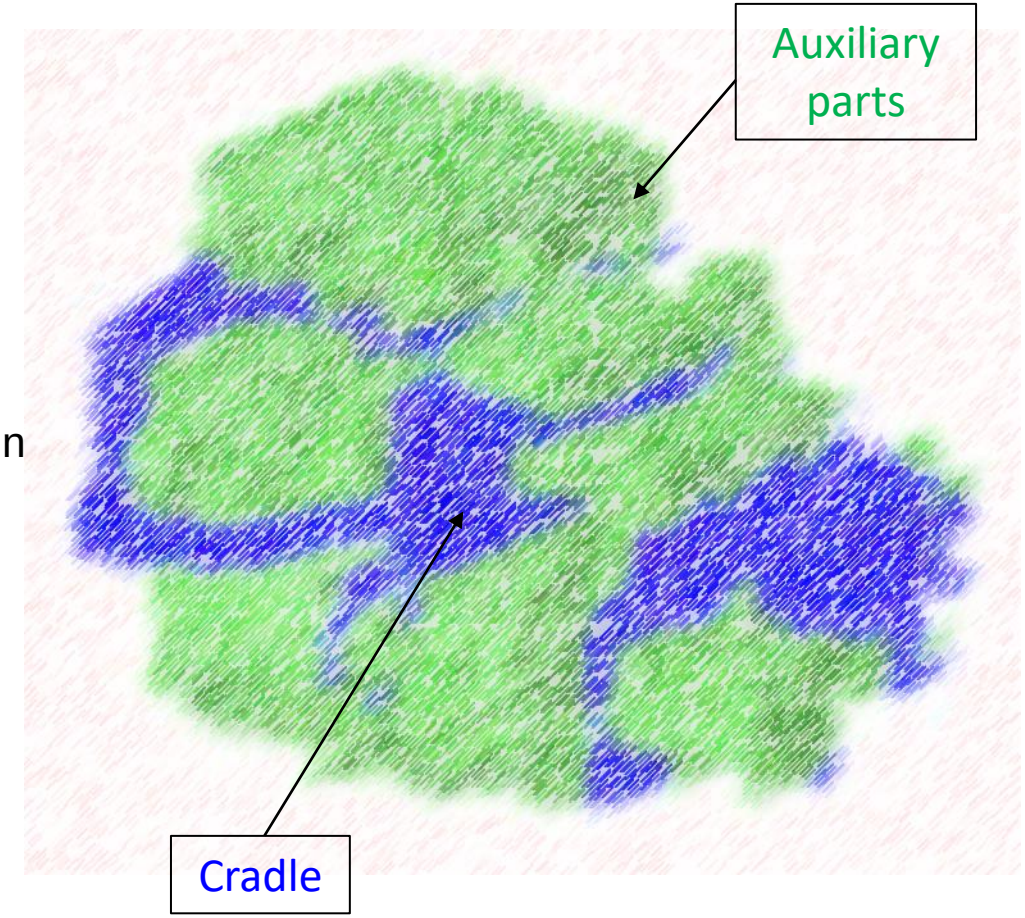
Introduction

- Powertrain of an electric vehicle
- Conversion of a fuel car into electric car
- Power train packaging space

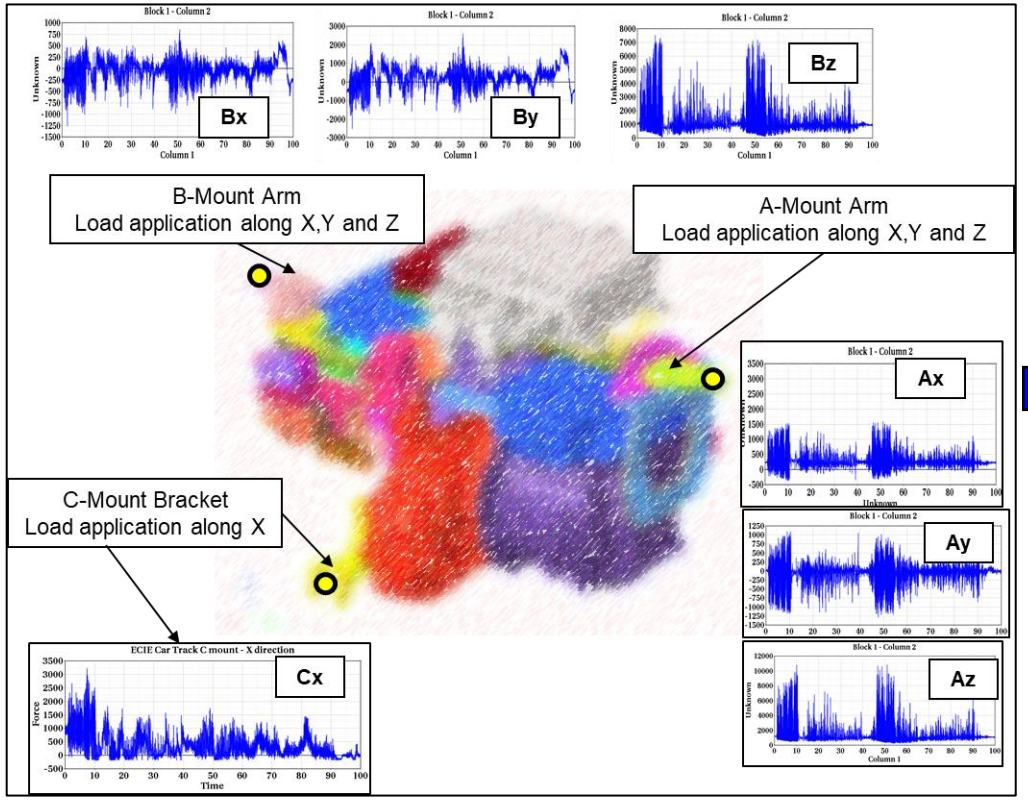


Need for Cradle development

- Packaging space constraints
- Accommodating auxiliary components – a part of the EV powertrain
- A cradle design sustaining dynamic behavior of the system

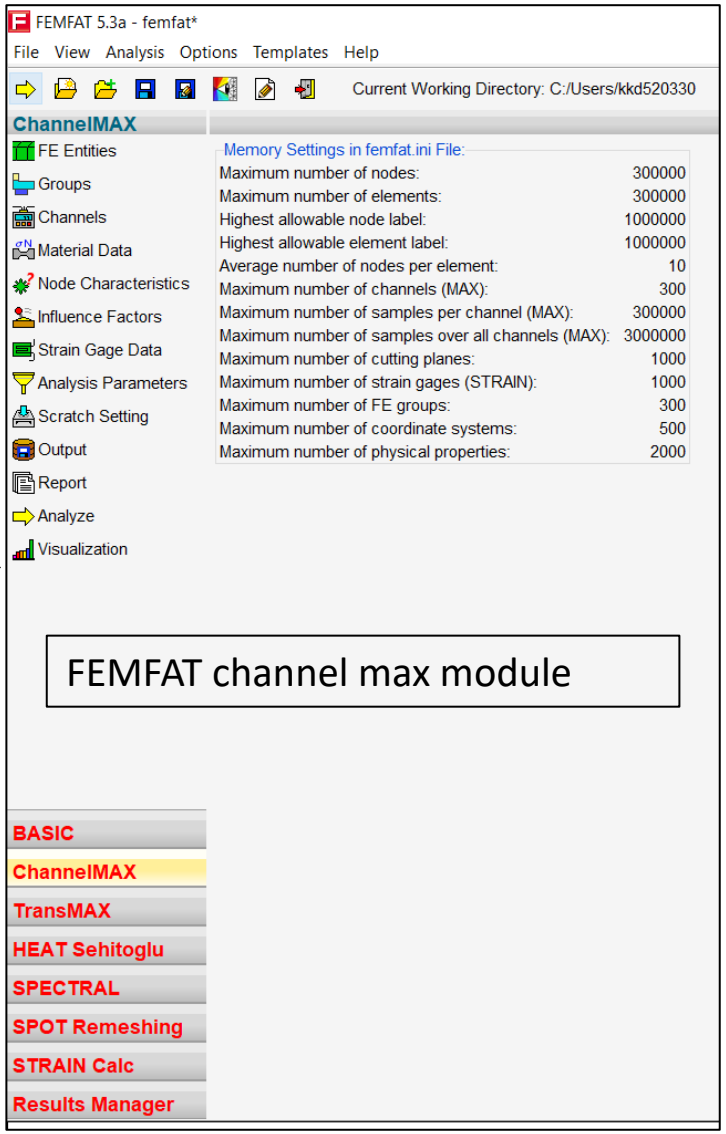


CAE Model Setup and Process Flow



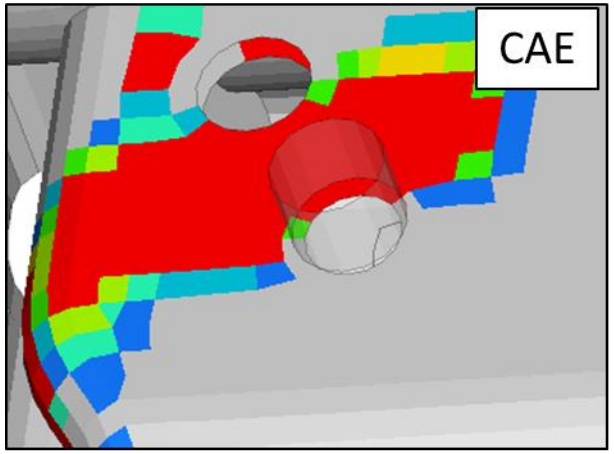
Power train mount forces from 4-poster

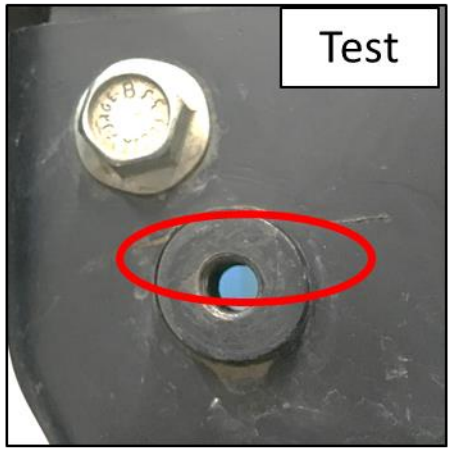
Modal Transient analysis

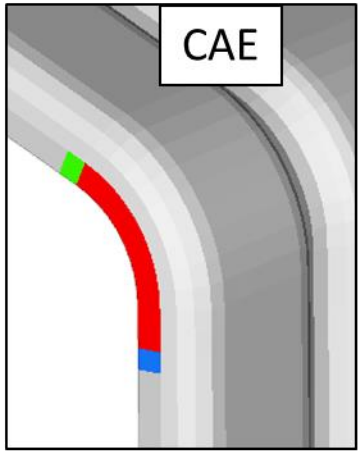


FEMFAT channel max module

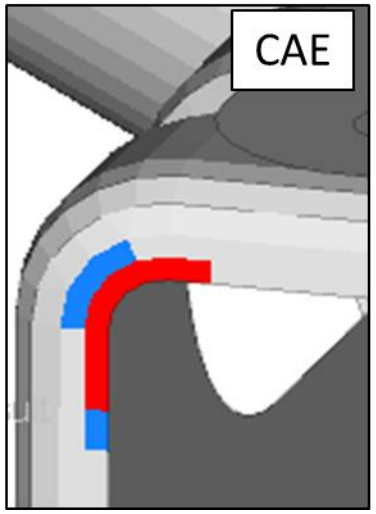
CAE co-relation with test results

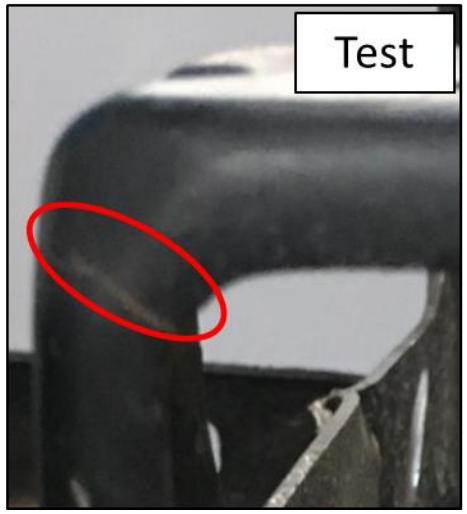


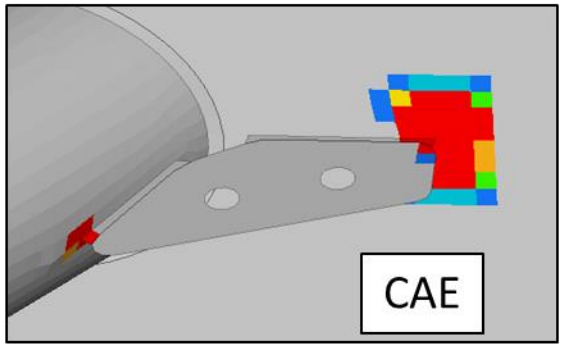


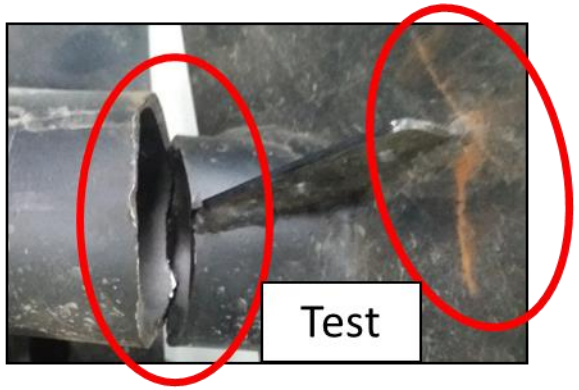


CAE results co-relation with internal test results









Summary

- Early prediction of the design weaknesses.
- Quick iterations possible to bring maturity in the development of the design
- Benefits on vehicle program timelines
- Good test CAE co-relation.

Acknowledgments

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Thank You!