AUTOMOTIVE CHASSIS SYSTEMS EXPERIENCE
Investments on Future Technologies

- Started in year 2,000
- 50+ active customers
- 4,300+ engineers
- 10+ Global engineering centers
- 50% Passenger OEMs
- 15% Commercial OEMs
- 35% Auto Suppliers
- $200+ Mn investments in future technologies and expanding global footprint

Platform based solutions for Connected Car and Personalized Mobility & Connected Factories
Engineering Services for End-to-End Product Development

Key Differentiators

- Ownership of Derivative Programs with Global Execution Models bringing in Cost Arbitrage to the tune of 25%
- Simulation Driven Product Development, 15-20% reduction in Product Development Time
- 20+ years of experience in Safety Critical Automotive Electronics
- AI Enabled Cost Optimization & Supply Chain Management Platforms, 10-12% Product Cost Savings for 100+ programs
- Industry 4.0 Solutions, IoT Based Asset Tracking, AR/VR Solutions
- Engineering Automation, Up to 50% Cost & Time Savings Achieved for 300+ Projects
- Innovative and Flexible Business Models. Willing to Co-invest/Risk Share on New Technology Programs
Chassis Systems: Key Offerings

- Chassis structures design & development
- Chassis subsystems/modules integration
- E-axles integration onto Chassis frame
- Weight & Cost optimizations
- Suspension geometry finalization
- Ride performance and handling enhancement
- Structural stiffness optimizations & crashworthiness checks
- Dynamic FE simulation studies (Modal analysis, frequency response studies)
- Kinematic & Compliance analysis
- Topology optimizations
- Road Load Data Acquisition (RLDA) & Real World Usage Profile (RWUP) mapping
Chassis Systems
End to End Experience

Design

Virtual Validation

Product Cost Innovation

End to End Sourcing & Manufacturing

Physical Validation Support

Value Add Services

- After market support
- NTF (No Trouble Found) - Warranty issues Resolution

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Our Value Proposition

Benchmarking and target setting. Subjective and Objective measurements to understand the ride and handling behavior of the vehicle

Light weight structures design, weight reduction by 15-20% for Chassis Frames & Modules

Modular Chassis design for new age EV Platforms, scalable across segments

Simulation driven design Optimization of Chassis Mounting Architecture weight reduction of Chassis & Improved factor of Safety for life

Prediction of Fatigue life of Chassis Components using proven virtual Simulation Methodology – Achieved close correlations (>90%)
## Chassis Systems: Key Success Stories

### Chassis Frame

**Monocoque structure design.** Weight reduction, 15%. Design tested for 100 ADT cycles 160K km

### Twist Beam

Close profile rear twist beam suspension design. 20% weight reduction with gauge optimization

### Modular Frame

Modular frame for Electric vehicle. Integration of e-motor instead of conventional engine

### Struts/Shock Absorbers

McPherson strut design for M1 vehicle with GVW of 2510 kg

### Frame design & Aggregates Integration

RWUP definition & RLDA. Frame design and mounting aggregates position w.r.t vehicle load distribution

### Cab Suspension

Modular Cab Suspension Design. Accelerating the design process using an integrated Front-End CAE + Hi-fidelity CAE approach
INTEGRATED ENGINEERING SOLUTIONS (IES)

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