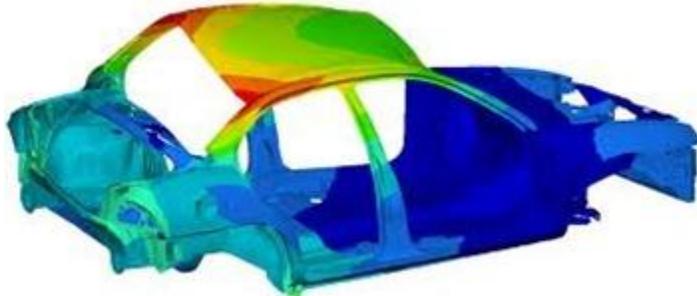


# Durability Analysis | Application Of Durability Analysis In Automotive, Aerospace & Wind Turbines

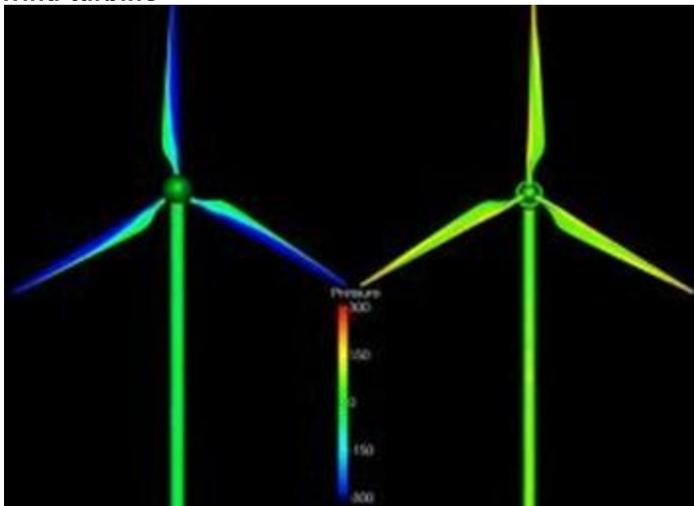
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## Automotive



- Design more reliable transmissions, drivelines and axles
- View the whole gearbox as an interacting and flexible system
- Predict gear, bearing and shaft life-times in the design concept phase
- Accurately and efficiently compare complex gearbox arrangements or concepts such as AMT, DCT, Hybrid and CVT
- Reduce gearbox weight by using component strength
- Minimize noise and vibration by influencing the transmission error
- Identify the weak points in the whole system under realistic load conditions
- Consider the impact of manufacturing tolerances in the concept design phase
- Improve the bearing choice by unique accurate prediction of bearing behavior
- Interact with dynamic solutions for your full vehicle design
- Predict the affects of generators/e-engines on the gears and its components in your hybrid system

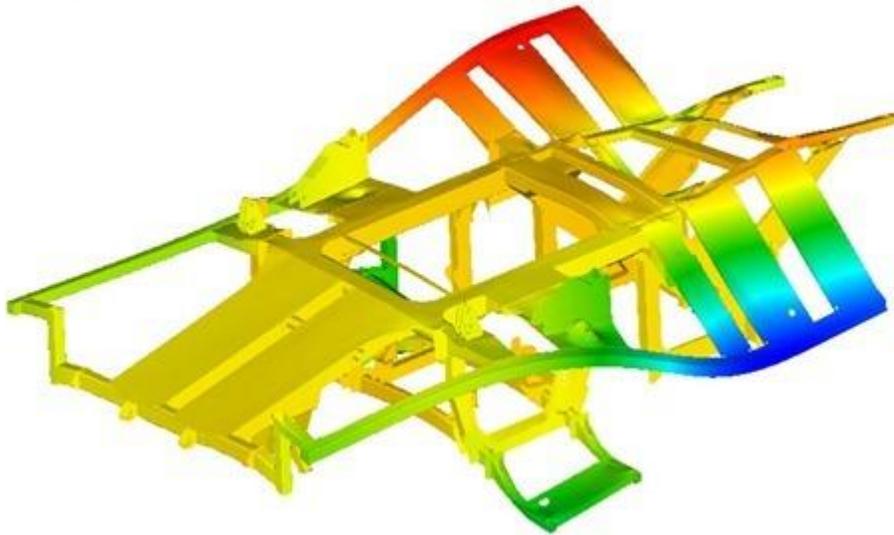
## Wind turbine



- Understand and benchmark operating load and extreme load scenarios
- Design gearboxes to meet life-time targets

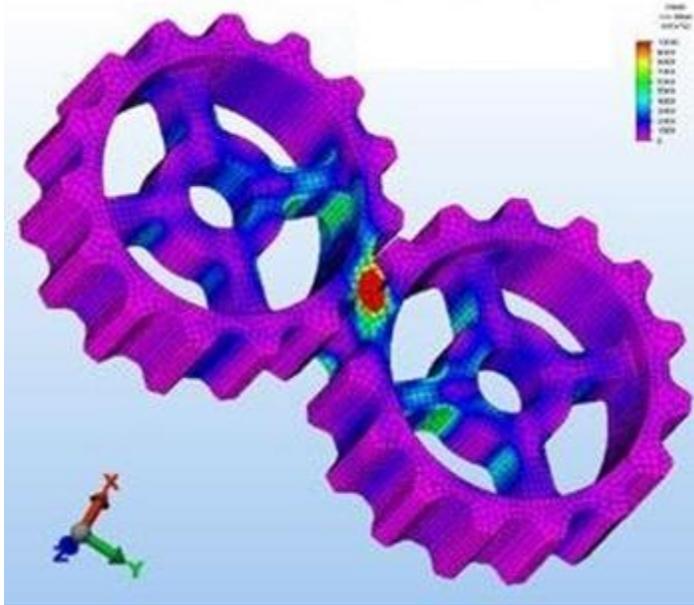
- View the gearbox as one complete system, without the need for sectioning and sectional boundary conditions
- Analyze the behavior of complex planetary systems within the whole system
- Accurately predict loads, deflections and interactions of all components
- Calculate detailed bearing behavior to identify excessive loads
- Direct loads or reduce misalignments to improve the system quality
- Predict load sharing in the fully flexible system instead of assuming load sharing factors
- Reduce weight and cost without reducing component lifetime
- Minimize noise pollution caused by transmission error

**Aerospace**



- Improve reliability for critical parts
- Reduce gearbox weight
- Predict bearing behavior under extreme load and climate conditions
- Optimize gearbox size

**Off-highway**

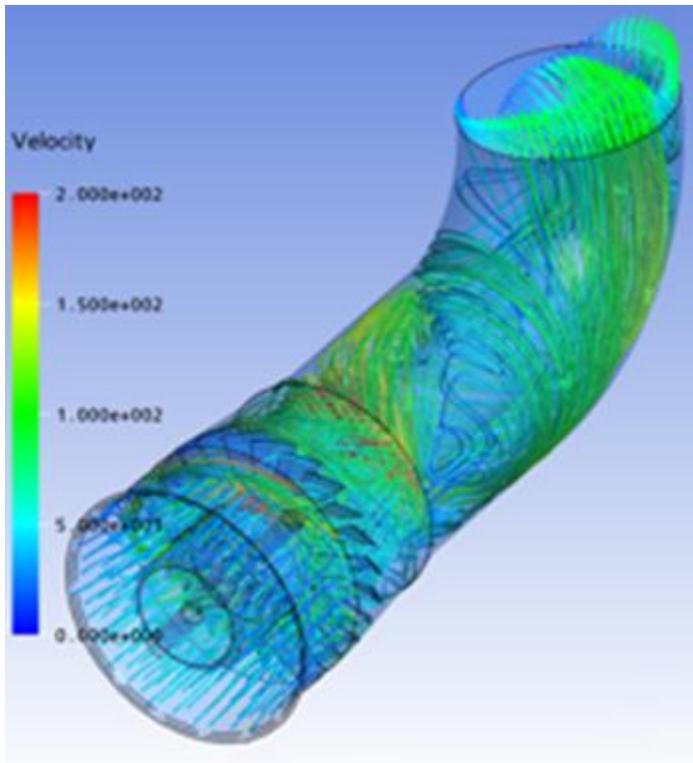


- Design heavy duty transmissions
- Accurately represent multi-gear mesh situations
- Optimize gearbox weight without compromising durability
- Predict system behavior under misuse conditions
- Compare different lubrication situations
- Precisely define micro-geometries to avoid edge-loading of teeth under extreme load conditions
- Consider split-torque system load

**Industrial equipment**

- Design for improved reliability in process machinery, material handling, power take offs, speed reducers and production line equipment
- Improve accuracy of high precision machinery by understanding and predicting system and component deflections
- Reduce failures in gears and bearings due to precise prediction of misalignments

**Consumer and office appliance**



- Optimize weight and size of power tools, food processors, washing machines, printers and photocopiers
- Improve product quality by reducing unwanted deflections
- Predict changes of working accuracy over a product's life
- Design casings that fulfill the requests for look and function simultaneously without wasting material
- Consider new materials for new or existing product concepts
- Create technical documentation for certification

Source:

<http://www.mechanicalengineeringblog.com/2320-durability-analysis-application-of-durability-analysis-in-automotive-aerospace-wind-turbines/>