



# Solving Gearbox Failures

In today's marketplace, gearbox failures are a growing concern across all industries. To meet increased consumer and market expectations, rotating machinery needs to be even stronger, lighter, smaller, quieter, cheaper and more efficient than previously produced.

If your gearbox fails to deliver one of these attributes, you need to know why and how to fix or mitigate it.

For over 27 years Romax Technology has been a global leader in providing solutions to design, develop, deploy and monitor drivetrains across all transport, marine and wind energy industries. These solutions deliver a proven combination of innovative technology, engineering excellence and design expertise to optimise business performance while reducing carbon emissions.

As a leading independent designer of gearboxes and drivetrains, Romax has an unparalleled understanding of solving gearbox failures. We can support you with a Right First Time™ solution with consultancy services, methods and tools for all parts of the product life-cycle, including field investigation and warranty issues.

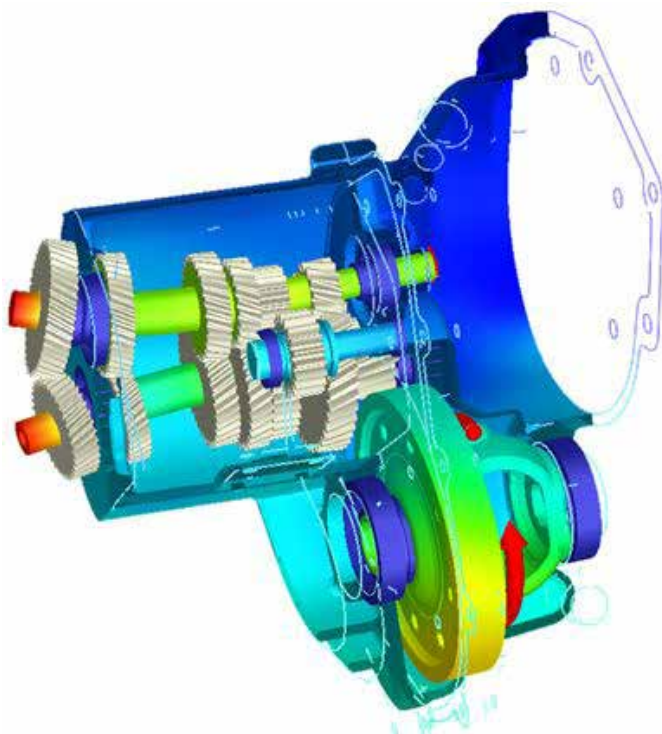
## Failure Root Cause Analysis

Romax root cause analysis will identify the failure and the various modes of failure including whole system analysis. Each contributor to the eventual failure is identified and rectified to provide a reliable and functioning drivetrain.

Using a combination of physical inspections (including onsite endoscope inspections, lubrication analysis and offsite teardown analysis), extensive engineering experience (bearing, drivetrain and metallurgical experts) and the world leading **RomaxDESIGNER** simulation software, the Romax root cause analysis reports indicates what went wrong, how to fix it and most importantly how to stop it recurring again.

Our failure analysis expertise covers all aspects of rotating machinery, including:

- Gearbox
- Main bearings
- Couplings
- Mounts
- Generator lubrication and cooling systems
- Pitch and yaw systems



*"Our main difficulty was identifying a more systematic approach regarding the powertrain, we wanted to consider the interaction between the various components, such as gears and shafts, in more detail.*

*We were analysing damaged products using our own internal process, but were also continuously considering new and improved ways to approach a problem. This led to D-I Industrial choosing Romax**DESIGNER**."*

**D-I Industrial**

*“Since engineers at D-I Industrial started using Romax**DESIGNER**, the time taken for design review of gearboxes has not only reduced but we’ve also gained new opportunities to explore multiple factors including bearing life, gear rating, housing strain analysis, and more.”*

**Junseong Kim**

**Research & Development Centre,  
D-I Industrial**

## Gearbox failure service scope

Projects vary wildly depending on objective, but every failure root cause analysis report culminates with Romax Technology’s unique ability to assess and implement practical solutions.

### SITE INSPECTION

Visual inspections using endoscope, oil and grease analysis methods

### TEAR DOWN

Failed components are dismantled, inspected and assessed in the workshop. Metallurgical analysis and measurements are conducted where appropriate

### DATA ANALYSIS

Existing load, maintenance and manufacturing data is analysed to identify critical trends

### STATISTICAL ANALYSIS

Information gathered is analysed against Romax’s global database to help identify potential future trends

### VIRTUAL SIMULATION

A Romax**DESIGNER** virtual model is created and analysed in order to verify previous findings

### ACTIONABLE REPORT

The comprehensive report will tell you what went wrong, if it is likely to happen again, how you can fix it and how you can mitigate future risk



Romax’s core strength is our ability to highlight the reason for failure, advise you how to solve it and recommend ways to avoid the risk of future failures



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