

Case Study | Industrial Heavy Machinery

COST REDUCTION - LONGWALL SHEARER

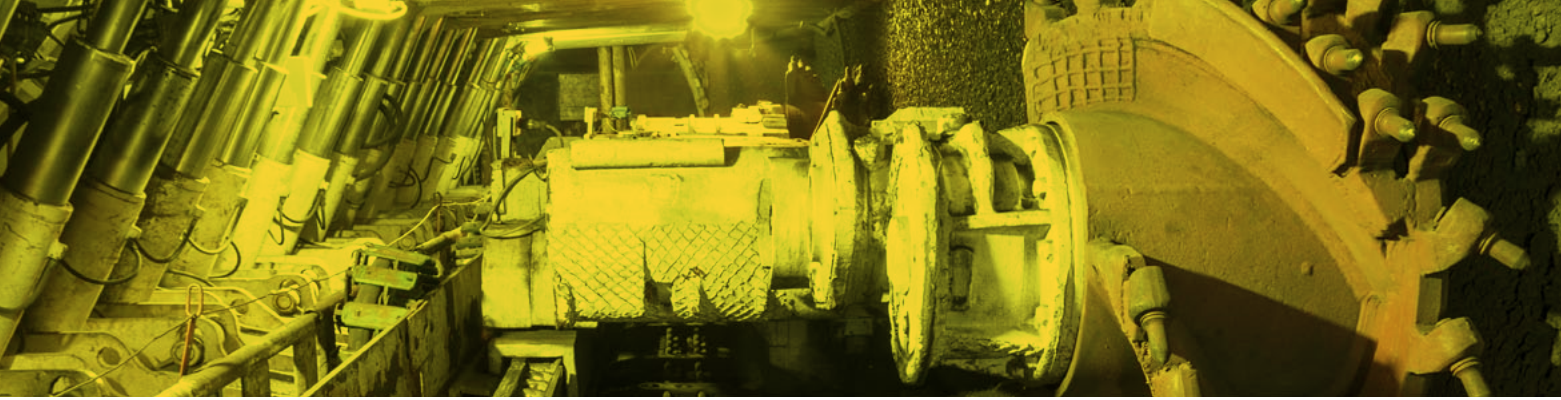
AN IMPORTANT MANUFACTURER OF UNDERGROUND MINING EQUIPMENT WANTED TO REDUCE THE MANUFACTURING COSTS FOR ITS NEW LONGWALL SHEARER AND REDESIGN THE PLATFORM RIG FRAME SO IT COULD BE MOUNTED ON EITHER TRUCK OR TRACKS.

THE CHALLENGE

- Analysing the design of the housings for the horizontal gearbox and vertical gearbox, for a potential 10% cost reduction.
- Designing modifications that could not cause changes in shape, materials, heat treatments and placements of shafts, gears, bearings and sealing systems.

THE COMPANY

The company is one of the world's leading manufacturers of construction and mining equipment, diesel and natural gas engines, industrial turbines and diesel-electric locomotives. It has corporate offices based in North America.



THE SOLUTION

Phase 1 – Quick Start

- Analysed the stiffness of the housings and determined areas where they were oversized, and where there was an opportunity to optimize shape and configuration – while keeping the minimum safety factor.

Phase 2 – Fundamentals

- Identified alternative materials to be used for the housings.
- Changed the plate thickness for some components.

- Based on Finite Elements Analysis (FEA) results, changed the housings geometry in order to reduce the number of components and consumption of materials.
- For the manufacturing surfaces, the machine allowances were optimized on all identified areas.

Phase 3 – Advanced

- Reduced the number of welded components and therefore the length of the welding seam.
- Provided cost reduction analysis using only materials and sheet metal plate thicknesses from the client's lists.

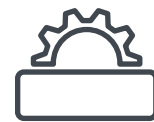
THE RESULT

~10%

Cost savings



Reduced vertical gearbox housing total costs by approximately 9%



Reduced horizontal gearbox housing costs by approximately 15%

ABOUT US

Tata Technologies is a global engineering and product development IT services company that is focused on fulfilling its mission of helping the world drive, fly, build and farm by enabling manufacturing companies across the automotive, aerospace and industrial heavy machinery verticals realize better products and drive efficiencies in their businesses. There are two components to our value proposition – managing and delivering outsourced engineering services and products for our manufacturing clients, and helping them identify and deploy technologies that are used to conceptualize, design, validate, build, test, benchmark and realize better products. For more information, visit www.tatatechnologies.com.