

## 65% Lower Vibration in Conveyor Belt Gearbox

### Challenge

Conveyor belts are vital for easy and fast transportation of aggregates in quarries. At a large quarry in Georgia, US, the Falk gearbox from Belt #1, with 110 gallons of oil was showing high stress acceleration spectra in the vibration monitoring. Harmonics of stress acceleration determine initial damages in the gearbox components. Especially critical were readings at the pinion outboard axial position.

The quarry implemented the Rewitec Nanocoating to revert and recondition this gearbox since it is key for the operation.

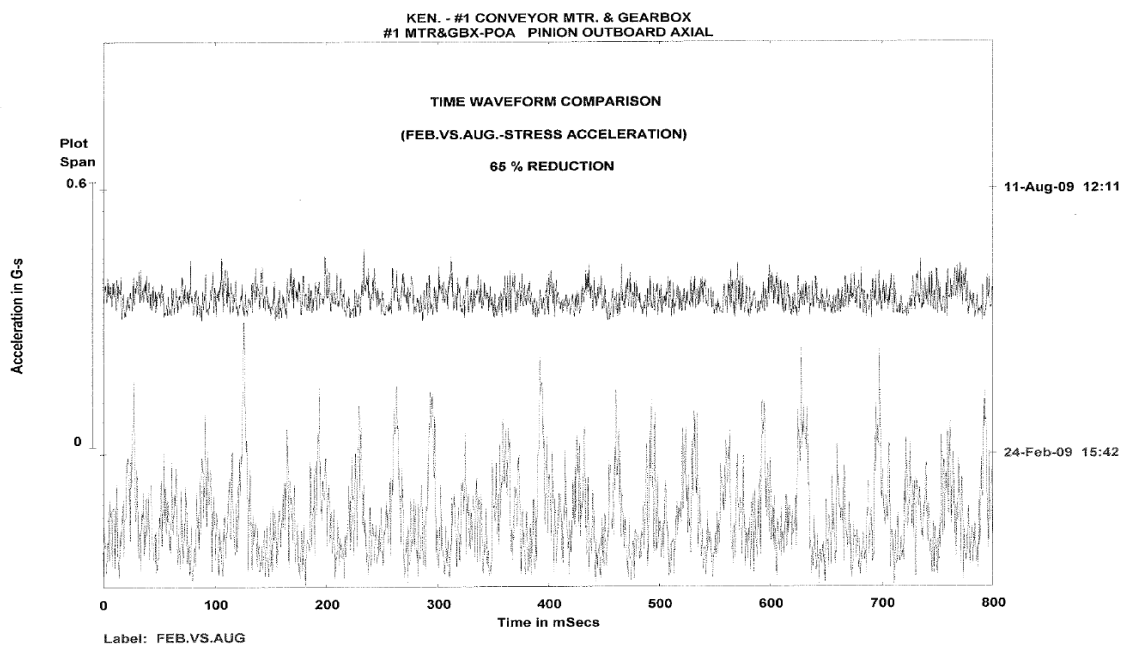
### Outcome

Between February 2009 and August 2009 the gearbox operated with Rewitec. During that period, the stress acceleration at the pinion outboard axial shown in plot 1 was **reduced 65%**! The stress harmonics seen in February in the intermediate inboard axial and pinion outboard radial shown in plot 2 and plot 3 respectively **are completely absent** in the August measurement.

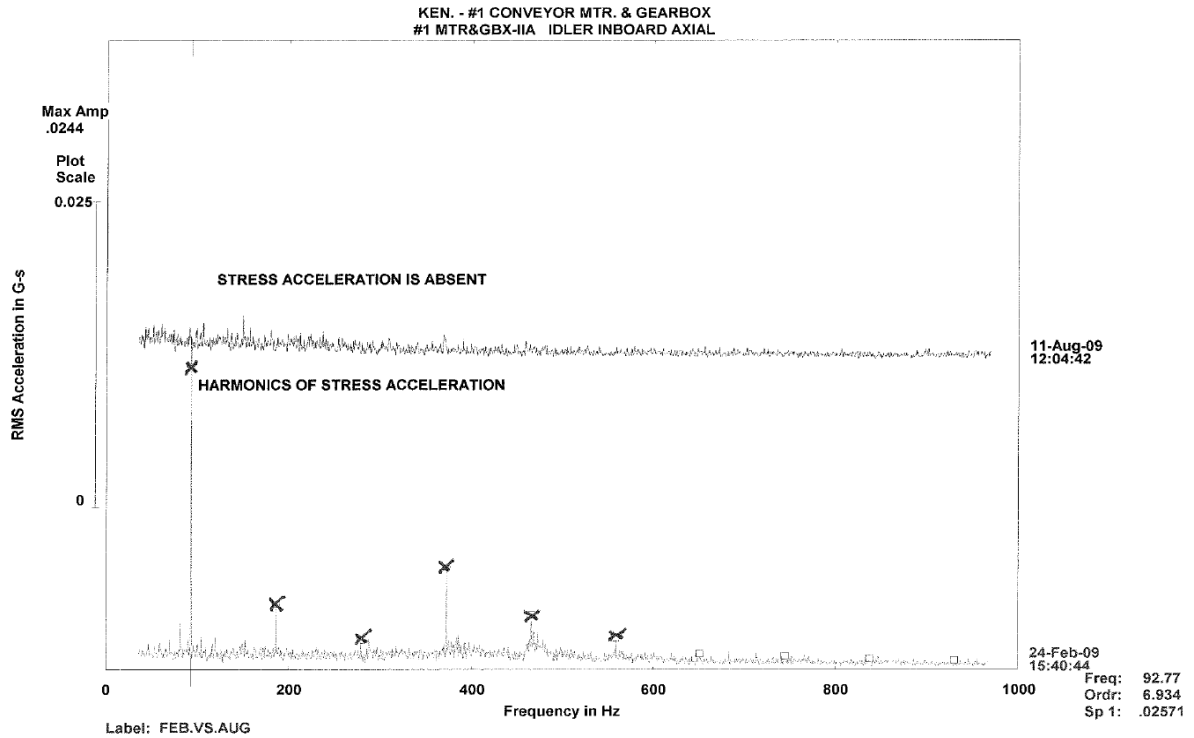
### Results:

The application of Rewitec radically regresses the damage process in the gearbox, smoothed the areas that caused stress vibrations, and increased its reliability. According to the plant manager, there is no doubt that this represents a longer lifetime for the gearbox.

Plot 1: Time waveform data for stress acceleration amplitude collected at the pinion outboard axial. This very good indicator of general metallurgical stressing is reduced by 65%.



Plot 2: Stress acceleration spectra collected at the intermediate inboard axial position. Between February and August, stress acceleration harmonics (marked with an "X") are completely absent.



Plot 3: Stress acceleration data collected at the pinion outboard radial position shows stress acceleration modulated by the pinion shaft turning speed in February. Those characteristics are absent in the August data and the noise floor is significantly reduced also. This indicates that contacting metal is sliding with less friction now.

