Fatigue cracking is a common phenomenon that occurs not only in ball mills but other rotating equipment which is subjected to cyclical fully reversed bending. Cyclically loaded members that are subjected to even moderate stresses have a finite life.

This jointly presented paper is a case study of collaboration between an equipment supplier and a cement producer, discussing the project justification and scope. Successfully executed project resulted in faster installation schedule, timely pre-shutdown work, and proven design concept utilizing a controlled rolling platform to avoid major electrical cables during installation.

In October 2017, a Nebraska-based cement producer made the decision to replace two aging ball mills suffering from an overall mechanical condition due to repeated cracking and weld repairs. Rather than continue with frequent repairs and maintenance to the mill shells, producer decided to replace their mills with new mill bodies as the long-term solution.

The replacement ball mill project began in November of 2017 and the schedule included manufacturing of the replacement components with new trunnions, ball mill shells and internal components. The equipment was shipped prior to October 2018 and the preconstruction phase began shortly after that. The critical path work included removal and reinstallation in January and February of 2019. With all new mill components being on site and prepared for installation ahead of schedule, the new shells were moved in, set in place, and aligned to original specifications. Hence, finishing ahead of schedule provided producer 2 extra weeks of production.