Romonta uses SimulationX to optimize operations of their mining equipment.

Romonta GmbH, specialized in lignite mining and coal based chemicals, runs the world’s largest production of montan wax at its HQ in Amsdorf, Germany, with about 450 employees. Montan wax is produced from lignite (brown coal) which Romonta extracts from its own open pit mine.

The removal of overburden and the extraction of lignite are executed by one bucket wheel excavator 1447 SR 1200, belt conveyors and a stacker. As the excavator is at the heart of all mining activities, it is vital for Romonta’s productivity that it is operative without any interruptions. Consequently, Romonta takes great pains to maintain and upgrade existing equipment.

»The authentic simulation results from SimulationX allowed us to precisely analyze the vibrational behavior of the bucket wheel excavator 1447 in order to back up our investment plans for an upgrade from a technical point of view.«

Axel Blunk, Chief Engineer Mining, Romonta GmbH, Amsdorf, Germany

Challenge
Evaluating vibrational behavior
Earlier retrofitting projects for the bucket wheel excavator led to a lower performance in moving overburden. The combination of high cutting resistances and the extending cutting boom caused severe vibrations, which resulted in a considerable reduction of productivity. The planned enhancements to prevent pitch oscillation needed to be backed up through simulations.

Solution
Analyzing frequencies and mode shapes
Upon importing the excavator’s CAD data into SimulationX, the MBS model was then used to simulate vibrational behavior for various levels of cutting force excitation while varying the speed of the bucket wheel.

Benefits
Profiting from virtual optimization
Since the bucket wheel excavator 1447 operates around the clock, running time consuming trials on the machine that would have caused interruptions to productivity was not a viable solution. By using SimulationX, however, it was possible to precisely analyze vibrational behavior and thus support the intended adjustments through authentic simulation results.