



PROJECT PROFILE

SELF-LEVELLING FELLER BUNCHER

CLIENT CHALLENGE

To assist in the design of a self-leveling mechanism enabling a tree Feller Buncher (forestry harvesting machine) to operate on a 30° incline. This would enable the Feller Buncher to harvest trees parallel and perpendicular to the slope of the terrain.

SOLUTION

To evaluate a 4-bar mechanism in all positions based on the force map of the boom movement. Based on the analysis, to design the self-levelling mechanism using standard hydraulic cylinders and custom linkage mechanism to withstand the harsh environment of the forestry industry. FEA was performed to verify the design for all load cases.

PROJECT HIGHLIGHTS

Design of a self-levelling mechanism enabling a tree Feller Buncher to operate on a 30° slope. This was done using only two hydraulic cylinders in the four bar linkage to accommodate a maximum pitch of 27° and a maximum roll of 20° at the same time supporting 27,000 lbs. with a maximum bending moment of 2.9×10^6 in-lb.

