

FIRST Robotics Team STEMpunk #4531

Lean Manufacturing Impact on Design Process - 2018 Power Up

2018 Design

3rd iteration of two-stage linear lift, reaches height of 7.5 feet

Active deployment mechanism increases reach and control of block placement

Optimized winch uses a single CIM on a 8:1 ratio gearbox and a 1-inch diameter spool with encoder for positioning data

3rd iteration of complex multifunction intake system

70% of robot's space and a significant portion of weight was allocated to a hopper we did not use

Lift system uses a strap and hook to minimize rung control; winch was repurposed to use two

Pneumatic brake system allows for precise lift control

2nd iteration drivetrain implements 8-inch wheels for clearance

Single iteration shooter that failed initial tests and remained untouched

Single iteration passive gear loading

Single iteration winch system designed to lift in 5 seconds

Single iteration drive train system lacked optimized gear ratios for gear cycling

2017 Design

