

## United Rotary Brush Inc., Marysville

**Intervention Key Words:** Platform, Lift, Turntable, Pallet, Scale, Tube Broom Lifting, Lift Truck, Tubing, Jib Crane, Hoist, Tilter Ground, Trolley

**Industry:** Manufacturing

**Risk Factor(s):** Awkward Posture- Back deviations, Shoulder deviations, Manual Handling- Lifting/Carrying, Pushing/Pulling, Repetitive motion

### Situation:

United Rotary Brush Inc. (URB) is recognized as the leader in the sweeper brush industry. Original equipment manufacturers look to URB for the brooms for their new machines. The process used to manufacture the sweeper brushes includes the extrusion of polypropylene bristles. It employs extruders to melt resin pellets into a liquid form and then, by use of a rotating screw, force the molten plastic out a small opening. After a slight cooling process this strand enters an oven where it is reheated and stretched. The stretching causes the strand to become stiff and then it is cooled by dipping in a water bath. The strand is cut and packaged. The finished product of the extrusion department becomes the raw material of the Rotary department, where the bristle is used to form a brush. Brushes are made by forming a steel channel and then filling the channel with the polypropylene bristles. The channel is then wrapped in a spiral fashion around a steel tube. It is affixed with welds on either end and packaged. Packaging involves standing and rotating the brush rolls on end, which weigh up to 250 lbs. Two tasks involved have shown to pose a significant Cumulative Trauma Disorder risk. Those tasks include running the extrusion machine and packaging the finished brushes. Risk factors related to these tasks process include heavy lifting, awkward motion, awkward posture, bending, repetitive motion, reaching, and lifting at or around shoulder height.



**Worker removes resin beads from Gaylord box**

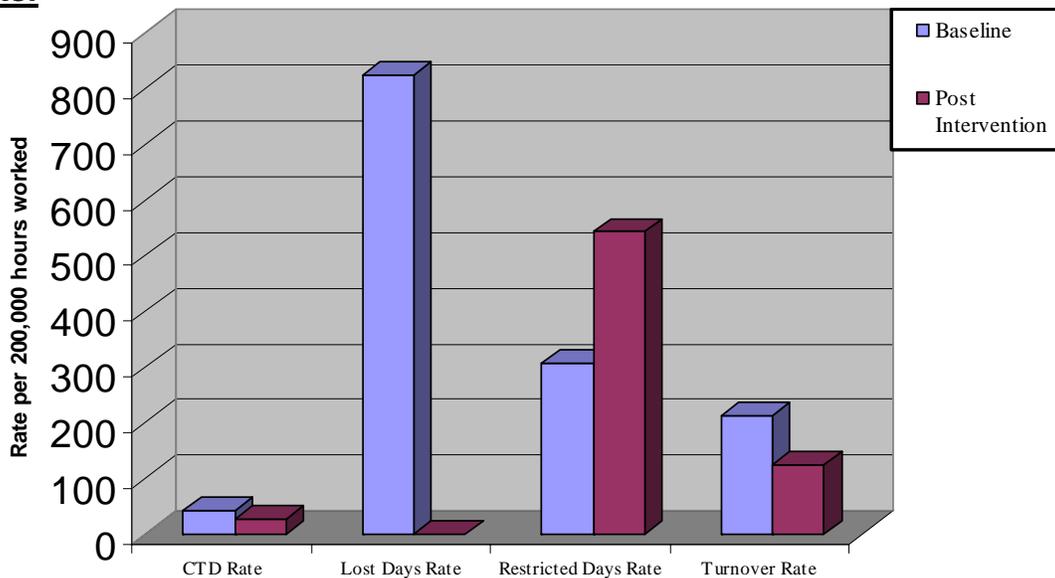


**Packaging finished brushes**

## Solution:

In order to address their CTD issues, United Rotary Brush Inc. decided to install vacuum feed loaders on the extruders. By adding a self loader to each line they eliminate the need to manually fill the extruders. The vacuum feeder draws the resin from a source and then dumps it into the hopper when it senses that the hopper is low. To improve the packaging workstation they added a pallet lifter with a turntable. This raises or lowers the height of the pallet through the use of hydraulic pumps. This allows the operator to simply slide the box from scale to pallet without the necessity of carrying the heavy boxes to a pallet located on the ground. Finally they put scales at each workstation to eliminate the added carrying and lifting involved in transferring from workstation to a central scale. For the rotary packaging tasks URB installed a chain hoist with a pneumatic three-pronged clamp, which allows the operator to lift the brush as high as necessary for packaging. There is also a powered drum handler which rotates the packaged box and a small pallet stacker is used to move the brush away from the workstation. Total cost to purchase all of the equipment mentioned was \$56,924. United Rotary Brush received \$40,000 in assistance from SafetyGrant\$ to offset the costs.

## Results:



- CTD rate (per 200,000 hours worked) was at 41.5 the year prior to the intervention and decreased to 25.6 over the 2 years following, a 38% improvement.
- Lost Days rate decreased 100% over the same time period and Employee Turnover rate decreased from 212.4 to 125.1, a 41% improvement.
- CTD Risk Factor scores, averaged over 2 tasks, decreased 48% following the intervention.