G-Force™ in Action: Machining

Doubled Productivity, Reduced Product Damage

Industry	Pump Manufacturer
SIC	3594
Application	Loading/unloading machine center
Solution	• G-Force™ BXi 300 w/virtual limits • GLCSL-FS-1000-14AL-27-11.5
Results	• Doubled Productivity • Reduced damage to machine

Application: Loading a Milling Machine

In this work cell, operators load motor adapter castings ranging from 35 to 70 lbs. into a twin spindle milling machine. The adapters are lifted out of a bin and transferred to the milling machine, where they are lined up and then carefully placed on the soft-jaw chuck. The adapters must be placed with care to prevent damage to the chuck. The milled piece is then moved to a table for deburring and loaded into the second spindle of the milling machine.

Ergonomic Assessment: Manual Lifting Is Too Big a Risk

An ergonomics assessment of the work cell identified potential hazards and problem areas to address to ensure workers' safety. Based on the assessment, the pump manufacturer began exploring ways to improve the overall safety and productivity of the area.

Prior to the G-Force™, operators frequently lifted the parts by hand or with an air balancer. These work practices created potentially harmful situations:

Risk of Injury

The manufacturer was concerned that the position operators had to maintain while trying to carefully place the castings on the chuck put them at a higher than acceptable risk for injury. It was suspected that repeated maneuvers were attributed to injuries reported at this cell.

Product Damage

The costly soft-jaw chucks in the milling machines were repeatedly damaged when castings were put down with too much force.

Lost Productivity

Air balancers took so long to bleed pressure before placing the load that valuable cycle time was lost.

"The G-Force™ is so much smoother than an air balancer - and I don't have to wait for the balancer to catch up!"

Gorbel's G-Force™ allows this operator to lift more parts per hour with less stress on his body. Plus, G-Force's™ Float Mode feature allows him to lift and place loads with his hands right on the part itself.

The Teachable Lifting Device

Among the G-Force's™ versatile features are its teachable virtual limits and speed reduction points, which have proved extremely valuable in this application.

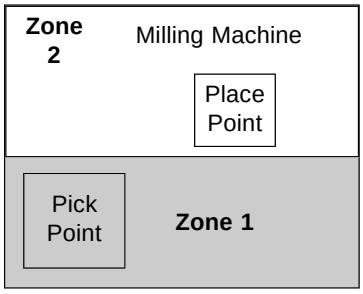
The G-Force™ BXi unit can be easily taught to stop or reduce speed when it reaches specific points in the lifting range. Through use of a sensor mounted on this custom crane system (see Diagram 1), two zones were created, one over the pick point and one over the milling machine.

Profile # 61

When the operator is in the pick point zone (Zone 1) , he is free to move at his natural pace as he lifts the casting out of the bin (see Diagram 1). As he nears the milling machine, the sensor senses that he is in Zone 2, activating pre-programmed virtual limits and speed reduction points.

These virtual limits and speed reduction points cause the G-Force™ to automatically shift to a slower speed to prevent the operator from slamming the part onto the chuck or into the sides of the machine. As he moves away from the milling machine, the operator returns to moving at his natural pace.

Diagram 1



Key:

Zone 1
Operator can move at natural pace.

Zone 2
Virtual limits & speed reduction points are activated.

Protecting People *and* Parts

G-Force™ has been an ideal solution in many ways:

Reduced Damage to the Machine

Damage to the soft-jaw chucks decreased, eliminating the need for frequent, costly recutting.

Easier Machine Maintenance

When the 300-lb. chucks do need replacing, the G-Force™ can change them out in a matter of minutes, much quicker and easier than using a cherry picker to do the job!

Improved Job Satisfaction

Perhaps most importantly, the *operators* are thrilled with the G-Force™.

As operator David Rothfuss said, "I couldn't be happier with it. There's just no comparison. The G-Force™ is so much smoother than an air balancer - and I don't have to wait for the balancer to catch up!"

The operator can lift the parts out of the bin at his natural pace. When he enters Zone 2, the sensor shown above reacts to a target mounted above the machine, activating pre-programmed virtual limits and speed reduction points. When activated, the G-Force™ automatically shifts into a slower speed to prevent the operator from slamming the part into the chuck.

G-Force™ Doubled Productivity!

As a result of the new production machine plus the G-Force™, the manufacturer has increased their productivity 100%, enabling them to decrease their on-floor inventory by 50%:

No more waiting for an air balancer

They are no longer losing valuable cycle time waiting for an air balancer to bleed pressure.

Operators can work at their natural pace

The operators can move at their natural pace without worrying about possibly damaging the adapter or the milling machine. They can count on G-Force's™ virtual limits and speed reduction points to protect their products.

GORBEL
A CLASS ABOVE

Gorbel Inc.
600 Fishers Run
Fishers, NY 14453

Toll Free: (800) 821-0086
Phone: (585) 924-6262
Fax: (585) 924-6273

Web: www.gorbel.com
E-mail: info@gorbel.com