

Balancing - A Key Component for OSG USA

One industry that certainly knows about the importance of quality, precision and productivity is the cutting tool industry. This incredibly competitive industry must balance (pun intended) demand for innovation with the challenge of producing cutting tools that are cost-effective for the end user. To do so requires the utmost efficiency and productivity. For OSG, a global leader in the manufacturing of premium cutting tools for the metalworking and composites industry, the pursuit of greater efficiency and quality in manufacturing never stops.

How Can We Improve Throughput

Many years ago, the reoccurring question of how to further improve throughput and machine utilization met with a conversation about balance. Vladimir Lazarevic, engineering manager at the time, met with HAIMER and some of the other production engineer's at OSG USA's Bensenville facility to discuss how one might help the other.

During the meeting, Brendt Holden, President of HAIMER USA laid out the benefits of balancing wheel pack assemblies, which included:

1. Longer wheel life
2. Improved surface finish on carbide tools
3. Reduced power consumption/load for longer spindle life
4. Ability to run faster speeds for increased productivity

The Test

As any good engineer does, Vladimir established a series of tests to conduct on the production line to properly evaluate HAIMER's claims. Several repeat wheel packs responsible for longer production runs were isolated for the test on two types of CNC grinding centers. Key analytics of the existing wheel packs were recorded, including wheel life, power consumption and surface finish quality. Next, new wheel packs were sent to HAIMER for balancing, and returned ready for production with total unbalance for each wheel pack assembly being well under the G2.5 specification at 10,000 RPM.

The wheels were placed into production, at the same speed and grinding parameters as before, and results were recorded during and after grinding.



The Grinding Results

- Load: During grinding, power consumption on both grinding machine platforms decreased 18%.
- Wheel Life: The wheels were able to produce approximately 20% more tools due to less (and more concentric) wear.
- Spindle Life: OSG calculated spindle life increased 30%; thereby lowering maintenance costs and down time.

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- Surface Finish: No physical measurements were necessary. A clear visible improvement in surface finish was evident.

“The results were undeniable,” said Vladimir. “Fast forward after all these years to today, and I cannot imagine grinding tools without balancing the wheels first. It has improved our machine utilization and improved the lifespan of the machines themselves.”

Conclusion

For OSG’s U.S. carbide production facility, the greatest value was in productivity and throughput. As a result, they increased grinding speeds for all machines utilizing balanced wheel packs by 18%, to bring the machines back to their original power consumption. Some operations, such as fluting, were able to be increased as much as 57%. While the dollar value of this productivity gain remains confidential, it was confirmed that ROI for the [HAIMER Tool Dynamic](#) balance machine was over 500% with a payback period of less than 3 months.

So whether it is tool life, surface finish, productivity or a little of all the above; balancing nets quantifiable returns.

