IMI Cuts Production Time with Flaig's FXL

Introduction

Flaig's FXL Electromagnetic Chucks are used in Milling, Grinding, Drilling and Tapping operations where the goal is to securely hold steel workpieces while they grind or mill without damage that can come from common mechanical clamping and other chuck devices.

The FXL Electromagnetic Chuck securely holds steel work pieces, minimizing waste and reducing setup time. Its precise clamping boosts part accuracy and production efficiency.

The Flaig FXL delivers many direct benefits including low vibration machining and clamping, fast and safe clamping of uneven parts, uniform clamping force without distorting or crushing, five-sided machining in only one set up, full usability of traverse paths, minimal set up times, and so much more.

Background

Industrial Magnetics began its exclusive North American distributorship with Flaig Magnetsysteme in 2019 for lifting products and added the FXL electromagnetic clamping systems to the product offering in 2024. Because it is a product that IMI believes in so deeply, it was incorporated into our own production processes and has shown significant results.

The FXL was implemented in IMI's machining department to keep workpieces secure and clamped to the table. Upon implementation, the team was expecting a challenge in how vices were still going to be used for stainless steel materials. The answer was a quick fix – 30 minutes to be exact – as a program was written that allowed the users to drill pin holes for locating pins. The vices then go on locating the pins. Once the vices are in place, the magnet is turned on, holding the vices securely for repeated accuracy and fast set-up without issue. The magnets hold firmly without issue. The fear was that the vice was not appropriate due to the type of the material; however, that was not the case.

The only other challenge anticipated was the learning curve that comes along with learning any new type of machinery. This challenge was centered around learning the different capabilities of the accessory poles that work with the FXL.

Implementation, Challenges, Solutions

Implementing the FXL into the machining process took about a day of downtime. The work that occurred behind the scenes included introducing the product to the machining team as a whole to get overall feedback. After that, the maintenance and mechanical engineering teams were looped in to help craft an installation plan. Further conversations included outlining specific projects and opportunities where the FXL could be used and determining what size unit was best for our operations.

Planning prior to execution allowed the implementation process to be quick and easy. The total time investment was roughly a day and a half for all parts, including the wiring, programming, and installation of the FXL.

As our machining team pointed out, there is a learning curve just as there is with any new technology an organization adopts. Beyond that, there have not been any specific challenges with the FXL.

Results

Labor times showed noticeable improvement from the first product machined with the FXL.

One illustration of this was evident in a project that featured four magnets. The FXL allowed for a 54% faster production of these four magnets than traditional clamping technologies. The machining department, where the FXL was deployed, was the primary factor behind the time savings, while build times in other departments stayed relatively constant. Machining these parts on five sides of each part with one set-up created a huge advantage.

Another example of significant time savings occurred when our team machined a large quantity of parts. Using the FXL, we completed these tasks between 37% and 43% faster than traditional

clamping methods. The exact percentage varied slightly depending on the order size, ranging from 30 to 120 parts. The FXL's efficiency allowed us to finish large projects in a fraction of the time.

Benefits

The FXL offers several key benefits that can significantly enhance manufacturing efficiency. Its uniform, fast, and safe clamping capabilities, combined with full traverse path usability and the ability to clamp warped, welded constructions quickly, resulted in substantial time savings for users.

The IMI team particularly valued the FXL's minimal setup times, five-sided machining capabilities in a single setup, and reduced vibration, which enables higher tool speeds and less tool wear. Our team typically performs one operation in the program, then adjusts the part and re-clamps it to ensure accurate alignment. This process is repeated until the task is finished. Our machining team found that these advantages not only shortened labor times but noted that over time will lead to significant cost savings.

Conclusions

Flaig Magnetsysteme’s FXL Electromagnetic Chuck has significantly improved Industrial Magnetics’ machining operations. By replacing traditional clamping methods, the FXL has reduced set up times, increased part accuracy, and lowered vibration levels. This has resulted in faster production times, reduced labor costs, and extended tool life. The implementation of this workholding equipment has proven to be a valuable investment for IMI, delivering tangible benefits in efficiency and productivity.