TRD USES MODULAR TOMBSTONE FIXTURES TO IMPROVE PRODUCTION OF CYLINDER COMPONENTS BY OVER 40%

ADVANCED MACHINE & ENGINEERING (AME) PROVIDES SOLUTIONS TO RUN 56 DIFFERENT BLOCK SIZES AT ROCKFORD-AREA MACHINE SHOP

AME workholding tombstone devices on an Enshu HMC at TRD. 56 block sizes are run, producing over 450 different parts, in one-off to 500-piece quantities. The HMC runs in tandem with a Fastems 10-station (5 x 2) pallet changer.

In its production of various cylinder and related products for hundreds of customers, TRD Manufacturing, Inc. of Machesney Park, Illinois (near Rockford), a division of Bimba, one of the leaders in actuation devices, was challenged by an ever-increasing variety of sizes, styles and materials in their workpiece blocks. As VP of Operations Kerry Reinhardt explains, "TRD is a fast-paced manufacturer but very dedicated to high quality and fast turnaround on deliveries. We have an established reputation as a solution provider to the fluid power industry." The company sells through distribution with its end users found in the general manufacturing, automation integration, mining, forestry, medical, food and various mill industries. TRD products are regularly specified as OEM components, plus the company serves the huge MRO marketplace.

To meet the demand for products in an ever-expanding line, complicated by the just-in-time delivery schedules often encountered, as Manufacturing Manager Tom Jensen notes, "TRD was seeking a partner who could develop fixturing to fit our manufacturing business model of quick set-up and the flexibility to run small or large batches of product from a multitude of block sizes."

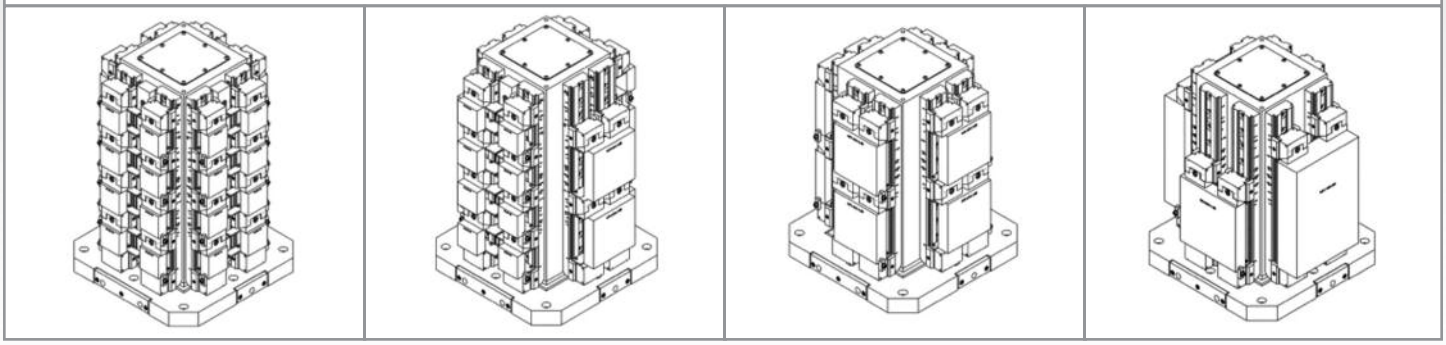
TRD turned to a local supplier of various machine tool components, Advanced Machine & Engineering (AME) in Rockford, Illinois. The head of the AME workholding group, Alvin Goellner, observes, "After a few discussions and visits to each other's plants, we knew TRD would benefit most from our Triag line of modular workholding devices."

Tom Jensen concurs. "We knew AME had a reputation for building top quality fixturing. Their in-house manufacturing capabilities were very impressive and we knew they could handle a project of this size, based on the other customers they serve and the fact that they are just across town from us, which made it easier to work through the preliminary discussions, quoting and final product delivery." The horizontal machining center (HMC) used for this particular application at TRD is an Enshu GE480H, with 30" x 30" x 30" travel and a 180-position toolchanger, expandable to 240-position. Workpieces are mounted and handled on a Fastems 10-station pallet changer. Currently, the block sizes run at TRD are 56 in number and run in sizes from 1" x 2" x 2" to 3" x 9-1/2" x 14". Weights range up to 114 lbs. Final part varieties produced on the machine number over 450, made from 1018 steel and 303 stainless. Lot sizes vary from one-offs to 500, but generally run between 25-50 on average. This machining center set-up runs two shifts per day, with the expectation of running 24/7 during peak demand periods.

The challenge for Alvin Goellner and his team at AME was to design a series of fixtures that was flexible enough to hold 56 different block sizes, offer quick changeover and offer the ability to run different parts on each side or run multiple pallet loads of the same part in high production, when needed. As Goellner notes with a smile, "It was a real one-size-really-can-fit-all situation. We knew the HMC with pallet changer was very costly to run, so keeping downtime to a minimum was essential."

The solution came in the form of ten Triag custom modular tombstone-style fixtures from AME, who partners with Triag, a major European workholding component supplier, as their exclusive North American distributor. As Jensen notes, "The fixturing in our existing machining cell was fixed, based on block size. AME fixtures use a vise system that quickly adjusts to any size with repeatability, a really key factor in the equation, as it allows all our work shifts to be pre-taught the process. We normally have the fixtures set for specific part sizes but this AME solution now allows us to run any size part on any pallet very quickly for high-volume

The machine operator says he sets up the machine for his shift, as well as a virtually unattended second shift at TRD.



Illustrations show the various arrangements of workpieces possible with the custom Triag tombstone-type workholding devices provided by Advanced Machine & Engineering to TRD Mfg. for the production of cylinder heads and caps.

jobs." He also observed there was a very short start-up time in the TRD shop, as the flexibility of the tombstone design and the fixturing mechanisms were relatively easy to learn for the operators.

Jensen continues, "We met with Alvin Goellner and brainstormed the improvements needed on our current fixturing system. AME laid out a concept and provided drawings for each fixture, which we then reviewed and approved, based on our current production schedules and anticipated workloads, going forward. All the fixtures ordered arrived on-time or ahead of schedule, a very refreshing experience." Goellner was the lead man for AME on the project, bringing his 20+ years of fixture design and build experience to the task. Because all aspects of this project's customized manufacturing, assembly and test of the Triag tombstone fixures were done in-house at AME, there was little delay in the processing of the project and all design changes were quickly accommodated, according to Jensen.

Reinhardt further commented, "The overall experience was excellent and the results have been outstanding for TRD. The project went well and all our expectations were met." He estimates the improvement percentage in production on the Enshu HMC to be over 40%, after several months in operation.

TRD combines 27 years of precision machining and engineering with an unmatched selection of options and modifications to deliver the highest quality customizable NFPA (National Fluid Power Association) cylinders on the market today. At TRD, the customer's specials are their specialty.

Advanced Machine & Engineering Co., is a manufacturer located in Rockford, IL, serving the Machine Tool Industry with precision components and accessories, including spindle interface components, workholding devices, and, through our sister company, Hennig, machine enclosures, chip removal and filtration systems. The Fluid Power – Safety markets are served with cylinder rod locks and safety catcher devices; and the Production Saw market with our AMSAW® carbide saw machines and Speedcut blade products. AME has manufacturing partners and customers around the world and across the U.S.

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