



## Doing It All with Multitasking

By Keith Felts & Gary Holcomb

Milling and turning have historically been separate machining processes. But modern CNC machining has allowed for the combination of these two methods, enabling milling and turning to occur in one setup on a single machine.



Figure 1: Nakamura-Tome multitasking mill/turn machine at Douglas Machining.

Compass Precision is embracing this newer technology. Making mill/turn machinery a priority has turned Compass into a multitasking leader in the CNC machining industry.

With the mill/turn process, machines perform both milling and turning by rotating the workpiece (turning) and utilizing rotating cutting tools (milling) at the same time. Tool and workpiece movements can occur on multiple axes, including but not limited to the x, y, z and c-axes, all at once.

Because of this, the mill/turn process completes parts in one setup. This is a particularly great advantage, as finishing a part in a single setup means more efficient and accurate work. Human error is greatly reduced.

The possibility of other multi-functions also exists with mill/turn centers. If equipped with dual spindles, the part can be passed from one spindle to another during machining and both ends of the part can be completed without operator intervention. A dual spindle machine could also be set up to cut two parts, potentially for two different customers, during each machining cycle. If the machine is equipped with two tool turrets, the parts could be machined concurrently. This achieves the same output as two separate machines (assuming the two parts have similar cycle times) but with a much smaller footprint and reduced labor requirement.



Figure 2: DMG Mori multitasking mill/turn machine at Advanced Machining.

But not only are mill/turn machines more efficient and accurate, they also possess the ability to machine more complex parts. Because the process performs the function of both a lathe and a mill, mill/turn machines can create unique contours and very intricate parts.

Similar to a lot of the newer and more efficient CNC machinery that has grown more popular recently, the biggest disadvantage of mill/turn machines is their initial cost. But that's not an issue at Compass Precision.

Compass invests in the latest and newest state-of-the-art machinery wherever possible. That includes 16 mill/turn machines at Advanced Machining & Tooling, Douglas Machining

Services and Gray Manufacturing Technologies -- three of Compass' five operating companies.

Douglas Machining leads those three companies with 12 mill/turn machines. When Compass acquired the operating company at the end of March 2021, Douglas Machining possessed eight

mill/turn machines. Since June 2021, Douglas Machining has acquired four additional mill/turn machines to significantly increase its capacity. Similarly, Advanced Machining has also doubled its number of mill/turn units (from one to two) since its acquisition by Compass in October 2019.

With its array of mill/turn machines at three operating companies, Compass satisfies its customers' need for complex parts more difficult to machine with other processes. Compass meets this demand with quicker deliveries due to shorter lead times and fewer errors because of 'one-and-done' processes.

Using its mill/turn machines, Compass fulfills shipments in the aerospace, space, defense, medical, power generation, industrial automation, and other demanding industries.



Figure 3: Mazak multitasking mill/turn machine at Gray Manufacturing.



## About the Authors



### Keith Felts

Keith co-founded Advanced Machining in 1985 and has served as President since then. He is responsible for Advanced's investments in mill/turn technology as well as in 5-axis machining. Keith is also a leading expert in electrical discharge machining, particularly sinker EDM. He previously worked as an application engineer for Agie Charmilles, a top manufacturer of EDM equipment.



### Gary Holcomb

Gary led the formation of Compass Precision in 2019 and serves as CEO. He previously was CEO of Coining, a Montvale, NJ-based precision stamping company whose revenue grew from \$13 million to \$65 million over seven years under his leadership. Earlier in his career, Gary was General Manager of the CNC machining division of Dynamet in Washington, PA.