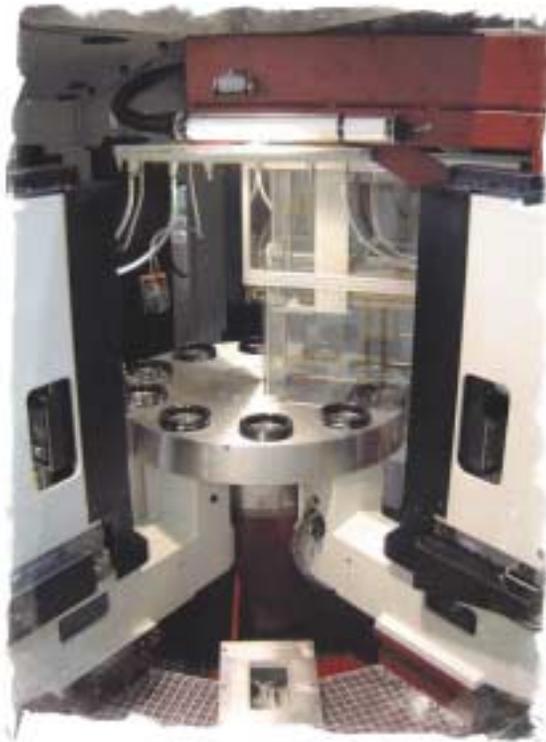


Bruno Schmitter, president and CEO of precision transfer machine maker Hydromat Inc., (St. Louis, MO) says that the development of the company's new Advanced Technology (AT) machine was driven by requests from watchmakers who required that their parts be firmly clamped throughout the entire machining process, since each time a part is clamped and unclamped the potential for error increases. Recognizing that there aren't a whole lot of watchmakers among the readers of *AM&P*, Schmitter ticks off a long list of automotive parts that could be produced by the AT: fuel injectors, ABS components, air bag system parts, and engine components including those for common rail diesel applications. He says that as more auto parts shrink in size they become potential candidates for processing by the AT.

The AT is a CNC-controlled, servo-driven pallet machine that can perform every machining operation necessary to transform a raw cast part into a complex finished part. The AT's ability to completely finish a part and eliminate secondary operations, and the lost time and increased manpower that go along with those operations, comes from what Martin Weber, vice president, Manufacturing, describes as "a range of tooling possibilities including horizontal and/or vertical tool spindle units, multi-tool turrets for multi-tasking and/or an automatic tool changing system with redundant or common tools to reduce down time associated with worn tool replacement."

The AT employs an innovative design to achieve this breadth of capability while maintaining precision measured in microns. Weber explains, "The table of the AT serves only as a transport device. The table lifts and transports each modular pallet to the next

ONE STOP PARTS MACHINING



Hydromat's new AT machining center achieves great accuracy in part through an innovative table design that moves each part and its pallet from station to station where it is clamped precisely into place.

pallet fixture. It lowers the modular pallet to the fixture pallet where it is located and clamped. Accuracy and repeatability are achieved via the pallet chuck system." The AT uses the Erowa Power Chuck in its pallet chuck system which is accurate to 2 microns or less, and has a self-locking ball lock that generates clamping power of 9000 N. The AT comes with either eight or ten base units, each of which can be a three- to five-axis CNC machining cell. The units are modular single-piece castings which support the pallet fixture, fixture servo drive and machining unit. The spindle motors on the stations are rated at 3.70 kW, and the pallet and workholding spindle drive is rated at 1.5 kW and a maximum of 5,000 rpm. The work envelope is 115 mm in diameter.

Another Hydromat machine that uses an unusual approach to achieve higher precision is the HydroTurn or HT. The HT marries the precision of a sliding headstock with the fast cycle time of a rotary transfer machine. The main advantages of the sliding headstock portion of the machine are that it can load the part into the collet with extreme precision, turn the part very precisely and handle heavy metal removal. These qualities make it applicable for processing long slender parts like fuel injector components and transmission spools. The HT's design allows it to use drawn bar stock instead of more expensive ground stock, and, like the AT, its ability to process a part completely eliminates the expense of secondary operations and further parts handling. The CNC-controlled machine can be programmed for JIT short runs as well as high-volume production; a distinct advantage to automotive suppliers who must be ready for the next hot product—*KEW*