



Application Story: TPS International

TRANSFER MACHINES *HELPING BRING BACK BUSINESS TO OEMs AND JOB SHOPS HERE*

As companies continue to wrestle with off-shore competitors, many are finding a solution in the utilization of transfer machines. Once used solely for dedicated machining of high-volume parts runs, transfer machines now afford OEMs and job shops alike enhanced flexibility, due to the improved controls onboard. Medium quantity runs, as well as smaller batches of highly complex parts, are now suitable for properly equipped CNC transfer machines.

TPS International of Sussex, Wisc., finds many customers receptive to this notion. TPS develops applications for, sells and services a variety of European and American-built machine tools, as well as its own proprietary line of positive contact broken tool sensors. With sales and service offices throughout the U.S. and also in Switzerland, TPS maintains close contact with its customers and builders alike.

On the Wirth & Gruffat TRANSTURN TT 312 rotary transfer machine, the capabilities of a multi-spindle screw machine combine with a CNC rotary transfer machine to achieve up to 60 axes of movement which substantially reduces the overall production time on complex parts. In one application, a complex steel firearm component is produced by TPS' customer, Magnus Precision of Phelps, N.Y., in just 22 seconds. The system completes the part from bar stock, with operations including multi-side turning, reaming, milling, tapping and slotting. The Transturn replaced seven machine tools and the associated labor and operating costs.

A key to the transfer machine's ability to multi-task in this manner is the Siemens SINUMERIK 840D CNC with four numerical control units; and SIMODRIVE 611D with numeric converter for 60-axis control

and independent sequencing of all workpiece action.

The W&G (Wirth & Gruffat) TRANSTURN TT 312 features 12 stations including a load/unload station equipped to automatically feed a cut-off blank that is supplied by a connected sawing and elevating system. The remaining eleven stations can be equipped with 2-axis CNC upper and lower cross slides mounted to cast iron columns. Each cross slide can accommodate static or driven tools allowing more than 22 horizontal, vertical or angular machining operations to be completed in a 12-station envelope. One station is generally used to invert the part within the machining sequence. Each workpiece clamping collet or chuck is an independent C-axis and can rotate up to 6,000 rpm. The CNC controls each of the 12 C-axis spindles, including all the upper and lower X and Y station axes. The index table is also driven by CNC.

Above left: TPS technician Scott Radschlag conducts a runoff on the TRANSTURN TT 312 FROM Wirth & Gruffat, prior to delivery to the customer, a large job shop.

Above center: Upper and lower slides at each of eleven machining stations can enable a minimum of 22 machine ops. The part or the tool can rotate or index, as required

Above right: A 1215 or 416 stainless steel billet is machined in 22 seconds to produce a firearm component, requiring only electroplating prior to assembly.

Below: Remote pendant operation can reprogram in real time.



TPS also serves OEMs and job shops; in the automotive, appliance, valve, fitting and other industries.

Hank Kohl, vice president and manager, TPS Machine Tool Solutions Group, explains the trend to transfer machines. "Some of the developmental work we do with our U.S. customers becomes the platform for design at the machine builders. Often, our approach of designing unique solutions to unique manufacturing challenges opens up new ways of thinking for our machine builders. A customer can justify a transfer machine if the productivity comes with CNC flexibility." Kohl continues, "The TRANSTURN TT 312 was the fusion of these ideas. In real time, all functions needed to be programmable and the basic PLC wouldn't get us there. We essentially furthered an evolutionary process for a PC-based control and drive package, working with Siemens. Their digital drives could run in close proximity without excessive noise and with real-time feedback."

"Overall, the Siemens platform enabled this machine to be built. Due to outsourcing, more job shops are looking for the complex parts and unique capability transfer machines like the Transturn to remain competitive. Targeting

complex part manufacturing with fast cycle times, quick changeovers and a high degree of automation has resulted in North American firms recapturing business lost to China and creating new business opportunities for themselves. This is not limited to automotive suppliers. Our customer base includes both OEMs and job shops in the appliance, fluid power, plumbing, power tool, small engine, ordnance and medical industries," observes Kohl.

Additional benefits cited for the transfer machine include a smaller machine footprint, less inventory, the ability to machine the part complete in one cycle and an enhanced "lights out" potential for the customers.

TPS currently supplies its own proprietary software packages with transfer machines, based on customer and application requirements.

TPS International was founded in 1981 by partners Dean Bentzien and Guido Brusa. The company routinely conducts its Tech Tours, where customers visit TPS' various machine tool factories to evaluate which manufacturing strategies best suit their own specific objectives. ■



A Siemens SINUMERIK 840D with four CPUs occupies an electrical and HVAC control cabinet nearly 30' in length. Controls up to 60 axes and all auxiliary devices.

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