

# Aerospace Shop Grows on Secondary Op Machining

**B**-C-D Metal Products Inc. (Malden, MA) was established as a blacksmith shop in 1935 by three Swedes, Eric Bergstrom (B), Oscar Carlson (C), and Sven Dahlquist (D). The company was incorporated in 1953 by Ralph Carlson and is operated today by a third generation of the family as a woman-owned small business with a fourth generation waiting in the wings.

“Our expertise today includes tube forming, small-precision machining, CNC milling and turning, EDM, welding, brazing, and ultrasonic cleaning,” said Randolph Carlson, plant manager. “We supply aerospace, ground support and military and missile defense companies with products ranging from fabricated brackets to precision nozzles and are well known for manufacturing oil nozzles with EDM and doing flow, directional, and pressure testing.”

B-C-D Metal Products specializes in tube bending and has a fully equipped machine shop for CNC milling and turning of small-precision parts. Typical applications include machining stainless steel engine parts for aerospace companies as well as aluminum and difficult-to-machine aerospace metals such as Inconel and high nickel alloys.

“With the volume of our CNC machining increasing, we recognized a need to add equipment to do secondary operations, especially because of our emphasis on lean manufacturing,” said Carlson. “We saw the TRAK 2OP portable machine from Southwestern Industries. [Rancho Dominguez, CA] at a trade show and could see its potential in our machine shop. A little over a year and a half ago, we purchased two of the TRAK 2OP machines, which quickly paid for themselves doing secondary operations.”

TRAK 2OP portable machining centers have an XYZ travel of 14 × 12 × 17” (355 × 305 × 432 mm), a 3-hp (2.2-kW) BT30 spindle



*TRAK 2OP workcell at B-C-D Metal Products is positioned near large milling machines and cells.*

taper, and an eight-station toolchanger. They occupy a 2.5 × 4’ (0.76 × 1.2-m) footprint, and are G-code compatible. “Right now, we are doing strictly milling work, but the TRAK 2OP machines have more capabilities for drilling holes or three-axis interpolation for profile milling. Although the machines can be moved anywhere in the shop where 220-drop down power is available, we’ve positioned them right next to our big CNC mills and their cells,” said Carlson.

“Guys in our departments love working with them. Because the machines utilize the ProtoTRAK CNC conversational language, they are easy to program and have the TRAKing feature that allows you to run a program by turning the handwheel. This is ideal for proofing programs because it allows you to run a program very slowly without hitting or bumping things,” said Carlson. “We practice lean manufacturing in the shop and the TRAK 2OP machines have

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helped us improve throughput. We've gone from having a 10-page hot list of current jobs reduced to a page and a half because we are more efficient in handling our secondary machining operations."

The TRAK 2OP machines provide a practical yet unique solution to a shop by organizing primary machining and turning centers in small clusters or cells of one or two machines, leaving a little space to bring small portable secondary machines into the cell as needed for a particular job. In this way, additional spindles are brought in to complete the job and maximize output. Theoretically, more and more secondary spindles can be added until the machinist's total work minutes to tend the spindles reaches the longest cycle time of any of the spindles. An additional benefit of this strategy is that it combines operations and thereby lowers costs of scheduling, organizing, inspection, and expediting.

The portability of the TRAK 2OP machines minimizes the shop's capital costs as well. If they were not portable, more would be required to be used wherever they were needed. Portability allows them to be moved to where they can be used with the



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work can be brought to any machinist who is running a machine with a cycle time that causes him to be idled. He may be able to do this job without any additional labor, saving cost.

Spreading a machinist's time over more spindles reduces the labor content per part and its cost. A second benefit of this strategy is that fewer machinists are required for any given level of work, minimizing the need to hire and train more machinists.

Streamlining its secondary ops machining fits right in with B-C-D's lean manufacturing strategy. "One of the things that we've done is tool up to the maximum on our secondary machining operations with emphasis on quick-change tooling," said Carlson. "We've been able to cut down on noncutting time which has allowed us to reduce lot sizes. Instead of running all 500 pieces in an order at one time, we've improved our processes so that we can change setups faster in a fraction of what they were before. With this improvement in throughput, we can run what we need now and put it back in the system later."

B-C-D Metal Products has ISO 9000 and AS9100 certifications, as well as being NADCAP certified in welding, brazing, and wire EDM and EDM hole drilling.

**For more information from Southwestern Ind. Inc., go to [www.southwesternindustries.com](http://www.southwesternindustries.com), or phone 310-608-4422.**



*Sample part machined by a TRAK 2OP machine at B-C-D Metal Products.*

best results. Some jobs may be able to be completely machined on the portable secondary machines. In that case, the machines and