

Application Story: Stihl, Inc.

COMMON CONTROLS KEEP STIHL CUTTING...LITERALLY

Stihl Inc. of Virginia Beach, VA, produces a broad line of chain saws for professional, commercial, farm and consumer use. Plus, the company manufactures other outdoor power equipment, such as gas and electric grass/weed trimmers, hedge trimmers, edgers, pole pruners, brushcutters, leaf blowers, sprayers, earth augers and driveway sweepers.

Based in Germany, the Stihl Group has operated U.S. manufacturing, sales and distribution facilities since 1974. Stihl Inc. employs over 1,300 workers, most at the Virginia Beach manufacturing plant, the largest producer of units in the Stihl Group. The Virginia Beach facility is an impressive complex of approximately 700,000 square feet on more than 70 acres in the Oceana West Industrial Park.

At the heart of the manufacturing facility here are multiple semi-automatic assembly lines, where dozens of metalcutting machine tools of various types produce the component parts for the equipment. The materials used for production of mechanical metal parts include 4140 stainless steel hardened to 40 RC, 4180 stainless and high silicon-based aluminums.

The machine tool department at Stihl reads like a "who's who" of the industry, with top-line milling, drilling, reaming, boring and finishing machines from world-class builders, as well as proprietary Stihl piston machines and large multi-function rotary transfer machines. In these latter machines, a forging enters one chamber and literally exits another as a finished part, needing only secondary finishing and/or heat treatment operations before assembly. Stihl also operates complete design loading automation cells. From the rotary transfer machine, a finished soft machined part is produced, with a total of 10 separate machining operations performed

on the workpiece, including roughing turn, semi-finish turn, finish turn, facing, grooving, center drilling, through drilling, thread rolling, reaming and deburring.

Other multi-function machining centers at Stihl include the Gildemeister Twin 42, Emag VSC250, Pittler Petra SL and others for hard boring and facing operations, primarily. The company also operates Weiler C30 and E35 controlled-cycle lathes, where CNC technology is utilized in part or overall to monitor cutting operations, even in short-run or one-off batches.

The common controls of choice for all the above machines, according to Stihl Inc.'s director of manufacturing, Paul Bruggeman, are various Siemens CNCs and PLCs. They range from the SINUMERIK 840D, a complete onboard controller of all machine motions, to

Above left: An operator maintains Siemens SINUMERIK 840D controls on a multi-station Wirth & Gruffat transfer machine, on which multiple cutting ops occur in sequence, producing a semi-finished part, will then be heat treated, hardbored, pressed, and finished ground.

Above center: Siemens SIMATIC PLCs provide immediate status information to operators, in fast, accessible mode, on an automated test cell line for outdoor power equipment at Stihl. Six SIMODRIVE 611 drive packages and a Win CC data collection system are also onboard this cell.

Above right: CNC and PLC modules on a gear cutting machine station provide total information management for quality control.

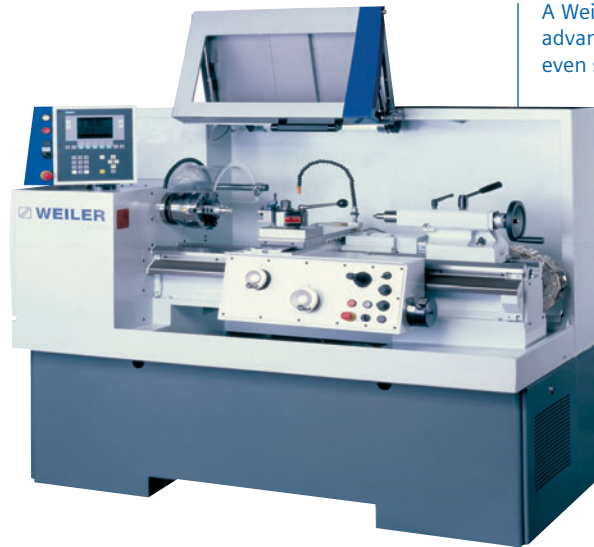


Remote pendant operation can free the operator to inspect multiple work stations on a large transfer machine. The remote pendant controls all cutting parameters and displays information in real time.

SIMATIC S7 and S5 PLCs, which include hybrid HMI modules for basic information monitoring and data exchange on assembly and machining center.

In its machining operations, Stihl produces its own crankshafts and pistons. In addition, various engine parts are manufactured and/or assembled here.

Paul Bruggeman cites the user-friendly, easy-to-learn nature of the onboard controls (CNC or PLC) plus the built-in modem on the machines with SINUMERIK 840D CNCs for access to immediate tech support, as particularly strong features of the Siemens product family. ■



A Weiler C30 CNC lathe, on which advanced controls are utilized for even small batch and one-off runs.

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