G&W-Services Inc.

19 Depot Street, Suite 5B – Bernat Mills
Uxbridge, Massachusetts, USA 01569
Tel: 508-278-4333 / 5351 Fax: 508-278-5846
Email: gnw.svc@verizon.net webpage: gnw-service.com

MDSI-OpenCNC â
BostoMatic Retrofit Packages

In response to our customer requests for an alternative to the available OEM CNC retrofit, G&W-Services under took a comprehensive review of commercially available CNC retrofit packages. Various design criteria along with customer expectations were considered, such as:
A PC based system was attractive, providing an abundant availability of serviceable hardware with "off the shelf" components, thus avoiding costly OEM repair parts. The CNC system needed an "open architecture" design to provide the end-user freedom to configure and expand their own systems. Lastly, a realistically priced total retrofit package with cost effective software updates and maintenance. These decisive factors along with overall CNC operational features seemed to be universal among all of our customers.

G&W-Services as a rebuilder and retrofitter, in conjunction with customer requirements, needed a CNC system that provided maximum flexibility to integrate to a wide range of products in the BostoMatic® line. A simultaneous 5-Axis CNC control with abundant part program storage and editing, file transfer capabilities via Ethernet, Floppy or CD, tool compensations and fixture offset tables with easy shop floor operations. A CNC system which could be integrated with existing servo and spindle drives, tool changers, pallet systems, probes and other auxiliary devices.

Thus minimizing the need for additional add-ons normally associated with other CNC retrofits, maintaining customer costs expectations. A CNC system that could be configured to emulate many of the BostoMatic operational features. For our machine rebuild and re-calibrating purposes; leadscrew, backlash, and rotary compensations were essential features.

Finally, to link all these requirements together, was the necessity for an established product with a good track record and a corporate commitment to on-going product development with competent in-house and field support for both the integrator and eventually the end-user.

OpenCNC Retrofit Package

Following our review of OEM and alternate CNC retrofits, G&W's choice was MDSI OpenCNC® software. Designed to run on a PC based system, accommodating a wide selection of commercially available servo, encoder/dac, I/O, Ethernet and other interface cards, a software definable closed servo loop, eliminating proprietary servo boards. All coupled with full CNC operational functions provided through a touch screen interface with provisions for user definable touch and hard buttons, handwheel and override potentiometers.
MDSI's OpenCNC® has been used in production since 1993, the first production proven, hardware independent, unbundled CNC software for a PC based system on the market.

MDSI's OpenCNC® satisfied our customer's needs and our own integrator requirements by providing essential software tools and diagnostic features for customizing servo, spindle, ATC and other hardware interface operations. Unique and specific applications can be developed and integrated with MDSI's OpenCNC providing unlimited system enhancement. OpenCNC runs either in a stand-alone or client server network configuration allowing multiple controls access to a central server. Overall, MDSI's OpenCNC® package provided the greatest flexibility to design and customize an advanced CNC Machine Tool Control system. G&W-Services installed its first OpenCNC control system in February of 1997, that system has run four years without a failure. G&W continues to build and install OpenCNC retrofits specific to BostoMatic® equipment.

Remanufactured BostoMatic 200-1 Series

Utilizing MDSI's OpenCNC® as the operating platform, G&W-Services has designed a control retrofit package with soft-logic and operational control features specific to BostoMatic machines equipped with either SPC-I or II and BDC3200 controls. The retrofit uses industrial rated, UL/CSA and CE components with state of the art technology in its hardware system. Control components are enclosed in a NEMA 4 cabinet to meet tough industrial standards and demands. This hardware/software combination creates a truly open CNC architecture, fully serviceable, and expandable by the end-user, with the freedom and power to meet current and future needs.

Performance evaluations have shown the system to process 10 times faster than SPC-I / II controls and comparable with the BDC3200 Control. Customer NC programs have achieved feed rate profiles 3 to 6 times faster without part program modification or data starvation. Coupled with a high gain, software closed servo loop with block look ahead mode for cornering and a soon to be released velocity feed forward feature will enable machines to hold tighter tolerances at greater contouring feedrates. Backlash, Leadscrew and Thermal compensations improve original machine accuracy, extending the equipment's productivity life at very cost effective prices.

Control Specifications

Software:

Microsoft Windows NT 4.0 Service Pack 6
Soon to be released Windows 2000 verison
MDSI - OpenCNC 3X, 4X, 5X – CNC Software
VenturCom RTX real time software
GWSI Soft logic - BostoMatic Version
GWSI Bosto to MDSI Part Program Converter

Hardware:

Intel Pentium III Processors w/256MB Ram Memory
10GB Hard Disk (or larger), 40x CD-ROM
1.44 MB Floppy Drive, PC Style Keyboard / Mouse
ATI Video Board w/32MB Ram
3 Com 100/10 Base T Ethernet Card
15" Flat Panel Touchscreen Monitor
ACS-Tech80 5641 Encoder / Dac with 48 I/O
Advantech PCL-731 48 I/O (Expandable to 128 I/O)
Western Reserve Opto-22 Digital I/O
GWSI Control Panel Interface Board
Hoffman Nema 12 Enclosure

Control Panel:

EOA Series II Push Button Switches for;
Console Power ON and Emergency Stop
Spindle # 1 & # 2 On/Off
Coolant and Clamp On/Off (optional definable)
Cycle Start / Cycle Stop
Nemicon Pulse Generator (Handwheel)
X1, X10, X100 (resolution set via touchscreen)
Handwheel Axis Selection Switch X, Y, Z, A, B
Potentiometer Data - 256 bit, 1% resolution
Spindle and Feed rate 0-100% Over-ride

MDSI CSP

MDSI Certified Solution Provider

BostoMatic 5-Axis OpenCNC Retrofit

OpenCNC Retrofit Package

BostoMatic Model 1750 OpenCNC Retrofit

Touch Screen Interface:

Machine Position Window

- XYZAB Machine Coordinates Display
- XYZAB Fixture/Part Coordinate Display
- XYZAB Remaining Distance Display
- XYZAB Following Error Display
- Current Machine G/M Code, Fixture & Tool Offset, Feedrate Display

Progam Window

- Active Program & Subprogram Display
- Edit, Program & File Handling Window
- Manual Data Input

Message Window

- System Operation & Error Messages
- Programmed Operator Messages

Tool Table Window

- Up to 99 Tool Radius and Length Values
- Geometry, Wear, Sum and Calibration
- Feed and Speed Optimization Tables

Fixture Table Window

- Up to 99 Fixture position offsets
- With Setup and Touch-off Features

Machine Operation Window

- Spindle RPM Display (Actual / Request)
- Spindle % Overide Display
- ATC Functions and Control
- Program Feedrate % Overide Display
- Rapid Feedrate % Overide Display
- Jog Feedrate % Overide Display
- Coolant & Clamp Control Options
- Optional Stop, Block Delete, Single Blk
- Variable A Diameter / Circumference
- Retract / Retrace / Withdraw
- Program Run & Machine Jog Controls
- Machine Setpoint Return
- Program Exit & Home Return
- Automatic Origin Cycle (home sync)
- Mill Power On / Off / Origin Status

Due to on going product development G&W–Services reserve the right to change specifications as needed or required without prior notice.

THE FACTS

Your company purchased one (or many) expensive, highly accurate, precision quality pieces of equipment from Boston Digital® Corporation. Often refered to as a Rolls Royce of American machine tools, these machines were built with long life and rigidity as their design basis. Most of the 3,500 machines shipped to date by Boston Digital® are still in active service today, some for as long as 25 years. The inherent quality of castings, materials and workmanship, along with rigid and accurate slideways, leadscrews and spindles are true testaments to their design. These machines provide an excellant stable foundation for rebuild and reconfiguration to a modern machine tool when coupled with an OpenCNC system.

THE SERVICE TEAM

G&W-Services in association with other regionally located former Boston Digital® engineers, all whom previously built, tested, installed, trained and serviced BostoMatics® with over 100 years of machine tool expertise, jointly provide WORLD-WIDE, professional, prompt, quality service at cost effective rates.

* Repair Service for all BostoMatics®
* Preventive Maintenance Services
* On-site machine retrofits
* Machine rebuilds and re-configurations
* Machine relocations & installations
* Machine Calibration and Certification

* Used Machine inspections
* Used Machine acquisitions
* Used Machine leasing
* Programming services
* Training services
* Related engineering services

OpenCNC and retrofit upgrade packages for Spindle and Servo Drives, High Speed Spindles, Rotary 4th & 5th Axis, ATCs, Probes, Power Supplies, Lubrication and Fault Warnings, all engineered to improve operation and replace tired obsolete units, maintaining your equipment in top operational condition.

G&W-Services Inc. operates an 11,000 sq/ft Machine Rebuild Center in Uxbridge, Massachusetts for the rebuild, reconfiguration and retrofitting of BostoMatics® Milling Machines, Bostomatic Spindle and Rotary A, B & C - Axis rebuilds, an extensive inventory of spare and replacement part, along with the production of OpenCNC® Control Retrofit Packages.

Your Representatives Are:

Gary Wells
G&W-Services Inc.
Uxbridge, MA - Tel: 508-278-4333

Art Bosse
Machine Technology
Willington, CT - Tel: 860-684-9631

John Tutolo
JT & Associates
Chardon, OH - Tel: 216-285-4190

Alan Civitate
4 Axis Service
Bristol, CT - Tel: 203-585-5934

Malcolm Brandon
NC Systems (Europe)
East Sussex, England - Tel: 1323-644-744