

Retrofit of an ITI Grinder

Ormco/Sybron Corporation in Glendora, California is the manufacturer of a product for the dentistry industry. They have plants in America and in Mexico (Mexico and Tijuana). Their two ITI grinders, built in 1981, needed to be updated. Both were becoming unreliable due to the aging of the electronics as well as some mechanical problems.

The ITI grinder had the Model 300 3-axis CNC control system, manufactured by ITI. Parts were no longer available for this obsolete control.

Carlos Moran of Ormco/Sybron was searching the Internet for a state-of-the-art CNC control and he found **MACHINEMATE**, INC. of Fond du Lac, Wisconsin. Their PC-based CNC control was just what Carlos was looking for. Carlos asked **MACHINEMATE**, INC. whether they had someone to do the retrofit for them in California. Hydrotronic Machine Tool, Inc was located just a few miles away, in South El Monte, California. Don Emon, President of Hydrotronic, began discussing this retrofit situation with Carlos a short time later.

Carlos wanted a complete package, to retrofit both ITI grinders with PC-based 3-axis CNC controls. Don presented a plan to Ormco that would restore the machines to a 'like new' condition. This plan accounted for the complete lack of documentation for the machines and their controls; it included transporting the grinders to Hydrotronic for the retrofit. The plan was accepted and began soon after its approval.

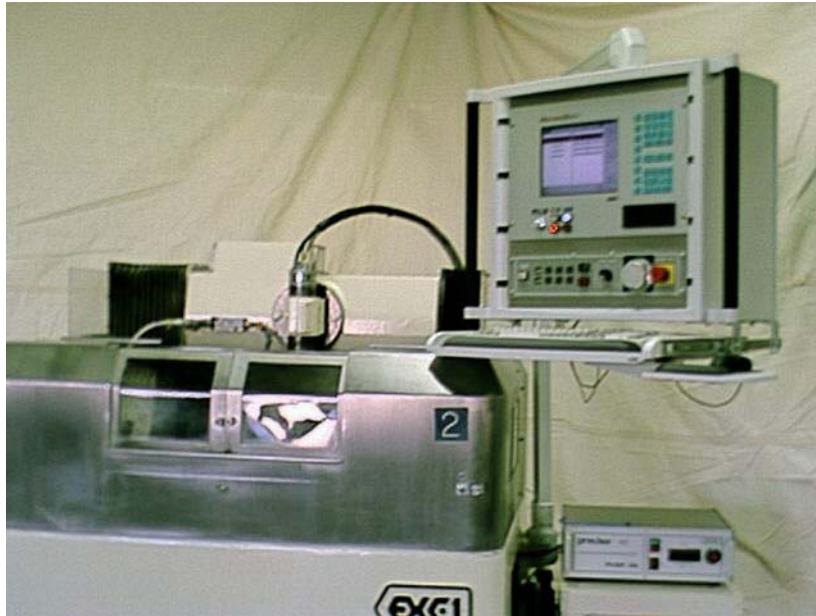
Due to the lack of documentation, a Hydrotronic technician stripped most of the wiring from the control panel, except for the servo drives, motors, power board and encoders. The Y-axis had a scale that was retained. He also developed the schematic for the installation of the **MACHINEMATE**[®] CNC.

The electrical aspects were progressing at the same time as the mechanical restoration of the machine. Most of the mechanical problems were minor. The ball screws were still in good condition. The total time to fix the mechanical problems in the grinder and to install the **MACHINEMATE** CNC was five work weeks (i.e., Monday to Friday).

The grinder's operator loves the new controls as they are easy to operate. The first machine has been in production about two months and the production has increased by 28%, which according to the customer has increased the profit margin. The success of the first retrofit resulted in the retrofit of several other Sybron machines with the **MACHINEMATE** CNC.

The **MACHINEMATE** was mounted on a pendant arm (see picture below). The handwheel was mounted in the machine tool builder's panel for ease of positioning each axis. There is a PC keyboard available to the operator; the keyboard is tucked underneath the control on a portable tray. The grinder has a precise high-speed spindle rated at 4000 RPM. The spindle is controlled by the small panel box to the right of the machine

(seen at lower right in the picture). This panel also controls the coolant to the spindle motor to keep it cool. The flood coolant for the grinding wheel is managed by the CNC.



Don Emon founded Hydrotronic in 1976. The primary focus at that time was selling and servicing hydraulic tracers and retrofitting various machines into a 3-dimensional X,Y,Z profiler. The company also did machinery repair and rebuild, including hand-scraping machine ways. Over the past ten years, the company has expanded its services to include retrofitting various machines with 3-axis CNC controls.

Hydrotronic has found the **MACHINEMATE** CNC to be an excellent product that is priced right for its market. They highly recommend the product to anyone seeking to retrofit a machine. They also found the **MACHINEMATE** staff excellent to work with.

MACHINEMATE INC. supplies a family of premier PC-based CNC products. The **MACHINEMATE** CNC family is the recognized leader in PC-based CNC technology. The use of Microsoft® Windows, a standard PC motherboard, standard PC components, an IEC-1131-3 conformant integrated soft PLC, support for either analog or SERCOS drives and the capability of Ethernet and standard field bus systems give this system the utmost flexibility and openness available today.

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