

INFO**MATE**

Introduction

Welcome to the 9th issue of our newsletter. The newsletter is used to send product and information updates to our customers on a regular basis. Starting with issue 9, we have added a brief technical review section to inform you of some of the **MACHINE**MATE features and capabilities.

I. News

Rockwell Automation to use MachineMate CNC in North America

In May 2002 Rockwell Automation and Power Automation GmbH announced a Resale Agreement involving **MACHINE**MATE® sales in the NAFTA countries. In the United States, Canada, and Mexico, Rockwell Automation will purchase their PC-Based soft CNC control products from **MACHINE**MATE, INC. Working closely with Rockwell Automation, **MACHINE**MATE, INC will provide technical support and training. Rockwell Automation will integrate its SoftLogix control platform, RS View visualization software and Kinetix integrated motion products with the **MACHINE**MATE soft CNC products. These integrated solutions will target machine tool and powertrain applications. With this Resale Agreement, Rockwell Automation will base its future CNC sales on this soft CNC technology, effectively ceasing the development of its own CNC, the 9PC. This decision creates a stronger market presence for **MACHINE**MATE, INC as well as increased sales.

Copies (or links) of the press releases are available on our web site (www.machinemate.com), including a link to the announcement in the Milwaukee Business Journal (Milwaukee is the corporate home of Rockwell).

Extra Training Class in July

MACHINEMATE, INC has added an additional training class to the schedule for July. Due to the great interest, another class is available for the week of July 15 to 19. The classes usually occur every even month of the year. Please call for your reservation early because the classes are filled on a first-come, first-served basis.

MM1 Control Discounted Sales

For a limited time, until July 24, 2002, a limited number of **MACHINE**MATE MM1 controls are available at a 20% discount. For this special discount, payment must be received before shipment; we accept cash or credit card via PayPal. Our special pricing is on a first-come first-served basis as long as this supply lasts. Not all previously quoted prices qualify for this promotion. For additional details and a list of available CNC's please visit our web site at: <http://www.machinemate.com/JulyDiscount.htm>.

Eastec 2002 Trade Show

MACHINEMATE, INC exhibited at Eastec 2002, in West Springfield, Massachusetts, from May 21 to 23. An Overbeck grinder was in our booth, demonstrating that the CNC is capable of handling many industrial automation technologies including grinding. The Zetto 30 grinder was originally built in 1965 as a manual grinder. Overbeck removed the old handwheels and retrofit it with Anorad linear axes (this use of linear axes is a first among grinders), Allen Bradley analog servos, Heidenhain scales and the **MACHINE**MATE CNC (with our MTBP and MPG). Overbeck Corporation is a grinding machine OEM located in Long Island, New York



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that also provides sales, service and support for a number of Overbeck ID and OD grinders. Seref Basaran, President of Overbeck (the person at the left in the above photo; Pete Bartelme is to the right), was available at the show to help with any grinder application questions.

We displayed several MACHINEMATE products in our booth, including our new L2 CNC model. The L2 is available now for OEMs to integrate into new machines and it will be readily available at the end of the year.

The L2 package (shown in the picture to the right, with the 19" rack mount (12.25" high) with a 12.1" color TFT display and the full alphanumeric keypad) has discrete 24V IO and the axis interface both built into the industrial PC that can be mounted up to 33 feet from the operator panel. The integration of this hardware into the IPC results in a lower cost for the CNC package. The CNC runs on Windows 2000 and its operator screens are browser based (html with java) to accommodate changes for the actual machine application. The L2 will support both analog drives (up to 12) or SERCOS drives (up to 8).



The operator panel is also available in a two-piece version, with a 10.4" color display in one small panel (11.4" by 8.7") and the operator keypad in the other panel (the same size). Both panels are less than 2" deep. With this two-piece configuration (shown in the picture to the right with their 33' cables (shorter cables are available in different lengths) and the keyboard panel to the left of the display panel), the mounting of the two panels can be adjusted for the desired operator pendant configuration (for example, both can be mounted flat or the keypad panel could be mounted at a slight angle below the display panel). An extremely low cost L2 package is also available with a 9" monochrome CRT instead of the 10.4" color display.



IMTS 2002

MACHINEMATE, INC will exhibit in our booth, D-4320, at IMTS 2002 in Chicago, Illinois. The show runs from September 4 to 11 at McCormick Place.



Stop and see the new products we will be introducing and learn about our new partnerships. Several OEMs will be using our CNC on their machines in their booths (in other buildings) at the show. We hope to see you there!

II. New Products

New LN CNC Model

The current MACHINEMATE CNC models, MM1 to MM7, run on Windows NT and the industrial PC is mounted on the back of the 19" rack mount operator panel. The next generation of CNC models, including the L2 just announced at Eastec, run on Windows 2000, the operator screens are browser based and the industrial PC can be mounted up to 33 feet from the operator panel. However these Windows 2000-based models are available for only new OEM development projects today and will be available to all customers at the end of the year.

To accommodate those customers that do not require Windows 2000 but have the requirement for the operator panel to be separate from the industrial PC, MACHINEMATE, INC has the new LN model available now. The LN runs on Windows NT and has the same operator screens as the current MM1 to MM7 models. However, the hardware platform is different. The operator panel (still 19" rack mount, with a 12.4" color TFT display) now has a full alphanumeric keypad. The industrial PC, with an Intel Celeron 900Mhz processor, is mounted remotely from the operator panel. The industrial PC has the L2 configuration shown/described above. The IPC comes

with the analog drive interface built-in for 4 drives; another 4 drives can be connected via a 4ENC4A MIO. The IPC comes with 24VDC IO built-in for 48 inputs/32 outputs; more IO points can be connected via the 2416 MIO (or a fieldbus network).

The LN has the same hardware package that is shown in the L2 picture above. The differences between the LN and the L2 are the IPC is loaded with Windows NT, not Windows 2000, and the CNC software is the same as on the MM1 models rather than the new browser based user interface that is included with the L2. The LN has only the 19" rack mount operator panel whereas the L2 will also have the two-piece operator panel configuration alternative. Note that all **MACHINEMATE** CNC controls have the same software look and feel, regardless of CPU or front panel; they also use the same PLC application tool (also in common with the off-line CNC simulation & development package) and the same machine parameter definitions.

The basic LN model has:

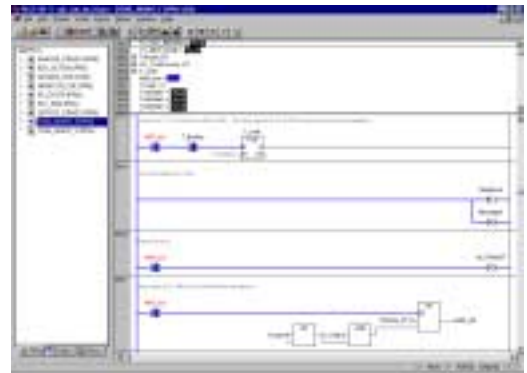
- the CNC performance of the MM3 (an upgrade to MM5 performance is available),
- a larger TFT display than the MM3 (MM3 has 10.1" display standard),
- double the standard IO points than the MM3 (MM3 comes with 24 inputs / 16 outputs as standard),
- an IPC that is separate from the operator panel,
- an operator panel that is only 2 inches deep (allowing a much slimmer operator station than the MM3 that had the IPC mounted on the back of the operator panel),
- a complete alphanumeric keypad (MM3 requires a separate keyboard for program editing on the CNC),
- an IPC that comes with both the interface for 4 analog drives and the connections for 48 inputs, 32 outputs already built-in so if this configuration meets the control requirements, no external IO modules are required (but, of course, more drives and/or IO points can be added as needed).

Even with these benefits the new LN package is reasonably priced. The LN is available now with 3-weeks delivery, while the L2 will be available at the end of the year. MM1 controls are available for next-day shipment.

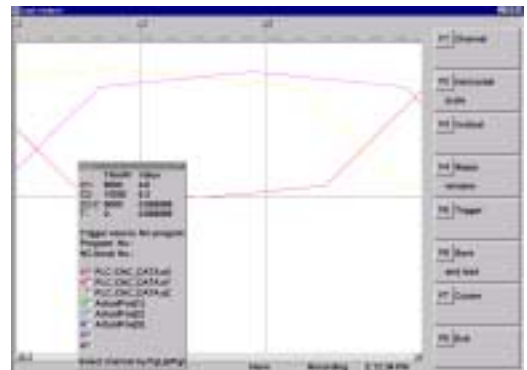
III. Technical Reviews

Real-Time Data Monitoring is a Standard Feature

One of the versatile standard features of the **MACHINEMATE** is its real-time data monitoring capabilities. The PLC application will display the current values of all the data variables when online. Booleans (like input or output signals) have their TRUE state shown in blue (in the coil or contact when in Ladder Diagram format, with an example in the picture to the right) while other variables have the current values shown appropriately (like numbers or character strings). The PLC application is in a separate window so the operations of the CNC are unaffected by this monitoring. (Note: Structured Text (another IEC-1131 standard language for a PLC) is also provided with the PLC and if desired the **MACHINEMATE** soft PLC can convert ST programs to LD. This conversion feature is useful if the PLC engineer prefers ST but maintenance prefers LD. The other three IEC-1131 standard languages are also available for the PLC.)



The Logic Analyzer feature allows more sophisticated monitoring or data analysis. This software oscilloscope provides 8 data channels. Each channel can be a CNC data item or a PLC data item (any variable within the PLC application is available); each is given a unique color. The trigger for the data recording can be a manual activation or as defined by a trigger condition. This condition can be a value or range or values of any channel input (including =, !=, >, <, rising edge, falling edge) or a specific NC program block number. Like a hardware oscilloscope, the horizontal and vertical resolutions can be changed, as well as a trigger delay (so that the respective channel states before the trigger condition can be viewed). For time or data analysis, a watch



window with two additional cursor positions is also available (shown in the picture to the above right), enabling the values for each channel to be viewed at each of the three times within the sweep, as well as the changes between those cursors (both the change in value and the change in time).

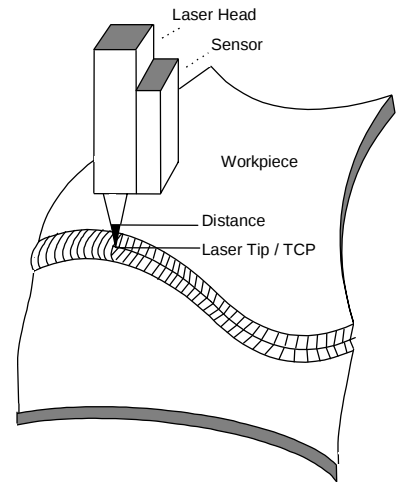
Using the PLC real-time data monitoring capability or the Logic Analyzer feature, the integrator or troubleshooter has the tools to determine the sequence of events when investigating the control's or machine's operations.

Complex Interpolation Features

The **MACHINE**MATE CNC has many standard features including several for sophisticated part programming. For example, helical interpolation is a standard feature in a milling configuration. With this feature, the G2, G3, G12 or G13 defines the arc or circle to be executed with two linear axes (in the active interpolation plane) while the other axes (up to 6) in the same NC statement will arrive at their end-point(s) at the same time that the arc/circle completes. Spline interpolation is another standard feature in a milling configuration. With this feature, the CNC connects the programmed points with smooth curves (whose radii continually change) and an M-code defines whether the start and end blocks of the spline have a tangential transition or not. A number of turning cycles (including stock removal (in both turning and facing), finishing, inner/outer diameter turning and threading) are standard in a lathe configuration.

In addition to such standard features, the **MACHINE**MATE CNC has several optional features for more complex part programming. For example, with the optional 5-axes transformations feature, the part coordinate system can be shifted or rotated as the orientation of the tool is changed. With this option and Tool Center Point (TCP) programming, upon any rotation of either rotary axis the CNC will automatically move the appropriate linear axis (or axes) to maintain the same TCP position within space. This feature greatly simplifies programming 4-axes and 5-axes applications that have rotating axes.

Also, for applications such as laser cutting, the optional distance control feature (also known as gap control) regulates a target distance. As the measured distance (the CNC is given an input analog voltage that is proportional to the actual distance) tries to depart from the target (that might occur with variations in the part's surface), the axis that controls that distance is automatically moved to maintain the correct target distance. This feature is represented in the figure to the right.



Conclusion

If you do not want to receive this newsletter, please tell us with a phone call or just respond with an e-mail with 'unsubscribe' in the subject line. If you received a printed issue and you wish to receive it via e-mail, please tell us that by an e-mail to us at info@machinemate.com or call us at 920-907-0001.

Our web site www.machinemate.com has lots of information about our products and applications; a link can be provided to our customers for the complete manual set. A number of **MACHINE**MATE control retrofit articles are also available. Please periodically check the site for news.

Thank you,

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