

# FAST-FAX

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## COMPUTERS IN MANUFACTURING IN THE 80's

### Greensboro Team Signs I-RCS To MIMS®

The Greensboro Branch and the Carolinas District has the distinction of being one of the first field offices to have signed a customer to use the MIMS System. The customer is Ingersoll Rand Construction (I-RCS), responsible for constructing factories to build compressors and compactors for road building contractors. Currently, I-RCS is charged with building a plant for making equipment in Ain-Smara, Algeria. Construction will be managed from a corporate office in Geneva. Stragely enough, it wasn't the availability of the international network that led to the sale, it was the persistent sales effort and perception of a match between the customer's requirements and a GEISCO service.

Mark Feldman, Senior AR in Greensboro had been calling on the account, with the assistance of Sr. T/R John Dowis. They were working on providing IR with a manufacturing information system, using DMS and other standard foreground products.

### A Challenge

Ingersoll Rand wanted to know how long it would take to come up with a Bill of Materials Program for parts explosions and implosions to establish product structure relationships. The catch was that the program had to be up and running in 30 days. Competition for the order came from IBM wanting to sell them a separate machine using MAPICS for the project, and WANG proposing to write the software for one of their mini computers.

### CA Summoned

Mark Feldman was sure that it was going to be a MARK 3000<sup>SM</sup> Service application based on the size of the files being discussed. He called CA in Atlanta for help, and Atlanta CA arranged to have Pete Dorer of Rockville sent to Greensboro. It became obvious that MIMS was a perfect fit for this particular application. The team

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The manufacturing industry in this country has historically generated a major portion of our gross national product. As we enter the 1980's, over 110,000 manufacturing establishments employing some 9 million people have begun searching for cost-effective resource management systems.

The needs for effective information processing in the manufacturing sector have been heightened even more as our economy enters its current recessionary slump. Many manufacturers have become acutely aware of the need to more effectively allocate their limited resources of manpower, machinery, materials and money through a better grasp of the interrelationships of the critical elements in production planning.

The role of Manufacturing Industry Market Development is to identify various segments of this market for GEISCO participation, to guide the development of the products and services needed to serve these market segments, and to assume a leadership role in making GEISCO a major supplier of comprehensive information services to manufacturers.

In the months and years ahead, Manufacturing Industry Market Development has planned a business scope that will include consulting, education, programming, operations and maintenance, systems engineering, remote computer services along with software licensing and the application of specific (turnkey) minis as required to serve manufacturer's needs. Products will cover a full range of manufacturing needs from engineering design, analysis and testing of a new product all the way to tracking the sale of products through distribution channels.

The ultimate objective is to position GEISCO as a world leader in the manufacturing information services market and the goal is to achieve that position by 1985.

## Computer-Aided Engineering

Energy and material shortages, increasing government regulations and customer expectations are driving up the cost of new product development. Breakthroughs in Computer-Aided Engineering (CAE) methods have dramatically reduced the time and cost associated with the product development cycle.

In this regard, Computer-Aided Engineering is a key program in the GEISCO manufacturing industry marketing thrust.

CAE Programs developed by Structural Dynamics Research Corporation (SDRC), and available through GEISCO, are designed to help engineers reduce the cost and lead-time required to develop new products. This analytical software allows the designer to model and predict product performance prior to building prototypes. Benefits to the manufacturer include dramatically reduced design time, material consumption reductions, the ability to test more design concepts and improved product quality.

SDRC is one of the leading technology companies in the Computer-Aided Engineering field. The SDRC CAE Mechanical Design Library contains more than 50 applications programs for mechanical design and analysis. This library is fully supported by an experienced computing staff of consultants and is available on GEISCO's MARK 3000<sup>SM</sup> Service. Education and training in CAE are provided by SDRC to the industry at their headquarters in Cincinnati.

Assistance in sales of Computer-Aided Engineering products available through GEISCO is provided through our CAE project office in Cincinnati. This office is managed by Dick Burke, dial comm 8\*333-3660.

## NC Plotting Via NSS

SDRC—has a library of programs used in programming numerically controlled lathes, machining centers, turret drills and punch presses. Their library also contains a graphics package that provides visual verification of output files through plotter output. This is particularly efficient in SDRC's HI PRO.

HI PRO is a unique NC tape preparation system for punching, shearing and other sheetmetal fabrication operations. An outstanding feature of the HI PRO system is the path minimizer program which provides a method of producing NC tapes with minimum cycle times. The graphics system allows each step involved in programming and job set up to be plotted, showing hit locations with the actual tool profile shown.

## Trade Shows Tell Manufacturing Story

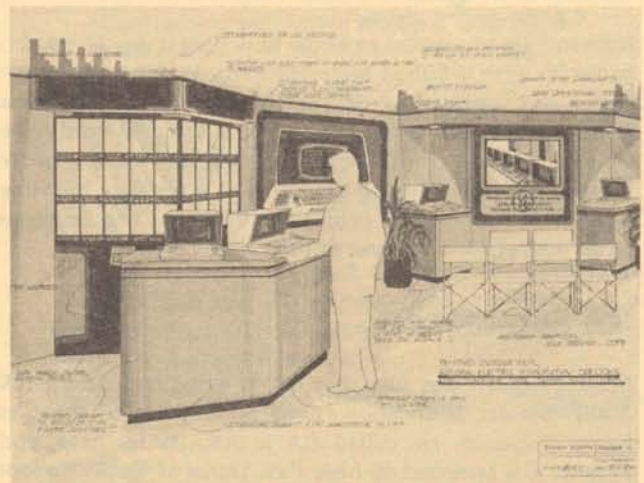
"How Manufacturers Can Use Computers Best" has been selected as the overall theme for three Manufacturing Industry trade shows scheduled this fall. These trade shows continue to be an important means of informing the manufacturing community about the varied full-function services available from GEISCO. At the same time, they provide an excellent forum for the presentation of new GEISCO products.

Current plans include using the same booth that has proven to be very effective, utilizing custom-designed demonstrations and audio-visual slide shows. The overall "Best" theme will be emphasized in each show but tailored to the individual audiences.

### Chicago, Sept. 3-12 IMTS

The first of the scheduled trade shows is the International Machine Tool Show to be held September 3-12 in Chicago. This, the largest of all North American trade shows will feature nearly 1200 exhibits and attract over 100,000 visitors. GEISCO's booth on the second floor of the main building (McCormick Place) is adjacent to both the GE Corporate and the GE Carboloy booths. This excellent location allows all three booths to share resources.

The GEISCO booth will present an entertaining audio-visual show as well as demonstrations on numerical control and Computer-Aided Engineering from SDRC. Visitors will hear GEISCO's presentation on revolutionary changes in product development and manufacturing engineering brought about through computer-aided design techniques.



Artist's rendering of proposed GEISCO display area at the International Machine Tool Show — McCormick Place — Chicago September 3-12.

**Los Angeles, Oct. 14-17 — MIMS  
APICS Exhibit**

Certain to generate interest at the second scheduled trade show, the American Production and Inventory Control Society Show in Los Angeles, October 14-17, is the Mitrol Industrial Management System (MIMS). MIMS is a superior Industrial Management Software system available through GEISCO which has received excellent field support and has a bright future in the manufacturing industry. Over 6000 potential customers are expected to attend the APICS Show.

**Chicago, Nov. 18-20  
Info-Mfg. '80 Exhibit**

Third on the list of trade shows GEISCO plans to participate in this fall is the Info-Manufacturing '80 Show, November 18-20 in Chicago. GEISCO's full function manufacturing capability will be featured, with such products as MIMS, CAE, N/C and Order Service. Show organizers estimate that 10,000 people will attend this show.

Overall, GEISCO hopes to reach current and potential customers with the message "We Know How Manufacturers Can Use Computers Best," through continued participation in these important trade shows in the upcoming months—and into 1981.

## The Manufacturing Industry Market Development Team

Organization  
as of 7-21-80

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of Feldman, Dowis and Dorer, convinced I-RCS that the Bill of Materials Program could be produced in time if I-RCS would agree to a PSA. I-RCC contracted for the programming effort and the Bill of Materials system was produced on schedule.

## Getting Started

Knowing that they wanted to begin work with MARK 3000 Service rather than foreground service, the team decided to use the Informatics Software (MARK IV) for doing the sorting of files that would be required to get the work done. From these files the MIMS transactions were created and loaded. The customer had a working MIMS database within four weeks.

In addition to the Bill of Materials processing one of the functions to be performed by the MIMS package will be the simulation of inventory planning in advance of actual operation. The simulation process will look at lot size, lead times, scrap factors, and determine material requirements for specific time periods.

## Inventory Management

Another phase of the processing to be performed by the MIMS software, prior to the opening of the factory will be inventory management of everything that goes into opening a new factory. The factory will be shipped—piece by piece—over to Algeria to the port of Skidka, and will then be shipped inland to the factory site. Two major warehouses in the states and the ship used to carry the materials overseas will be resident points for thousands of inventoried items that must be tracked in the process of setting up the new factory.

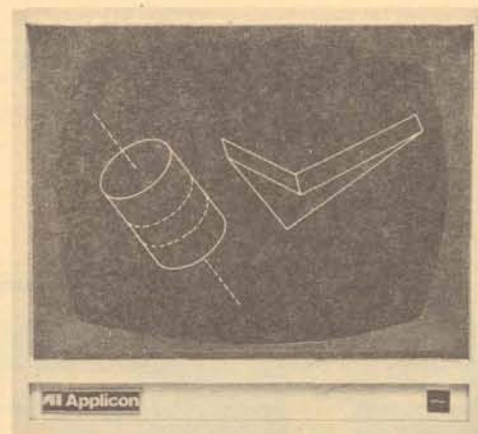
I-RCS has consented to share their MIMS experience as appropriate, with interested people. Contacts must be coordinated through Mark Feldman, John Dowis, or Branch Manager, Jim Patrick.

## Use of CRT Graphics Terminals in Manufacturing

A time-saving advantage in having a visual graphics system in the manufacturing cycle is the ability to visualize the part that is to be machined. In many shops, people spend considerable time studying drawings and tracings in the first stages of design and NC programming. With a visual graphics system, the engineer/designer can bring to the screen a visual picture of the part being prepared for production. With single commands to the mini-driven system, the designer can get multiple views of the part—side, bottom, angle—any orientation that will help him visualize the path of the cutting tool. Many of the new visual graphic systems will let the viewer "zoom" in on an area in question to examine closely what the results of the cutting operation will be. The 3-dimensional aspect of the part would take hours to produce at a drafting table, but visual graphics terminals can do it with a single command.

In addition to visually verifying the part geometry, size, placement of clamps and drill bushings, the system can generate the tool path, to prevent errors, and to increase the efficiency of tool movement in the actual production cycle.

Two visual graphics systems have been successfully integrated into the manufacturing cycle that uses MARK III Service. The ComputerVision and Applicon systems prepare what is called a CL file which is sent to MARK III Service as a source of input to one of the post processors. The post processor then produces the NC tape which directs the machine tool controller.



Visual graphics terminals and plotters are playing an ever-increasing role in the preparation of parts prior to production. Mini and micro-driven visual systems are springing up in drafting rooms. The draftsmen who formerly sat at those large tilt-top drafting tables are now manipulating keyboards and light pens preparing data for computers to generate NC tapes.

A company with this kind of equipment is the kind of prospect you want to approach to find areas where MARK III Service can be used. Chances are they have in-house computers, but if they have to wait for turn-around from their finance-dominated, in-house computers, you have a good chance to get the work done on MARK III Service.

# Plotters in Manufacturing

Plotters are used in NC manufacturing to provide visual part program verification, thus assuring error-free NC tapes. By "dry-running" the prepared program to paper on a plotter, the user benefits through:

1. reduced programming time
2. reduced machine prove-out time
3. reduced machine run time
4. decreased scrap.

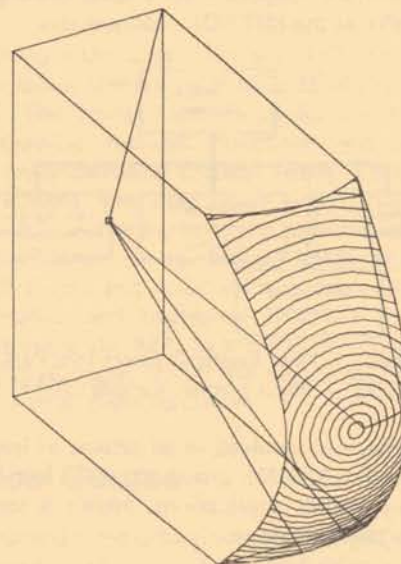
The program CLPLT\*\*\* converts the cutter location file (CLFILE) into a path file to allow the APT/ADAPT language user to obtain a graphic representation of his program.

Illustrative examples of plots used today in industry are shown on this page.

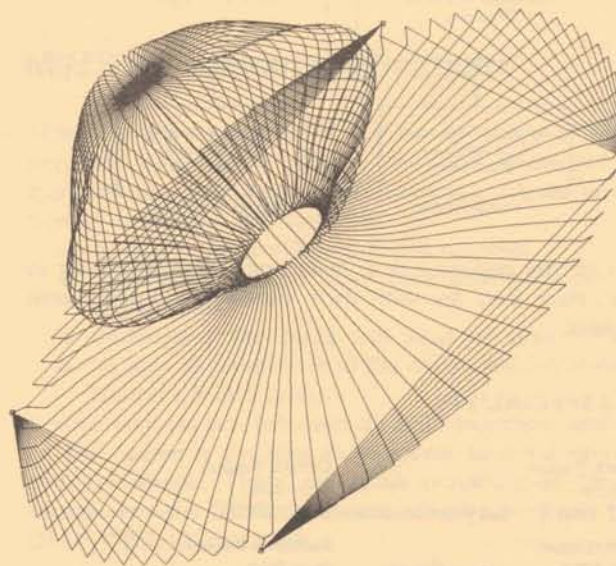
Documentation available for plotters to check NC program is OLOS No. 5304.02—Tape Verification System. For more information on plotting with CLPLT\*\*\*, list CLPLTINF\*\*\*.

The following is a list of plotters supported for NC plotting.

PLOTTER TYPE	CALL	CMD FILE NAME
ANDERSON JACOBS	TAPCMNS***	AJ
ANDERSON JACOBS	TAPCMNS***	AJU
CALCOMP	TAPLOS***	CAL
ARDS 100A CRT	TAPCLS***	ARDS
TPS	TAPTSS***	TPS
HP-7200 -7202	TAPHP\$***	HP
HP-7203	TAPHP3***	HPB
HP-7221A	TAPCMNS***	HPA
TEKTRONIX T-4002	TAPTK\$***	TEK
TEKTRONIX T-4662	TAPTK\$***	TKX
HOUSTON COMPILOT 5M	TAPCMNS***	COM
ZETA 230 10M	TAPZTS***	ZETA
ZETA 230 10M	TAPCMNS***	ZNEW
ZETA 230 5M	TAPCMNS***	ZNEW
ZETA 1240/3640 10M	TAPCMNS***	ZTEN
ZETA 1240/3640 5M	TAPCMNS***	ZFIV
ZETA 1240/3640 2M	TAPCMNS***	ZTWO
ZETA 1250/3650	TAPCMNS***	ZFTWO



This plot demonstrates the capabilities of APT software which includes a variety of sculptured surface capabilities.



This is an APT isometric plot showing the "pocketing out" of an optical cavity. This 3-dimensional plot was programmed on APT66.















