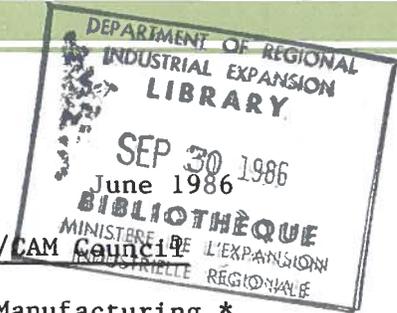




CAD/CAM

NEWSLETTER



Information Compiled by the Canadian CAD/CAM Council
for the Advancement of Computer Integrated Manufacturing *

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1. Canadian Manufacturing at the Cross Roads

A new videotape entitled "Canadian Manufacturing at the Cross Roads" is available for showing to managerial and technology based interest groups.

The video tape, in two segments totalling approximately 45 minutes in VHS format, results from a Canadian technology study team that visited Japan in November 1985, plus subsequent collaboration between the Federal Department of External Affairs and the Canadian Manufacturers' Association.

Briefly, the program in part one focuses on the level of factory automation evident in the Japanese firms visited, and the challenge this means to Canadian manufacturers. While the Japanese reputation for total automation in their factories may be part truth, part myth, the challenge is formidable. The impression is that while some North American manufacturers have made strides to close the gap, members of the Canadian awareness mission returned to Canada with the message that immediate action will be necessary to maintain the competitiveness of our manufacturers.

Part Two of the program deals with the steps already being taken by a number of Canadian companies. In their efforts to upgrade the quality of their products, many Canadian companies are now making extensive use of CAD, CAM and other advanced manufacturing technologies. Often, these computer based technologies help to build in quality at the design stage, and carry it through to the production process to reduce product rejects to a minimum.

Examples shown are drawn from a wide variety of companies, such as Chrysler, Pratt and Whitney, Echlin (an Ontario manufacturer of brake slack adjusters for heavy trucks), Camco (Canada's largest manufacturer of domestic appliances) and others.

For further information or loan copies of the tape contact:

- The Canadian Manufacturers' Association
- Field officers of NRC's Technical Advisory Service
- Ontario Centre fo Advanced Manufacturing
- CAD/CAM Association CAO/FAO (Montreal)

2. CQIP Network Plans Unfold

Plans are progressing to establish a network of laboratories for computer integrated manufacturing and production technologies in the province of Quebec, sponsored and coordinated by Le Centre québécois pour l'informatisation de la production (CQIP).

As stated in a recent information brochure, the changes introduced by CIM technologies must not be taken lightly. The future of firms depends upon them. By the end of the twentieth century, Québec manufacturing firms will have to respond to the biggest challenge in their history due to:

- technological advances
- increasing numbers of competitors
- easing of restrictions on international trade
- revolutionary communication means.

CQIP is a non-profit-making corporation assigned by the government of Québec to facilitate the diffusion of computer integrated manufacturing in the manufacturing industry, particularly for small and medium sized firms.

CQIP's missions include:

- Diffusion of CIM technologies
- CIM Systems Demonstrations
- Technical Development and Demonstration
- Consulting Services
- Continuous personnel training.

For this purpose a network of sector oriented laboratories involving approximately 23 organizations to date, including industrial firms, technical schools (CEGEPs) and universities is being established in the following industrial sectors:

- Machinery (mechanical)
- Metallic products
- Transportation equipment
- Electronic and electrical appliances and equipment
- Clothing
- Textile
- Furniture, accessories and carved wood
- Plastics and rubber

By way of illustration, organizations participating in establishment of the laboratories include Bombardier, General Motors, Pratt & Whitney, the University of Quebec, Centre de recherche industrielle de Québec (CRIQ), and CEGEPs at many locations.

For further information, contact:

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H3M 3E2

Tel. (514)335-6116

3. CAD/CAM Council Defines Mission Statement

At its meetings on June 16-17, the Canadian CAD/CAM Council defined further its mission statement and completed final arrangements for its 1986 report to be issued in the very near future under the title "Management in Crisis: Implementing Computer Integrated Manufacturing in Canada".

The Council, which has up to 18 members invited from industry, industry related CAD/CAM Centres, educational institutions and government, operates under a broad mandate to provide advice to Canadian industry, educational institutions and government and to promote liaison and constructive working relationships between the various interested parties. The secretariat and support for the council is provided by the federal Department of Regional Industrial Expansion.

Continuing on the basis of both past and planned activities, the mission statement is as follows:

"To assist Canadian industry to enhance its domestic and international competitiveness by encouraging the creation of strategic initiatives that promote the effective and efficient use of advanced manufacturing technologies in design, development, production and marketing.

This can be accomplished by:

- Providing appropriate advice to Canadian industry, educational institutions and government
- Emphasizing the use of computer based advanced manufacturing technologies
- Providing a forum for coordinating activities for all interested parties
- Identifying on-going strategic issues
- Developing a national focus and philosophy
- Encouraging the participation of all parties, such as:
 - Industry (users and suppliers)
 - Labour
 - Education and training
 - Government
 - Technology Centres
 - Financial Groups
 - Technical societies
 - Industry associations
- Disseminating reports and information
- Monitoring international developments
- Examining and encouraging the needs for human resource planning and adjustment."

4. Highlights of the June 1986 CAD/CAM Conference

The Fifth Canadian CAD/CAM and Robotics Conference was held in Toronto June 17-19, 1986, sponsored by the Computer and Automated Systems Association of the Society of Manufacturing Engineers (CASA/SME) plus a number of Canadian organizations. In his opening remarks, Mr. Jacob Reichbart, the conference chairperson, dedicated the 1986 conference to Mr. J.E. (Ted) Crozier, who was the originator of the conference series but who has been unable to participate in its organization for the past two years due to extended illness.

While attendance appeared to be reduced from previous years, the quality of the papers was high. Special sessions in the program schedule included a video night for viewing audio-visual material on CAD/CAM, and a MAP tutorial on the Manufacturing Automation Protocol (MAP) for factory data communications. The June 1986 issue of "CAD/CAM and Robotics" publication contains a detailed listing and information on the 130 exhibitors who exhibited over \$30 million worth of CAD/CAM equipment in the nearby show. Total show attendance was 9662, up from 9175 in 1985, and marked by the high quality of attendees.

For information concerning the conference proceedings, or availability of individual papers, contact:

Society of Manufacturing Engineers
One SME Drive
P.O. Box 930
Dearborn, Michigan 48121
U.S.A.
Telephone (313) 271-1500

5. Concluding Observations on Office Automation Field Trials

A final overview and impact assessment on the office automation field trials, sponsored under the Department of Communications "Office Communications Systems Program", was given by Dr. T. Grusec of DOC to persons attending the OCS program wrap-up conference in Ottawa, June 25, 1986.

The OCS program and field trials took place, mainly during the 1980-85 time frame, under DOC sponsorship with approximately \$14 million in funding. Five systems suppliers were each given the opportunity to install a system of their design in a government department on a field trial basis. Between 100 and 200 workstations were installed in 4 of the 5 trials. One result is that the Canadian companies continuing, on the basis of this experience, are now better equipped to compete in both the domestic and international marketplace for office automation equipment, which is currently estimated to be \$5 billion per year in Canada alone, rising to \$20 billion by the year 2000.

As reported in the April, 1985 CAD/CAM newsletter, a number of observations concerning project experience and system performance could appear to apply equally well to computer integrated manufacturing and might provide useful lessons for newsletter readers. The following comments of this nature are selected from a paper on lessons from the OCS trials given by Dr. T. Grusec at the 1986 wrap-up meeting:

- Empirically it has become clear that it takes as long as two years, or more, of end-user, hands-on experience in order for stable impact effects of OA to show up, assuming also that the OA system itself is technically stable throughout that period.

- Even when fully tested, off-the-shelf systems were implemented in the longer trials, the period after system installation was one of some turmoil.
- OA can be applied in a substitutive mode for applications which are rule-governed by known procedures. In addition OA can operate by providing new capabilities, so that it becomes possible to do procedural things that were simply not done before.
- Most people can easily envisage substitutive uses of OA in their own work. New capabilities may be harder to see in advance. In fact, in the absence of direct, prolonged and active experience with a computer system, enormous mental creative effort is needed to envisage either new proceduralization or new capabilities.
- By the same token, no outsider can understand the needs of an organization as well as the people in it.
- Even after extensive analysis and consultation with a team approach, a pilot trial, using proven technologies, may be the best way to proceed.
- User input and extensive training are essential ingredients.
- So far, evaluating the benefits in dollars has totally defied the best of efforts. For a great many people, however, OA is now so obviously beneficial that the justification issue has disappeared.

6. Videotapes Available

Among the videotapes shown during the June 1986 CAD/CAM and Robotics Conference, the following may be of particular interest to newsletter readers:

- "Canadian Manufacturing at the Cross Roads" (see section one of this newsletter for detailed information.)
- "The Robot Revolution" from PBS "Nova" October 1985. Approximately one hour. Examines the state of automated technology in the workplace and raises the question, "Is computer based automation the key to revitalizing American productivity, and if so is enough being done?"

Contact: Craig Coleman
Ontario Centre for Advanced Manufacturing (OCAM)
190 Attwell Drive, Suite 402
Rexdale, Ontario
M9W 6H8
Telephone (416) 675-4363

- "Up to Speed" (20:10 minutes) shows how Echlin Canada, an automotive industry parts supplier, installed their first robot assembly cell with the assistance of the Ontario Robotics Centre and automation system suppliers. The result was a doubling of production, a 400% improvement in labour productivity per man hour and the addition of 60 new employees, due to expanded market share.

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7. Conferences, Exhibitions, Workshops and Seminars

- "Flexible Manufacturing Cells - FMC 86"

Aug 26-28, 1986 Inn on the Park, Toronto, Ontario

Flexible Manufacturing Cells have become an attractive concept because in many cases they are easier to implement or more readily justified than larger flexible manufacturing systems. Mr. Edward Herring, marketing consultant of Manufacturing Applications for Digital Equipment Corporation in Boston, Mass., will chair this three day educational seminar which includes an evening of table top exhibits by ten suppliers, scheduled for August 26.

Fee SME members \$455 (U.S.), non-members \$555 (U.S.).

Contact: Maria Kisell
Special Programs Division
One SME Drive, P.O. Box 930
Dearborn, Michigan 48121
Telephone (313) 271-0039 (8:00 am - 4:30 pm, EDT)

- CAD/CAM 86 - Conference-Exposition

Sept 16-18, 1986 Palais des Congrès, Montreal

The fourth annual CAD/CAM Conference and exhibition, sponsored by the CAD/CAM Association CAO/FAO and others will be held in 1986 as noted above.

Contact: Louise Renaud
Telephone (514) 879-9037

- "Third International Forum on Micro-based CADD"

Sept. 17-19, 1986 Colorado State University, Fort Collins, Colorado

Approximately 350 persons are expected to attend and participate in the small group sessions which are a feature of this event which focuses on leading edge software products for micro-based CAD.

Contact: Office of Research, Development & Training
Department of Industrial Sciences
Colorado State University
Fort Collins, Colorado 80523
U.S.A.
Telephone (303) 491-5278

- "CAM-I's 15th Annual Meeting & Technical Conference"

October 14-15, 1986 San Antonio, Texas

The conference portion of CAM-I's annual event has the theme "Computer Integrated Assembly" and will focus specifically on:

- management concerns and economic justification
- system planning - including human factors
- parts design - requirements and changes
- control systems - communication, planning, scheduling
- implementation - experience & actual applications

The fee for non-members is \$500 (U.S.) prior to Oct. 1, 1986 and \$550 (U.S.) after Oct. 1. CAM-I member organizations are permitted to have one authorized representative attend at no charge.

Contact: CAM-I Conference Services
611 Ryan Plaza, Suite 1107
Arlington, Texas 76011
Telephone (817) 860-1654

8. Twenty Selected Abstracts Provide a World View on CAD/CAM

For a monthly review of CAD/CAM developments around the world please refer to the selection of twenty abstracts in the section attached. These will assist your organization to meet both the management and technical challenges of computer integrated manufacturing.

While the abstracts provided are informative in themselves, in most cases copies of the complete papers can be obtained from your nearest technical library, or from the Canada Institute for Scientific and Technical Information (CISTI), which is part of the National Research Council, as noted.

9. CAD/CAM Quotes

"We now spend more in North America for electronic office equipment than for plant automation. That cross-over came about one year ago."

-Dr. J. Taylor, Canadian Workplace Automation Centre
Dept. of Communications Office Automation Conference,
June 25, 1986

"CIM involves the whole enterprise."

-H. King, McDonnell Douglas Aircraft
5th Canadian CAD/CAM & Robotics Conference, June 1986

"While the number of installed robots in Canada increased from 1980 to 1984, the percentage of the world's robots in Canada declined from 1.09% to 0.68%. Thus in spite of our efforts we are losing ground and not closing the gap."

-G. Rochow, 5th Canadian CAD/CAM & Robotics Conference

"Because we lack the tools to analyze overhead properly, the payoffs for CIM are invisible. We must learn how to make these invisible benefits visible and quantifiable."

-C.D. Hall, Coopers and Lybrand Consulting Group
5th Canadian CAD/CAM & Robotics Conference

"CIM is a direction not a destination. It has proven, major advantages. It is becoming less expensive. It is an on-going process. A strategic approach is necessary. The time to start is now."

-K. Jones, President,
Ontario Centre for Advances Manufacturing
5th Canadian CAD/CAM & Robotics Conference

10. Newsletter Scheduling

This issue of the CAD/CAM Newsletter was completed July 2 in camera ready form in English, ready for translation, printing and distribution arranged by the secretariat of the CAD/CAM Council.

11. This newsletter may be reproduced in whole or in part. Reprinting in other Canadian publications is encouraged. Acknowledgement to the Canadian CAD/CAM Council would be appreciated.

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Please note that requests for additions, deletions or changes to the newsletter distribution list should normally be directed to the secretariat.