First Announcement and
CALL FOR PAPERS

WORKSHOP
SKILL BASED AUTOMATED MANUFACTURING
September 3-5, 1986
Karlsruhe, Federal Republic of Germany

SPONSORED BY
The International Federation of Automatic Control (IFAC)
- Technical Committee on Social Effects of Automation
- Technical Committee on Manufacturing Technology

ORGANIZED BY
- VDI/VDE-Gesellschaft Meß- und Regelungstechnik, Düsseldorf
- Kernforschungszentrum Karlsruhe GmbH
  Projektträgerschaft Fertigungstechnik
  (Manufacturing Technologies Program Agency), local organizer

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PURPOSE

Past development of batch production has been leading to advanced horizontal and vertical division of labour and insulated areas of automation of the manufacturing process. This caused serious difficulties such as unsufficient flexibility, long and variant throughput times, an unfavourable ratio of indirectly to directly productive workers, and low quality of work. On the other hand, profound and lasting changes of market conditions demand high flexibility in manufacturing, improved product quality with reasonable prices, and shorter and safer delivery times becoming more and more important.

This situation challenges managers, engineers and workers to look for new production concepts. In recent years many attempts of bringing man back in rather than replacing him by computers have become visible. They aim at a different partition of functions between man and machine by reintegrating tasks and using human skill and judgement in manufacturing more comprehensively in order to make it more flexible and productive. It is the aim of this Workshop to join representatives from industry, research institutions, associations and unions to exchange ideas and experience with such new production concepts and to discuss design principles for manufacturing systems and their work organization matching economic requirements and improving working conditions as well.

With these issues the Workshop relates to earlier IFAC Workshops "Case Studies in Automation Related to Humanisation of Work" held in Enschede, Netherlands, in 1977, and "Design of Work in Automated Manufacturing Systems" held in Karlsruhe, FRG, in 1983.

It is intended to report on the Workshop's results at the IFAC World Congress in 1987.

TOPICS OF INTEREST

Referring to experiments that have actually taken place, the Workshop shall concentrate on design of alternative systems which suit our needs. New design concepts and actual implementation, possibly presented as case studies, are wanted rather than social analyses and theoretical work. Since there often exist different structures of man-machine-systems proving to be of equal profitability, it is very important that the papers describe the essential step of working out alternative structures and valuate them against criteria (including person-oriented ones).
Papers will be selected on the basis of the following or related topics, favorably experienced in the capital goods and consumer goods manufacturing industries:

- **Aspects of skill based manufacturing**
  - Work design for comprehensive use of skills in automated manufacturing
  - Skill centered work organisations
  - Training for skill based automated manufacturing

- **Human work design criteria**
  - Person-oriented criteria as additional design goals when integrating information technology into manufacturing systems (physical and psychic loads, qualification, personality promotion)
  - Transfer of work design criteria into functional requirements
  - Cognitive ergonomics

- **Design of better systems (considering social as well as technical and economic criteria)**
  - Division of functions (man-machine, man-man, intrapersonal)
  - Task allocation for man (work content)
  - Man-machine interface reflecting man as thinking and acting being
  - Rules for integrating information technology in manufacturing systems regarding man’s new role

- **Valuation of alternative work structures and organizations**
  - Use of degrees of freedom in design
  - Justification of design decisions versus a set of comprehensive criteria and goals
  - Consideration of non-monetary aspects in investment decisions

- **Participation of people involved**
  - Forms of participation of shop floor and office workers in the design of work

**STYLE OF WORKSHOP**

This Workshop wishes to enable an intensive exchange of ideas and experiences, including those of the operators of automated manufacturing systems, their experience and advice being of great value. Evidence and practicability shall be stressed rather than scientific splendor and theory.

Ample discussion time and a plant visit will be provided.

Working language of the Workshop is English. Participants with little knowledge of English should be accompanied by colleagues who can help. The program committee will also provide ad hoc interpretation during discussions.
CALL FOR PAPERS

Papers are requested from industry, engineering and social sciences, governmental agencies and other interest groups.

Prospective contributors are invited to submit five (5) copies of the abstract in English (300-500 words), clearly indicating the contribution of the proposed paper and its relevance to the topics of the Workshop.

The closing date for submission of abstracts is

December 31, 1985

The results of pre-selection by the International Program Committee will be communicated to the authors by

March 31, 1986

Instructions and special forms for typing the final papers will be supplied at the same time.

Final version of papers in reproducible form should be received not later than

June 15, 1986

Accepted papers will appear in the Preprints of the Workshop. These will be distributed to the participants at the Workshop.

Only papers not published and not being considered for publication elsewhere may be submitted, IFAC holds the copyright for publication of the papers. Papers are also considered for possible publication in the IFAC Journal Automatica. However, if the author is not notified within three months after the Workshop that the paper is to be reviewed for Automatica, then it is released for publication elsewhere. In this case, the publication shall contain reference to the paper having been presented at the Workshop.

CORRESPONDENCE

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