INTERNATIONAL INSTITUTION FOR PRODUCTION ENGINEERING RESEARCH

NEWSLETTER

edited by the Technical Secretary
M. SANTOCHI

Nr. 15 - October 1999

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From the Editor

Dear Colleagues,
I wish to inform you the next issue of the CIRP Newsletter is scheduled for April 2000. All your contributions are welcome and will be considered for publication. For a fast and easy transmission of documents, you are invited to use the E-mail at the following address:

santochi@ing.unipi.it.

Please consider that the deadline for your contributions is:

March 15th 2000.

In addition I wish to remind you that a bibliographical research on CIRP Annals by authors, by title and by keyword is possible. Links to WEB pages of CIRP's members labs are available and **links to your own page are welcome! We are now studying the possibility for the future to have also the abstracts and the full texts of the Annals on line!**

The Technical Secretary
Prof. Marco Santochi

Acknowledgement

The Editor wishes to thank Mr. **E. Bellini** , Dept. of mechanical , nuclear and production engineering of the University of Pisa for his valuable help in preparing the Newsletter.

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Obituary

It is with great sadness that we announce that our Colleague Professor **Jean Lombard** passed away on August ,12nd 1999. Professor Jean Lombard was the creator and manager of the CERMO (Study and research center for machine tool) and was highly recognized and awarded by the French Scientists.

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Awards

We are glad to announce that in occasion of the 5th International Conference on Technology of Plasticity in September 1996 at Columbus, Ohio, USA, our Colleagues Prof. Em. Dr.-eng. Dr.-Ing. **E.h. Hideaki Kudo**, Tokyo, and Prof. Dr. **Taylan Altan**, Columbus, received the Japan Society for Technology of Plasticity Prize for Research & Development in Precision Forging. The prize was again awarded at Nürnberg, Germany, in September 1999 at the 6th International Conference on Technology of plasticity to our Colleagues Prof. Em. Dr.-Ing. Dr.h.c. **Kurt Lange**, Stuttgart, and Dr. **Hubert Lloyd David Pugh**, Bristol, UK.

Related to the awards a "JSTP International Seminar on Precision Forging" was held at Osaka in March/April 1997 and another one will be organised from 15th to 18th May 2000 at the same place. About 30 young researchers preferably under 35 years old (about 1/3 from Japan, 1/3 from Asia and 1/3 from other areas) will be selected and invited by JSTP to attend the seminar by providing travel grants. Altogether 150-200 participants are expected for the seminar in 2000.

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It is our pleasure to announce that our Colleague **Klaus J. Weinmann** Professor at Michigan Technological University, has been named a Fellow of ASME International (The American Society of Mechanical Engineers).

The Fellow grade is conferred upon a member with at least 10 years active engineering practice who has made significant contributions to the field. Weinmann earned his doctorate from the University of Illinois, Urbana-Champaign. He is also a member of the Society of Manufacturing Engineers.

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We are glad to announce that our Colleague **Warren R. De Vries**, Professor and chair of Iowa State University's Department of Mechanical Engineering, recently was elected to the American Society of Mechanical Engineer's Board of Governors.

De Vries, during his three-year-appointment, will work closely with the president, president-elect and eight other at-large members of the board to provide strategic direction for all aspects of the society and establish management , financial and legal policies necessary to govern ASME. De Vries, an ASME fellow, just completed a three-year-term as senior vice president and chair of society's Council on Engineering.

We are pleasured to announce that our Colleague Prof. **Y. Altintas** has been elected as a Fellow of American Society of Mechanical Engineers in November 1998 for his contributions to mechanics and dynamics of milling, chatter stability, open CNC and machine tool monitoring.

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Meetings, seminars and conferences

2000 International CIRP Design Seminar

May 16-18, 2000

Haifa, Israel

Design with Manufacturing:

Intelligent Design Concepts Methods and Algorithms

In recognition of the scientific achievements of

Prof. Ehud Lenz

Topics:

- process & production planning
- design of one-of-a-kind products
- principles of design (axiomatic, general theory, conceptual design)
- methods for evaluating design concepts
- distributed systems for design and manufacturing
- artificial intelligence methods in design & process planning
- expert systems for design and process planning
- PDM & EDI systems
- assembly and disassembly
- product state modelling, analysis & simulation
- product life-cycle modelling, optimisation & simulation
- design for X (manufacture, assembly, maintenance, recycling, etc.)
- virtual & augmented methods in design & manufacturing
- design interfaces
- reverse engineering & rapid prototyping
- digital mock-up
- case studies

Important dates:

1 October 1999: abstracts due

1 November 1999: abstract acceptance notification

15 January 2000: final program announcement

15 February 2000: registration fees due ($ 380)

15 February 2000: camera-ready papers due

16 May 2000: seminar begins

******: note that tourism to Israel is expected to increase in the year 2000; therefore, we suggest that you give us an indication of your intentions **as soon as possible**.

For further information:

http://mecadserv1.technion.ac.il/public_html/Dn2000

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2nd CIRP International Seminar on

INTELLIGENT COMPUTATION IN MANUFACTURING ENGINEERING - ICME 2000

21-23 June 2000, Capri, Italy

Important Dates

o Submission of abstracts: 15 November 1999

o Notification of acceptance: 15 January 2000

o Submission of full papers: 15 April 2000

o 2nd CIRP Int. Sem. on ICME: 21-23 June 2000

Seminar Chairman

R. Teti, University of Naples, Italy

Topics

o Manufacturing processes

- machining
- forming
- casting and solidification
- welding
- heat treatments

o Process modeling and monitoring

o Design, simulation and modeling

o Assembly and disassembly

o Sensors and sensing techniques for manufacturing

o Process/Production planning and control

o Dianostics and maintenance

o Automated inspection and quality control

o Concurrent/Simultaneous engineering

o Rapid and virtual prototyping

o Continuous, discrete and hybrid processes

o Distributed and co-operative production

o Intelligent machines, robots and systems

o Intelligent manufacturing systems

o Knowledge and data-base for IMS

o Holonic manufacturing systems

o Virtual manufacturing

o Dynamic scheduling for complex manufacturing

o Evolutionary and emergent computation for manufacturing

o Customer driven production

o Product life cycle management

o Factory design and integration

o Human factors in IMS

o Manufacturing applications of:

- expert systems
- artificial neural networks

- fuzzy and neuro-fuzzy models

- multi agents

- genetic algorithms

- simulated annealing

- hybrid approaches

o Any other topic related to the Seminar's scope

For more information

Scientific Program Tecnical Organization

Prof. Roberto Teti *Seminar Secretariat*

Dept. of Mat. and Prod. Eng. Dr. Pasquale Buonadonna

Univ. of Naples "Federico II" Dept. of Mat. and Prod. Eng.

Piazzale Tecchio, 80 Univ. of Naples "Federico II"

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Phone: +39.081.7682371 Phone: +39.081.7682555

Fax: +39.081.7682362 Fax: +39.081.7682362

Email : tetiro@unina.it; Web Site: http://www.speedit.com/icme2000

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1st euspen Topical Conference on

Fabrication and Metrology in Nanotechnology

and

2nd general meeting of the european society for precision engineering and nanotechnology

Copenhagen

May 28-30, 2000

Topics

- Micro and nanometrology
- Nano-fabrication processes and assembly
- Modelling and simulation in micro and nanotechnologies
- Analaysis of engineered surfaces using microscopy techniques
- Micro and nano-structure manufacturing
- Nanotechnology instrument development
- Other SPM applications: electrochemistry, surface modification, materials properties (spectroscopy). etc.

For information

Center for Geometrical Metrology

Department of Manufacturing Engineering

Technical University of Denmark

Building 425,

DK-2800 Lyngby, DENMARK

Contact:

Prof. **Leonardo De Chiffre**

Tel.: +45 4525 4760

Fax: +45 4593 0190

e-mail: ldc@ipt.dtu.dk

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Year 2000 Parallel Kinematic Machines

International Conference and Second European-American PKM Forum (2000 - PKM - IC)

September 13-15, 2000

The University of Michigan

Ann Arbor, Michigan, USA

Topics:

- Kinematics, dynamic and synthesis of the PKM
- Modelling
- Simulation and identification
- Motion and force control
- Sensors fusion; Dexterity and grasp control
- Flexible PKM
- Multi-PKM and co-operative systems
- Active vision, reasoning and planning systems
- Virtual reality and human/robot interfaces
- Cellular PKM systems
- Factory based applications
- New applications in manufacturing
- Design automation and rapid prototyping
- Computer integrated and Flexible and reconfigurable manufacturing models

For more information:

2000-PKM-IC Conference Secretariat

Program in Manufacturing

The university of Michigan

2300 Hayward St., 1539 HH Dow Building Ann Arbor, MI 48109-2136, U.S.A.

Tel.: +001-734-763-0480

Fax: +001-734-647-0079

E-mail: hek@engin.umich.edu

URL: http://www-personal.eng.umich.edu/~orlanik/2000-PKM-IC.htm

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2nd Grinding Colloquium ² Grinding - a Competitive Technology²

Bremen, Germany

November 9 - 10, 2000

On November 9 and 10, 2000 the Verein Deutscher Schleifmittelwerke e. V. (VDS) in co-operation with the Laboratory for Machine Tools and Production Engineering (WZL) of the Aachen University and the Department of Production Technology, University of Bremen is organizing the conference.

Industrial experts and researchers from both institutes will be presenting their solutions and concepts for competitive grinding production. The topics at the colloquium are focussed on a wide field of production grinding:

- CD-grinding of turbine parts
- honing of automotive parts
- grind hardening
- high speeds in grinding processes
- cut-off grinding
- grinding tool machines
- coolants in grinding processes
- grinding of
- bearings,
- valves,
- injection pumps,
- HSS tools,
- knives
- punching tools
- grinding technology in the future

The grinding colloquium (conference language is German) will take place at the University of Bremen.

For further information please contact:

Dr.-Ing. E. Minke

Production Technology/Manufacturing Processes

University of Bremen

Badgasteiner Straße 1

D - 28359 Bremen

Germany

phone: ++49-421-218-3530

fax: ++49-421-218-3272

e-mail: minke@iwt.uni-bremen.de

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NAMRC

Twenty-eighth North American Manufacturing Research Conference

May 24-26, 2000

University of Kentucky - Lexington, Kentucky

Topics:

- Mechanicals and technology of material removal processes, as well as non-traditional-processes
- Design, dynamics, control and accuracy of machine tools
- Mechanics and technology of material forming processes, as well as powder consolidation, casting, welding, and polymer and composite materials processing
- Material behaviour and tribology, as related to manufacturing processes

- Computer-aided design and manufacturing, including robotics, automation and rapid prototyping
- Manufacturing systems, simulations and design, including concurrent engineering
- Human factors and man-machine interactions relating to manufacturing processes and systems
- Rapid response manufacturing, networked manufacturing and environmentally-conscious manufacturing
- Nano to micro scale manufacturing

For more information:

Cynthia Hintz

Administrator NAMRI/SME

Society of Manufacturing Engineers

One SME Drive, P.O. Box 930

Dearborn, Michigan U.S.A. 48121-0930

Tel.: (313) 271-1500, ext. 1824

Fax: (313) 240-8255

E-mail: hintcyn@sme.org

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13th International symposium for electromachining

ISEM XIII

May, 9/11 2001 Bilbao, Spain

Topics:

- electric discharge machining (EDM)

- micro machining by non-traditional machining methods
- laser beam machining (LBM)
- electrochemical machining (ECM)
- electron beam machining (EBM)
- ultrasonic machining (USM)
- water jet machining (WJM)
- other non traditional machining methods (AJM, AFM, IBM, CHM…)
- rapid prototyping techniques (RP)
- environmental, safety and legal aspects of non-traditional machining

Important dates:

expression of interest form by May 31st, 2000;

abstract submitted by July 17th, 2000;

paper submitted by November 30th, 2000

final paper acceptance February 28th, 2001

For further information:

Mr. Francisco Javier Garcia Robles

ISEM XIII Secretariat TEKNIKER

Otaola, 20. 20600 EIBAR

SPAIN

Phone: 34 943 206744

Fax: 34 943 202757

E-mail: jgarcia@tekniker.es

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First International Conference on Axiomatic Design

(ICAD2000)

June 21-23, 2000

Massachusetts Institute of Technology

Cambridge, MA 02139 USA

Topics:

- concepts synthesis and evaluation
- troubleshooting, diagnostics, and design improvement
- robust design
- structuring of design and development processes
- large-scale and industrial applications, case studies, and successes
- application to software design
- innovative application fields (organisational design, business planning, etc.)
- integration with computer tools
- integration with other design methods
- dissemination of theory into practice
- teaching and learning methods

For further information:

Dr. Derrick Tate

Manager, Applications Engineering

Axiomatic Design Software, Inc.

221 N. Beacon St.

Boston, MA 02135-1943

http://axiom.mit.edu/icad2000

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The Second International Conference on Forging and Related Technology

2nd ICFT

10 - 11 April 2000, Chamberlain Tower Hotel, Birmingham, UK

The Conference is being organised by the International Institute of Forging Technology and the Institution of Mechanical Engineers and is co-sponsored by the International Cold Forging Group, EUROFORGE, the British Cold Forging Group, Forging 2020 and the Confederation of British Metalformers.

The Conference is based on a total technological package for both researchers and users. It will offer the unique opportunity to network amongst the most well known professionals from all over the world who are directly involved in the development of forging and related technology at research and production level.

The key themes of the Conference will be

Foresight

Globalisation

Competitiveness

Chair of the Organising Committee is Professor A N Bramley, University of Bath, UK

Chair of the International Institute of Forging Technology is Dr G Martinelli

Further details are available from

Ed Maycock

Conference and Events Department

Institution of Mechanical Engineers

London

Tel (44) 171 973 1316/1249

Fax: (44) 171 222 9881

Email: e_maycock@imeche.org.uk

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ICME 2000

The Eighth International Conference on Manufacturing Engineering

27-30 August 2000

Australian Technology Park

Sydney, Australia

Topics:

- advanced manufacturing technologies
- intelligent manufacturing and information systems
- manufacturing management
- manufacturing planning and control

For information:

website: http://www.tourhosts.com.au/icme2000

postal:

ICME 2000 Secretariat

GPO Box 128

Sydney NSW 2001

AUSTRALIA

Fax: 61 2 9262 3135

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MATAR

International congress of machine tools, automation and robotics in mechanical engineering

Praha, June 27 to 29, 2000

Topics:

- common problems of all areas of interests
- machine tools and manufacturing systems
- forming machines and manufacturing systems
- industrial robots and automation
- machining and forming technologies

For further information:

address of the Congress Secretariat:

MATAR PRAHA 2000
FME - Faculty of Mechanical Engineering
Of the CVUT - Czech Technical University, Praha
Horská 2, 12800 PRAHA 2
CZECH REPUBLIC

Phone:
420 2 24915319, ext. 343
Fax:
420 2 291087

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II International seminar on improving machine tool performance

Nantes - La Baule, France

3rd - 5th, July, 2000

Topics:

High speed machining:

- machine tools and machine tool components
- tools for high speed cutting

Precision machining:

- reduction and compensation of errors
- strategies for machine tool characterisation
- improving machine tool accuracy
- improving surface quality

Clean/safe machining:

- substitution of cutting fluids
- security devices
- handling residues and emissions

For information:

Dr. J. Christophe Hamann

Dr. Frederic Meslin

Telephone: +33 240 372 553

Fax: +33 240 372 566

e-mail: Jean-Christophe.Hamann@ec-nantes.fr

Frederic.Meslin@ec-nantes.fr

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2000 Japan- USA Symposium on Flexible Automation (2000JUSFA)

- International Conference on New Technological Innovation for 21st Century -

Symposium theme: reconfigurable machining systems

July 23-26, 2000

The University of Michigan, Ann Arbor, Michigan, USA

Topics:

- advanced computer integrated manufacturing
- autonomous guided vehicles
- CAD/CAM
- communication networks and software systems
- concurrent engineering
- evolutionary computation
- flexible manufacturing systems

- machine design
- malfunction analysis
- manufacturing process control
- mechatronics
- planning and scheduling for manufacturing
- principles of agility in manufacturing
- **reconfigurable machining systems** *
- reliability
- robotics
- sensing and signal processing

* : conference theme topic

For information:

website: http://www.engin.umich.edu/prog/pim/2000JUSFA.html

2000JUSFA Secretariat
c/o Ms. Henia Kamil
Program in Manufacturing
The University of Michigan
1539 H.H. Dow Building
2300 Hayward Street
Ann Arbor, MI 48109-2136
Telephone: 001 - 734 - 763 -0480
Fax: 001 - 734 - 647 - 0079
E-mail: 2000JUSFA@umich.edu

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The 2nd International Conference on

Advanced Manufacturing Technology (ICAMT-2000

16th - Thursday 17th August 2000 Johor Bahru, Malaysia.

Topics

Artificial Intelligence

Automation

Casting/Joining Technology

Computer Integrated Manufacturing

Forming

Machining

Metrology/Quality

Non-Traditional Machining

Precision Engineering

Rapid Prototyping

Other areas related to Advanced Manufacturing Technology

For further information:

Secretariat

International Conference on Adv. Manuf. Tech.

Faculty of Mechanical Engineering

Universiti Teknologi Malaysia

81310 UTM Skudai

Johor, Malaysia

(Attn: Prof. V.C. Venkatesh /A/Prof. Noordin /Mrs. Siti Hawa)

Telephone : 60-7-5504715/5504697/5504591

Fax : 60-7-5566159

E-mail : mailto:icamt2000@fkm.utm.my

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Inside of the

4th International Conference and Exhibition on

"Optoelectronics, Optical Sensors and Measuring Techniques"

May 9 - 11, 2000, Exhibition Centre Erfurt, Germany

a special workshop will be organised on:

"**Optical Sensors for Quality Control of glossy and shine surfaces**"

Topics

- Sensors and sensor technology
- Optical based measuring methods
- Methods of surface characterisation and intelligent interpretation.

For more information

Dr.-Ing. habil. Jürgen Lepold

GFE e.V.

Lassallestr. 14

D-09117 Chemnitz; Germany

e-mail: 100536.1232@compuserve.com

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International workshop on:

Parallel kinematik machines PKM'99

November, 30th, 1999

UCIMU-SISTEMI PER PRODURRE, Cinisello Balsamo (MI), Italy

http://www.ucimu.it

Topics:

- PKM architecture
- PKM kinematics
- PKM dynamics
- PKM workspace analysis
- PKM control systems
- PKM components (joints, struts…)
- PKM modelling, simulation and VR
- PKM programming
- PKM prototypes

For further information:

please contact:

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PMAR, DIMEC, university of Genoa

Via Opera Pia, 15/A

16145 Genova, Italy

Tel.: +39 010 3532842

Fax: +39 010 3532298

E-mail: pkm99@dimec.unige.it

Website: http://www.dimec.unige.it/pkm99

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Books and journals

"Tools for high-speed machining"

by **J. Leopold**

Starting with the state-of-the-art in modelling and simulation of high-speed-machining new methods for calculation and design will be discussed. Methods for testing of high-speed-cutting tools and new methods for sensing for high speed machining complete the first part of the book. The second part of the book deals with new tools for mould and dies productions as well as with milling, drilling, reaming and grinding tools. In the third important part, new aspects of tool materials and coating systems will be discussed. Finally, the book will be completed by special aspects of tool management and parallel mechanism based machine tools.

The book is completed with F. E.-demonstration systems (NISA and AdvantEdge) and Tool Management demonstration systems (TDM and Cimsource) on CD.

Different videos and F.E. calculation models and also Web-pages are attached.

Authors are: Henk van den Berg, Jochen Brand, Patrick Damm, David Dornfel, Klaus Dreyer, Marc Ehrmann, D. Friedrich, Matthias Fryda, Jan Gräbler, R. Gessell. G. Guntermann, Christian Harzbecker, Carsten Hochmuth, Klaus Hoyer, Jens Jasper, Dieter Kassel, Fritz Klocke, Jürgen Leopold, Jens Muckli, Reimund Neugebauer, D. Opalla, Lothar Schäfer, Gerhard Schmidt, M. Schroer, K. Schulte, Ulrich Semmler, Hans Kurt Tönshoff, Klaus Weinert, Engelbert Westkämper, H. Westphal and Frank Wieland. The Editor of the book was Jürgen Leopold.

The full bibliographic information are:

J. Leopold

Werkzeuge für die Hochgeschwindigkeitsbearbeitung

ISBN 3-446-21072-5

DM 98,- / Euro 50,11

More information are given by:

Carl Hanes Verlag

P.O. Box 86 04 20

D-81631 München

Tel.: +49-89-998300;

Fax: +49-89-99830-269

E-mail: info@hanser.de

http://www.hanser.de

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ROUGH SURFACES

(2nd edition)

Tom R. Thomas

(Chalmers University of Technology, Sweden)

This book is intended for scientists and engineers who need to know about surface roughness, how to measure and describe it and what practical problems it might cause them. The original Rough Surfaces was widely accepted as the definitive work on the subject; this is a completely new edition, updated to take account of recent major advances in measurement and characterisation.

Modern instruments are introduced, including laser interferometers and AFM's,and there are sections on fractals and motif analysis. Problems of 3D surface measurement and description are extensively treated. Manufacturing and production engineers, optical and QC engineers, tribologists and many other applied scientists will find this book an essential addition to their libraries.

Contents: Measurement; Stylus Instruments; Optical Techniques; Other Measurement Techniques; Characterisation: Profile Characterisation; Area Characterisation; Rough Surfaces as Fractals; Applications: Contact Mechanics; Tribology; Other Applications.

Readership: Manufacturing, production, quality-control, mechanical and optical engineers, tribologists and applied physicists.

300 pp. (approx.) with 157 figures and 640 references.

Pub. Date: autumn 1998

1-86094-100-1 US$ 48 £ 33

Published by Imperial College Press and distributed by World Scientific Publishing Co.

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The Science of Innovation:

a Managerial Overview of the

TRIZ Methodology

By **Victor Fey and Eugene Rivin**

This book provides the reader with a basic understanding of TRIZ - a powerful methodoly for enhancing engineering creativity. Where conventional trial and error approach fails, TRIZ proves to be the most reliable engineering methodolgy for product and process development. TRIZ does not help to find just a solution - it aims for the best result by eliminating psychological inertia and maximising utilisation of the system's resources.

TRIZ was developed by Genrikh Altshuller after analysis of hundreds of thousands of patended inventions. He discovered that all technological systems evolve according to certain patterns formalised as the Law of Technological System Evolution. Knowledge of these Laws helps engineers develop next-generation products and processes. Use of the Laws of Evolution creates opportunities for strategic patent fencing and circumventing competitor's patents.

The Algorithm for Inventive Problem Solving and other powerful problem-solving techniques of TRIZ help engineers to clearly define the problem and to find cost effective ways to solve it.

TRIZ is credited with helping engineers in many countries to develop numerous breakthrough solutions. Frequently, pioneering concepts were discovered in a matter of hours.

This book is a first in a series of book describing in detail various aspects of TRIZ. Its content is based on the unique experience of the authors in the TRIZ application and training in the U.S. and overseas (numerous hands-on training and problem solving sessions, both at large corporations and public; many offerings of the first and only in the U.S. university course on TRIZ at Wayne State University in Detroit, short courses at MIT, Chalmers University, etc.)

For further information and orders:

The TRIZ Group,

5832 Naneva, West Bloomfield, MI 48322

Fax: 248 - 538 - 9207

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Advanced Models for Manufacturing Systems Management

by **Paolo Brandimarte and Agostino Villa**

Politecnico di Torino, Italy

This book presents the mathematical models applicable to manufacturing systems management, covering problems from production to real time control. It explores manufacturing systems from the viewpoints of both physical structure and performance measures.

Two broad classes of mathematical models are covered in detail:

- generative models, which yield a set of decision variables optimizing a performance measure, based on mathematical optimisation; and
- evaluative models, which evaluate some performance measures as a function of some predefined decision strategy. Within this class Petri Nets and Queuing Networks are discussed

Features:

- Presents production management problems in terms of a discrete-event dynamic model
- considers mathematical models with a production management architecture
- examines descriptive and prescriptive models
- places more technical material in interspersed appendices for better self-teaching
- gives extensive references to the literature

ISBN. 0-8493-8332-3

1995,432 pp

$69.95

CRC Press

http://www.crcpress.com

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Restructuring the Manufacturing Process

Applying the Matrix Method

by **Gideon Halevi**

Features:

- defines the innovative Matrix Manufacturing Method, creating greater efficiency technology throughout the manufacturing process
- outlines the essential decision-making process to make the new system work
- provides numerous case studies and examples of implementation at all levels of management, and production

Contents:

Global Optimisation Method Concepts

The Matrix Concept

Master Product Design

The Matrix System

Why a Matrix

The Matrix Concept

Example of Matrix Concept

Process Plan Optimisation

Master Product Design

Master Product Design - Example

Master Product Method

Master Product Design System - Product Specification

Master Product Design System - Concept Design

St. Lucie Press

Catalogue no. SL1213, January 1999, 300 pp.

ISBN: 1-57444-7121-3

$ 39.95

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Stiffness and Damping in Mechanical Design

by **Eugene I. Rivin**

Contents:

Introduction and Definitions

Stiffness of Structural Components: Modes of Loading

Non-linear and Variable Stiffness: Preloading

Contact (Joint) Stiffness and Damping

Supporting Systems and Foundations

Stiffness and Damping of Power Transmissions Systems and Drives

Design Techniques for Reducing Structural Deformations and Damping Enhancement

Use of "Managed Stiffness" in Design

Appendix 1: Single-Degree-of-Freedom Dynamic Systems with Damping

Appendix 2: Static Stiffness Breakdown for Cylindrical (OD) Grinders

Appendix 3: Influence of Axial Force on Beam Vibrations

Articles of Interests

May, 1999-10-05 528 pp., illus.

ISBN: 0-8247-1722-8

$ 195.00

$ 69.75 (on orders of three or more copies, for classroom use only)

Marcel Dekker Inc.

270 Madison Avenue, New York, NY 10016 • 212 - 696 - 9000

Hutgasse 4, Postfach 812, CH-4001 Basel, Switzerland • 061 - 261 - 8482

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Environmental Assessment of Products

Volume 1 - Methodology, tools and case studies in product development

by **H. Wenzel**, **M. Hauschild** and **L. Alting**

Institute for Product Development, Technical University of Denmark, Lyngby, Denmark

Volume 2 - Scientific background

By **M. Hauschold** and **H. Wenzel**

Institute for Product Development, Technical University of Denmark, Lyngby, Denmark

This major two volume presents a new decision making tool which enables manufactures and scientists to undertake life-cycle assessment (LCA) of new products from the design and development stages. The methodology allows the environmental consequences of a product to enter into decision making in the same way as traditional commercial parameters such as price, quality, etc. Significantly, it is in accordance with international consensus, as defined by SETAC (Society of Environmental Toxicology and Chemistry) and the ISO (International Organisation for Standardisation). Moreover, the individual steps have been made operational through the creation of a collection of tools for assessment. The books are derived from the Environmental Design of Industrial Products (EDIP) programme organised by the Technical University of Denmark and Five leading Danish companies. The project was sponsored by the Danish Environmental Protection Agency (EPA) and the Confederation of Danish Industries

Kluwer Academic Publishers: services@wkap.nl

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Mathematical and Physical Simulation

of the Properties of Hot Rolled Products

by **Lenard, Pietrzyk and Cser**

This publication had its origins in the *Thermal-Mechanical Modelling of the Flat Rolling Process*, by M. Pietrzyk and J. G. Lenard, published by Spriger-Verlag in 1991. The authors realized the tremendous advances in modelling and computing ability and these allowed the advancement and improvement of the models described in the 1991 manuscript. The major objective was to esplore the possibilities of the models described in the 1991 manuscript. The major objective was to explore the possibilities of producing steel having pre-determined chemical, metallurgical and mechanical attributes, called *designer steels*.

The chapter in the books in the book deal with tribology of flat rolling, the resistance of the material to deformation, modelling of the rolling process, microstrucutral evolution, shape rolling, parameter evaluation and knowledge based modelling.

Elsevier Science Ltd.
services@wkap.nl

Dimensioning and Tolerancing for

Function and Economic Manufacture

by **L. E. Farmer**, The University of the New South Wales, Australia

This text/reference book presents Functional Dimensioning and Tolerancing in the context of Time to Market, Concurrent Engineering, Customer Focused Products Development and Cross-functional teams. Key features of *Dimensioning and Tolerancing for Function and Economic Manufacture* are:

- the FAST approach to identifying functional requirements
- an easy to follow detailed procedure for obtaining the most economic, cost effective set of dimensions and tolerances for stack and fitting type functional requirements
- introducing geometry tolerances and surface texture specifications into designs
- strategies for revising solutions
- refining solutions with preferred sizes and tolerances
- machining process capabilities for size, form, orientation and surface texture
- tips for setting up your own design standards for fits… and much more.

Practical, worked examples are provided throughout and it is generously illustrated with over 100 detailed drawings. It is an indispensable reference book for product design, mechanical, manufacturing, process planning, quality control engineers/managers and draftspersons. Undergraduate and postgraduate students will also find this book a most valuable resource.

Our Colleague Len Farmer has had some 20 years experience teaching Dimensioning and Tolerancing and related subjects such as Design for Manufacture; Jig, Fixture and Gauge Design; Inspection and Quality Control to undergraduate and postgraduate students at the University of New South Wales. Prior to joining the University he worked in industry for some 10 years at the shop floor level through product design engineer. He has maintained his association with industry as a consultant, particularly in the area of dimensioning and tolerancing of products for economic manufacture. Len is well known internationally for his research into dimensioning and tolerancing of product design and is the Chairman of the Standards Association of Australia Committe responsible for the Dimensioning and Tolerancing Section of the Technical Drawing Standard AS 1100.

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From the labs

Cutting Technologies for Light Alloy Honeycombs and Reinforced Plastics

In the aircraft and shipbuilding industry a variety of light alloys and composite materials is used for light structures of interior components. Materials in use are multi-layer light metal sheets like Al-honeycomb sheets, coated Al sheets and Al-sandwich structures as well as reinforced plastic structures like glass reinforced plastics (GRP), carbon reinforced plastics (CRP) sheets and aramid reinforced plastics and honeycomb panels. The lightweight and stiff sandwich panels mostly consist of a honeycomb core and a variety of skin materials. Generally the core is made of aramid fibre or aluminium honeycomb with hexagonal cells or rectangular cells. The skins are typically made of aluminium or epoxy/glass-weaves.

The primary objective of a recently granted collaborative research project (CRAFT BES2-3259) in Bremen (Germany) is to provide the participating companies with the know-how required for safe and economically productive contour milling and thermal laser cutting processes on lightweight materials in the aircraft and shipbuilding industry. The project is granted by the European Commission and it distinguished itself by strong industrial participation. It deals with the following items:

To increase the quality and performance of the cutting process extensive investigations concerning adapted process parameters and specially adapted milling tools with special wear resistant coatings and geometries will be carried out. For this purpose, the project of the Foundation Institute for Material Science deals with the development and optimisation of milling tools according to the milling process requirements in order to realise more economical high speed milling strategies. The secondary objective is to develop strategies for the ecologically beneficial design of the relevant cutting processes by use of environmental friendly ester based coolants, the reduction or avoidance of coolant and cleaning media by minimum quantity lubrication and dry machining. The reduction of aerosol, dust and toxic fume emission by a careful selection of process parameters and special exhaust systems is an additional key to solutions that improve working conditions. In reducing auxiliary materials and wastes, these advances shall combine ecological benefits with economical benefits.

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New chief engineer at the IFW, shop floor updated with two tool grinding machines.

In May 1999 Dr.- Ing. Thomas Friemuth became the new chief engineer at the Institute for Production Engineering and Machine Tools (IFW), Hannover, Germany. He is the successor of Dr.-Ing. Bernhard Karpurschewski who left the IFW and is now working with Prof. Inasaki at the Keio University, Japan.

The Institute is equipped with two new tool grinding machines. For periphery grinding of cutting inserts the manufacturer WENDT, Meerbusch, Germany, has provided a WAC 705 as a machine from the latest generation. Additionally the WALTER AG, Tuebingen, supplied a grinding machine Walter Helitronic Power for grinding of cutting tools for milling and drilling.

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10 years anniversary

Institute for Production Engineering/CAM Saarbrücken

As a means of promoting the structural changes in the regional economy, the Saarland University has continuously expanded its activities in the technical disciplines over the past 20 years. In the course of these efforts, the Institutes for Production Engineering/CAM (LFT), Construction Engineering /CAD (LKT) and Process Automation (LPA) were founded in 1989. One of their main

goals and fields of work, the increased co-operation between research work at university institutes and its applications in industrial manufacturing, could be further approached by the installation of the Centre for Innovative Production (ZIP) in 1995.

On the occasion of our 10th anniversary, Professor Bley would like to thank all ther partners for their energetic support during the last decade.

The anniversary festivity will take place on November, 2nd, 1999 in the ZIP building, Saarbrücken. It will include speeches by hte Prime Minister of Saarland and by the President of the University of Saarland. Furthermore, LFT, LKT and LPA will present a survey of past and future projects and research activities.

For further information and a detailed programme contact:

Prof. Dr.-Ing. H. Bley

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News from Manufacturing Automation Laboratory

The university of British Columbia

Department of Mechanical Engineering

In October 1998, Prof. Altintas has received "Peter Larkin Innovative Graduate Program Award" for the new five-year Electro-Mechanical Engineering (EMEC) degree program he created at UBC in 1994. The program curriculum contains combination of core Mechanical, Electrical and Computer Engineering courses. After completing a four year course work, the students have to design and build and industrial size computer controlled machine in a company under the joint supervision of Prof. Altintas and a company engineer. A team of two students have to design,

manufacture and assemble a machine including electrical wiring, sensor interface and real time software engineering tasks. Upon the satisfactory completion of the machine as requested by the company and approved by the university, the students receive a combined bachelor and master degree in engineering. Three batches of students have already graduated with substantial support from the industry. The graduating students are in high demand in Mechatronics industry. Sample machines built by the students can be seen at:

http://www.mech.ubc.ca/Programs/ElectroMech/index.htm

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Center for Nontraditional Manufacturing Research

University of Nebraska-Lincoln

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The Center for Nontraditional Manufacturing Research (CNMR) was established in 1989 with funding from the Nebraska Research Initiative Fund to improve economic competitiveness for Nebraska and the U.S. in the field of nontraditional (advanced) manufacturing/processing equipment and related technologies. The Center aims to achieve this goal by establishing and providing the facilities and expertise in nontraditional (advanced) manufacturing (method, machine tools, machinability data, innovative applications, etc.) to faculty, students and practicing engineers.

CNMR's principal research thrust is to develop a science and technology base of nontraditional (advanced) manufacturing equipment and techniques for solving machining and fabricating problems posed by modern materials of industrial and strategic importance. Currently, Center researchers are working on electrical discharge machining (EDM), abrasive flow machining, electrodischarge grinding (AEDG) abrasive slurry jet machining (ASJM), rapid prototyping, thermally-assisted machining (TAM), and micromachining projects. CNMR also, as a partner in the seven-university consortium project "Agile Manufacturing Research Institute of Machining Tools," is helping to develop Internet-based tool selection and remote monitoring and controlsystems for traditional and nontraditional equipment. The Center was involved in applying electrochemical and abrasive flow machining processes to combustion chambers and intake manifolds of future automobiles under a NIST/ATP project. The Center researchers have worked on or are working on a large number of research projects funded by federal and state agencies and national and international industries such as NSF, NIST/ATP, DOD, GEAE, Extrude Hone, Brush Wellman,

Cummins Engines, NCMS, Mitsubishi Electric Corporation (Japan), Trans Tec Inc. (England), the State of Nebraska, and other sponsors.

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Proposal for a CAPP interest group

At the last two STC"O" meeting discussion for establishing a CAPP interest group was made.

Dr. **Halevi** sent an E-mail to all STC"O" members with a short questionnaire regarding their opinion on the idea. He has already got over 30 enthusiastic responses in favour.

At the Montreaux meeting it was decided to continue with the organisation of the interest group (or working group - the name was not decided yet).

CIRP members who are not yet on the mailing list and would like to participate should call Dr. Halevi at the E-mail : merhalev@techunix.technion.ac.il

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A reminder from the 49th CIRP General Assembly Montreux (Switzerland) August 1999

49 th CIRP general Assembly, Dr.J.P. van Griethuysen and Dr.D.F. Dauw - Communication, a most for succes !)

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