

CIRP NEWSLETTER

edited by the Technical Secretary prof. M. Santochi

n;10 April 97

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from the Editor

Dear Colleagues

I wish to inform you the next issue of the CIRP Newsletter is scheduled for
October 1997.

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@itm.unipi.it

Please consider that the deadline for your contribution is
September 15th 1997.

The Technical Secretary
Prof. Marco Santochi

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awards

It is our pleasure to announce that on December 4, 1996, Prof. Dr. h.c. mult. Dr.-Ing. Gunter Spur, head of the Institute for Machine Tools and Factory Management of the Technical University Berlin and of the Fraunhofer Institute for Production Systems and Design Technology, was awarded the Honorary Doctorate Degree Doktor der Ingenieurwissenschaften Ehren halber (Dr.-Ing. E. h.) by the Brandenburg Technical University of Cottbus. This is the first honorary doctorate granted by this university. Professor Spur was awarded this title for his important, unusually broad contribution to the development of modern production technology. At the start of his scientific career he dealt with the further development of machining technologies, which belong at the centre of his work up to the present day. As an example, the machining of new materials, especially of ceramics, can be given. He made substantial contributions to the improvement of machine-tools, especially of turning machines. Over the years, his research was marked by a wide range of investigations on the thermal

and dynamic behaviour of machine-tools and on the accuracy of machines and machining processes. Furthermore, Professor Spur contributed significantly to the successful introduction of numerical control technology and CAD technology into German industry. Automation technology is indebted to him especially for developments in the fields of flexible manufacturing systems, new controls for industrial robots, off-line programming, and solutions for industrial and orbital automation. Moreover, Professor Spur contributed to the improvement of industrial production with basic research on modern factory operations. In addition, Gunter Spur did the innovation of the university system in Germany great service. The Brandenburg Technical University of Cottbus, whose founding rector he was from 1991 to 1996, follows the concept of concentration on interdisciplinary teaching and research in focal fields. This is realized in an exemplary way for production science, environment and traffic science, natural sciences, civil engineering and architecture, and economics and social sciences. The university, which is planned for up to 6000 students, aims to educate a type of engineer who combines a clear professional orientation with a high competence in socio-technological questions and a distinct ability to think in complex network structures.

It is our pleasure to announce that our Colleague Nam P. Suh, Ralph and Eloise Cross Professor and Department Head of Mechanical Engineering was awarded the 1997 Ho-Am Prize. Professor Suh went to Korea on March 22 to receive his prize. The Ho-Am Prize was established in memory of the founded of the Samsung Group in Korea. It honors those individuals who have contributed to the improvement of society and furthered the well-being of humanity through accomplishments in their respective fields. The Ho-Am Prize is presented in six-categories: Basic Science, Engineering, Medical Science, the Arts, Mass Communication, and Social Service. The Prize consists of the Ho-Am medal and 100 million won (about \$ 120,000). The Ho-Am Prize is administered by the Ho-Am Prize Committee, and independent council created by the Ho-Am Foundation. Its members are leading scholars and academicians. Professor Nam P. Suh will receive in 1997 Ho-Am Prize in engineering. He is cited for his exceptional contributions to tribology, materials processing, and design. His work on axiomatic design theory was particularly cited as an internationally acclaimed achievement. He was also cited for his work on technology transfer to industry, service to U.S. government agencies and industry, the United Nations, and the World Bank. The citation also acknowledges that Professor Suh was the architect of the 1980 Five-Year Economic Department Plan of the Republic of Korea, which played an important role in the development of the Korean economy. Professor Suh has published 227 papers and 8 books, obtained 41 U.S. patents, and has given 140 invited lectures. Finally, he is cited for his contributions to the engineering education in the United States.

History of the Schlesinger-Award 1997 by Professor Gunter Spur In 1979, the State of Berlin donated the Georg-Schlesinger-Prize on the occasion of the 75th anniversary of the foundation of the Institute for Machine Tools and Factory Management at the Technical University Berlin. Since then this award, which is named after Prof. Georg Schlesinger who became the first chair of the newly established institute in 1904, is presented every third year to German or foreign academics for outstanding achievements in the field of production technology. The winners are hereby not only honoured for excellent technological, scientific approaches but also for the social, humanitarian aspects evident in their work. This prize serves to express the profound appreciation of the exceptional scientific work of Georg Schlesinger, who as co-founder and pioneer of modern academic research in the field of manufacturing technology and business management displayed a decisive influence on production technology in general. Georg Schlesinger, born in Berlin in 1874, began his academic career as chief engineer at Ludwig Loewe Company after finishing his studies of mechanical engineering in 1902. He concentrated first on the field of manufacturing measuring technology in order to form both the experimental and theoretical bases for interchangeable manufacture. His dissertation, which he published in 1903 as quintessence of his investigations under the title *Die Passungen im Maschinenbau* (Fits in Mechanical Engineering) has long been of

great importance for further developments in engineering and manufacture. Together with his successor Kienzle, Schlesinger is considered the father of the DIN- and ISO-system of fits. Schlesinger's appointment as full professor to the newly formed Institute of Machine Tools and Factory Management in 1904 initiated the establishment of the first institute of this kind in Germany. It focused on all fields of development in machine tool engineering, manufacturing processes, and business management as well as on innovations in standardization, cutting, and cost calculation. Its practical scientific research for practical application helped Schlesinger's institute to draw soon the attention of the industry. Particularly the institute's activities in the field of machine tools led to the promotion of scientific studies of machine tool engineering in research and teaching, which up to this point were mainly based on empirical research. For example, Schlesinger was the first to set up an experimental station for machine tools. Through his scientific research in manufacturing technology and the related revision of business management and work design, Schlesinger affected to a great extent the research in manufacturing technology conducted in the first half of this century, which revealed tremendous progress in industrial production technology. Innovations of e.g. high-speed steel caused a rapid growth of the production of goods and in consequence, resulted in increasing requirements of trained staff. This demand could be filled by the departments of manufacturing technology and business management that subsequently emerged at German technical universities and followed the Berlin model. Schlesinger's lectures, however, continued to enjoy excellent reputation at Berlin universities. His distinct lecturing style was characterized by a firm scientific basis and knowledge of the actual procedures by his own personal, practical experience, which translated into vivid presentations of even the most difficult subjects. Schlesinger's numerous publications and lectures established a constant connection between theory and practice and allowed a wider public to have quick and full access to newly gained knowledge. For this purpose, Schlesinger created the journal *Werkstattstechnik* in 1907. In addition to his academic research, Schlesinger devoted himself to work in the VDI, in the Deutscher Normenausschuß and the Verein Deutscher Werkzeugmaschinenfabriken. Admired for his ability to find crucial characteristics in short time, to recognize advantages and disadvantages, and to draw the right conclusions for future innovations, Schlesinger was frequently consulted by the machine tool industry to study the situation in other countries and to evolve new ideas for the German industry. It was one of Georg Schlesinger's most distinguishing qualities that he never stopped searching for and pursuing new challenging tasks without letting set-backs discourage him. He always emphasized generality, but never lost sight of individuality. In 1933, Schlesinger was committed for trial for his Jewish origin. After his forced retirement in 1934, Schlesinger emigrated to England where he continued his work until his death in 1949. The award in honour of Georg Schlesinger shall again bring together here in Berlin academics of all cultural and ethnic backgrounds.

Awarding of the Georg-Schlesinger-Award 1997 to Professor em. Dr. Dr. Eng. h.c., Dr. h.c. Milton C. Shaw by prof. Branimir F. v. Turkovich

Professor Shaw is one of the most distinguished and influential scientists and educators in the field of Production Engineering, not only in the United States but also internationally. Throughout his 50 years of research and teaching he has elucidated, improved and developed the art and science of material removal for the benefit of industry and the public. The range of his research effort is immense. His results have opened new opportunities for technological development, and his scholarly attitude is the inspiration to countless older and younger engineers and engineering educators. Professor em. Dr. Dr. Eng. h.c., Dr. h.c. Milton C. Shaw, attended Drexel University in Philadelphia, graduating with a B.S.M.E. degree in 1938. His graduate education took place at the University of Cincinnati, with a M.E.Sc. Degree in 1940 and an Sc.D. in 1942. From 1942 to 1946 he was the Chief of the Materials Branch NACA (NASA), Lewis Laboratory, Cleveland, Ohio. From 1946 to 1961 he was Professor of mechanical Engineering and Head of the Materials Processing Division at the Massachusetts Institute of Technology, Cambridge, Massachusetts. In

1961 he became Professor and Head of the Department of Mechanical Engineering at Carnegie-Mellon University in Pittsburgh. He was elevated to the rank of University Professor in 1974. In 1978 he became associated with Arizona State University as Professor in the Department of Aerospace Engineering and Engineering Science, and later as Professor in the Departments of Mechanical, Chemical, Bio and Materials Engineering. He became Emeritus Professor of Engineering in 1988. At MIT, Professor Shaw established a very influential materials processing research activity. His primary interest centered on metal cutting and grinding. The first modern text in the United States on the science and technology of metal removal was written by Prof. Shaw during his tenure at MIT. A number of doctoral students worked under his supervision producing a superb series of theses addressing the problem of grinding process temperature, temperature of the cutting tool face in machining, and the dynamics of chip formation and fracture. The first important results on machining of titanium were obtained during the early and middle 50. The design and construction of metal cutting meters reached new heights at that time also. Professor Shaw became a world leader in the research of metal cutting and grinding. He displayed an unusual talent for transferring the knowledge and insights from a given field into a new direction and for new applications. This interest in grinding reached its highest level in the initiation and formation of the Abrasive Grain Association. This association of abrasive grain manufacturers sponsored much of the basic research on grinding. During his professorship at Carnegie Mellon University, Professor Shaw explored several fields of mechanical engineering such as lubrication and wear, fracture of metals and ceramics, hardness testing, and plastic indentation. Numerous publications contain the results of this research work. His wide ranging interests and great research and consulting experience inspired work in new directions at Arizona State University. This has brought new and unexpected insight into cutting and grinding of hard materials, ceramics, rubber elasticity and fracture. Professor Shaw has visited and collaborated with many scientists and engineers during his career, particularly in Japan, Europe and India. He has also given generously to colleagues overseas. He was a Fulbright Guest Professor at Aachen Technical University, Aachen, Germany in 1957; Lucas Professor, University of Birmingham, UK, in 1960, 1961 and 1964; Guest Professor at Technical University, Munich, 1964; Guest Professor at Danish Technical University in 1982; and also a visiting and guest professor at several universities in the US. Professor Shaw is author and co-author of over 300 books, papers, and edited conference volumes. His classic book on Metal Cutting Principles, was published in 1984 and recently Principles of Abrasive Processing” in 1996. He is the holder of 19 US and foreign patents. In 1968 Professor Shaw was elected to the US National Academy of Engineering. He was President of CIRP in 1961 and has been an Honorary Member since 1980. He was made a Foreign Member of the Polish Academy of Sciences in 1977; an Honorary Member of the Society of Manufacturing Engineers in 1970; American Society of Mechanical Engineers in 1980; American Society of Lubrication Engineers in 1965, and the American Abrasive Society in 1972. He is also a Fellow of the America Academy of Arts and Sciences (1953), and the American Society for Metals (1982). He is a member of the American Society of Precision Engineering (Honorary Member 1988), American Society for Engineering Education and the Japan Society of Mechanical Engineers. He is the recipient of many professional awards: ¥ Georg Westinghouse Award of ASEE for Excellence in Teaching, 1956, ¥ John Simon Guggenheim Research Fellow, 1956, ¥ ASTM Gold Medal for Fundamental Research Contributions, 1958, ¥ ASLE National Award, 1964, ¥ Distinguished Alumnus Award: Drexel University, 1957 and Univ. of Cincinnati, 1959, ¥ ASME Hersey Award, 1967, ¥ ASME Thurston Lectureship, 1971, ¥ ASME Pittsburgh Section Outstanding Engineering Award, 1975, ¥ ASME Centennial Lectureship, 1980, ¥ ASME Gold Medal, 1985, ¥ American Abrasive Society Award, 1969, ¥ American Machinist National Award, 1972, ¥ American Society for Metals Wilson Award, 1971, ¥ Carnegie Mellon University Philip McKenna Award, 1976, ¥ Society of Manufacturing Engineers International Education Award, 1980, ¥ Distinguished Research Award, Arizona State University, 1981, ¥ MIT Ralph Cross Award, 1982. Considering the achievements and influence that Professor Shaw has imparted on the international research and engineering

community in the field of materials processing, I have the privilege to introduce him as the candidate for the Georg Schlesinger Award for 1997.

After the ceremony on February 3rd 1997 in Berlin prof. Shaw gave a lecture on Mechanics of saw tooth chip formation. The text of the lecture can be obtained from prof. G. Spur. *****

Awarding of the Georg Schlesinger Award 1997 to Prof. em. Dr. Eng. Dr.-Ing. E.h. Hideaki Kudo
by Professor Dr.-Ing. Dr. h. c. Manfred Geiger

By awarding Prof. Kudo, the Georg Schlesinger Award, the State of Berlin honours a highly recommended scientist, engineer and university lecturer, who has decisively influenced the development of modern metal forming technology. Together with the honouring of your long-standing scientific colleague Prof. Lange three years ago, your honouring is also an impressive sign of the respect and importance of the metal forming manufacturing technology. Metal forming technologies have a long tradition and the trend to an extremely dynamic development of metal forming manufacturing technologies and its application in production is unceasing. University based pure research has influenced this development crucially and has often just enabled it by optimised understanding of material and processes. And here, dear Prof. Kudo, your achievements, which I have the honour to appreciate, are beginning. A lot has been said about the merits and successes of your scientific life achievement during the last years on the occasion of numerous appreciations and honouring. After his studies of Mechanical Engineering at the Tokyo University, Kudo worked at the Research Institute of Science and Technology as research assistant and lecturer until 1960. In 1961, Kudo was conferred the Doctor of Engineering at Tokyo University for his work on a Plasticity Approach to Forging and Extrusion. A research engineer now, he changed to the world famous Mechanical Engineering Laboratory of the Ministry of International Trade and Industry shortly before, where he worked very successfully until he was appointed Professor for Metal Forming at the Yokohama National University in 1966. After his retirement in 1989 he changed to a private university, the Tokyo Denki University, where he is partly lecturing even today. The Georg Schlesinger Award is awarded to outstanding scientists who follow the tradition of Schlesinger by means of their scientific achievements and the charisma of their activity on society. When Wagenhoff states in Schlesinger's Berlin Days about his activity that it is characterised by (I cite): ¥ - a lasting methodical approach to the complex matter, ¥ - a sense for the detail and the overall context, ¥ - the endeavour to gain theoretical generalised knowledge from both experiment and experience, ¥ - which is of benefit for its applications, this could also be completely found in the not - or not yet - written biography of Kudo from Yokohama. From the very beginning his interest has been attracted by an improved understanding of metal forming processes by means of the application of the technology of plasticity, tribology and experimental materials technology. By that he was one of the first who managed to combine the various disciplines in a common mental approach without - to remind Schlesingers qualities - neglecting the profundity at single scientific tasks. With his works about the so-called Upper Bound Theory and later - together with Prof. Johnson in Manchester - about the further development of the Slip Line Theory, Kudo decisively founded world-wide emphasis of research and activity in the sixties, which has nowadays obtained exceptional importance in science and application in metal forming under the term of process simulation. Research in engineering is a continuous matching between theory and experiment. Kudo has recognised the importance of this statement especially for experimentally confirmed boundary conditions for his calculations and he developed respective measuring methods, for instance for the determination of contact stresses inside the tool, the visioelastic determination of material flow or the testing of lubricants. These basic examinations as for process understanding based on plastomechanical, tribological and materials investigations never let Kudo stay in the ivory tower of science. His endeavour has ever been to do research in manufacturing technology in close

connection to company constraints and to transfer them directly into novel technologies and products. This is especially correct in the field of cold forging in Japan, its development up to net shape forming is essentially linked with Kudo's name. Additionally, Prof. Kudo founded the series of International Conferences on Technology of Plasticity, the ICTP, which started with its first meeting in Tokyo in 1984 and has now been continued in a three years cycle in Stuttgart, Tokyo, Peking and Columbus last year. the ICTP have been developed to the most important metal forming conferences world-wide. Your name will always be associated with this conference series. Numerous awards, honouring and honorary posts prove that you are highly respected by the experts far beyond the borders of Japan. You are honorary doctor of the University of Stuttgart, visiting professor of several universities in the USA and China, honorary member of CIRP, the Japan Society for Mechanical Engineers and the Japan Society for Technology of Plasticity, and member of the International Cold Forging Group as well. Japanese scientific societies and industry have awarded you high scientific awards, last time in October 1996 the international award for Research and Development in Precision Forging" of the Japan Society for Technology of Plasticity. Today, dear Prof. Kudo, you are able to draw excellent conclusions about your work as a scientist. You had success. Your work is characterised by a firm sense which is required by the complex interdisciplinary structure of metal forming systems. Success is no accident: it has to be earned by effort, steady commitment and dedication to the tasks taken over, renunciation of many things which are nowadays regarded as evident - especially renunciation of leisure time. You rendered great services to the science of engineering and you enjoy great recognition and appreciation both as a scientist and a personality among your colleagues in Japan and abroad. With the greatest pleasure I like to congratulate you to your today's high honouring and I wish you many further healthy, good and pleasing years.

After the ceremony on February 3rd 1997 in Berlin prof. Kudo gave a lecture on A note on growth of Kudo's research work and cold forging industry in Japan. The text of the lecture can be obtained from prof. G. Spur.

On 11 October 1996, our Colleague Prof. P. Vanherck retired from official duty after more than forty years of scientific and teaching activity at the Katholieke Universiteit Leuven. During a well-attended ceremony, also by several CIRP members from Germany and the Netherlands, a Liber Amicorum was offered to Paul, as a token of appreciation for his achievements in the fields of production engineering. The Liber Amicorum contains an excellent cross section of the state of the art in production engineering, as illustrated in the following Table of Contents J. Peters, H. Van Brussel, Professor Paul Vanherck: Scientist and Pedagogue; W. De Bruin , Survey paper on half-lifetime contact with Colleague Paul , Vanherck; J. Peklenik ,Paul Vanherck - Researcher and Friend; J.B. Bryan Some Remembrances, My Friendship with Paul Vanherck; Th. Van der Waeteren ,Straalmotoren en raketten. Hoe en waarom?; H. Kunzmann, V. Looock, E. Trapet, Umfassende Beurteilung der Fertigungsabweichungen von FrŠsmaschinen mit PrŸfwerkstŸcken; G. Pritschow, Lineardirektantriebe - Antriebstechnik mit Zukunft; Sri Hardjoko Wirjomartono, Taufiq Rochim, Qualification of Engineers, Technicians & Managers in Manufacturing Industries; T. Hoshi, Research, Development, and Implementation of Setup-Free Technology for Job Shop Machining Center Work; G. Spur, U. Forstmann, Static Optimization of Machine Tool Beds; E.G. Thwaite, ISO Roughness measurement standards - A Commentary;Komang Bagiasna, Experimental Study to Identify the Vibration Signature Due to Misalignment Between Schafts Connected by a Flexible Coupling; H. Sato , A view on East and West through a researcher's experience; H. Trumpold, Why Filtering Surface Profiles?; M. Weck, N. Hennes, Production in the twenty-first century - new machine concepts; R.D. Weill, New concepts in geometrical tolerancing

standardisation; C. De Meersman, European site plan for Deceuninck plastics industries (D.P.I.); M.A. Davies, S.E. Fick, C.J. Evans, Dynamic measurement of shear band information in precision hard turning; J. Peters, Can Engineering re-enter the main stream of social acceptance; H. Van Brussel, Global cooperation in manufacturing research : A European perspective; J.P. Kruth, Research in Production Engineering in Belgium from 1970 to 1996; P. Sas, W. Dehandschutter, Active control of rolling noise in a passenger car through structural and acoustic control; J. De Schutter, Robot force control : Twenty years of research at PMA . Books can be ordered from: Mr. Luc Haine Katholieke Universiteit Leuven PMA Celestijnenlaan 300B B-3001 Leuven tel: +3216322480 fax: +3216322987

The price, mailing included, amounts to 600,-BF

It is our pleasure to announce that prof. Hiroyuki Yoshikawa, President of Tokyo University, received Honorary Doctorate of the University of Twente on 29 November 1996 , at the occasion of the celebration of the 7th lustre of the University of Twente. He received the honorary title in recognition of his pioneer research in design, resulting in the "General Design Theory", and for his stimulating role and leadership in the establishment of a global network in design and manufacturing research directed to a better use of natural resources and a better global distribution of welfare. Prof. Yoshikawa developed the "General Design Theory" describing the human controlled design process. The "Theory", published for the first time as a whole in 1979, has successfully served as a theoretical basis for the modeling and rationalization of design processes. He developed also the "Theory of artifacts" . In this theory, he follows the objective to re-structure the total product life cycle in order to realize better products, sustainable manufacturing and a responsible use of natural resources. Prof Yoshikawa has also introduced a new paradigm for the manufacturing development in the next century. He considers the diffusion of manufacturing knowledge as a prerequisite for the distribution of wealth. In support of this, he proposed in '89 a global research program on Intelligent Manufacturing Systems (IMS). The objective of this research program was to develop 'pre-competitive manufacturing technology' on a global scale. By now, the IMS programme has become an item on the agenda of many nations. It has been an unmeasurable achievement to convince industrial, economic and especially political bodies all over the world of the great value of such an intellectual effort. Apart from being the President of the prestigious University of Tokyo, Hiroyuki Yoshikawa is member of the Science Council of the Japanese Ministry of Education, Science and Culture, member of the University Council of the same ministry and member of MITI, the prestigious Japanese Council for the Ministry of Industry and Technology. Professor Yoshikawa is President of the Japan Society for Precision Engineering and is Past President of CIRP.

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meetings, seminars, conferences

5th CIRP International Seminar on
Computer -Aided Tolerancing

Toronto, Ontario Canada
April 27/29 1997

Sessions :

- ; Tolerance theory and standards
- ; Tolerance representation in CAD
- ; Tolerance analysis and synthesis
- ; Industrial applications and CAT systems
- ; Modeling of geometric errors
- ; Evaluation of geometric deviations

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31st CIRP International Seminar on
Manufacturing Systems
Networked Manufacturing Integrated Design, Prototyping and
Rapid Fabrication
May 26-28, 1998
University of California
Berkeley, California.

The seminar is designed to highlight recent advances in networks and their applications to rapid design and manufacturing.

- Relevant topics include, but are not limited to
- o agent-based manufacturing
 - o virtual manufacturing
 - o environmentally conscious design and manufacturing
 - o rapid prototyping of mechanical components
 - o precision manufacturing
 - o process planning and simulation
 - o manufacturing software development
 - o next generation machine tools and hybrid machining
 - o novel rapid prototyping and new fabrication techniques
 - o agile fixturing
 - o man-machine interfaces
 - o open architecture machine and process controllers
 - o quality and reliability issues in networked manufacturing
 - o time to market analysis
 - o management of technology and technology diffusion
 - o rapid response manufacturing
 - o expert systems in manufacturing
 - o sensors and control in manufacturing
 - o design for assembly and manufacturing
 - o heterogeneous hybrid design environments
 - o web-based design and manufacturing

The meeting is organized by the Engineering Systems Research Center (ESRC) at the University of California at Berkeley and will be held on the University campus in Berkeley (just across the bay from San Francisco). The Seminar Chair is David Dornfeld and Seminar Co-Chairs are Paul Wright and Paul Sheng, all of the University of California at Berkeley.

For more information contact :
D. Dornfeld (e-mail: dornfeld@dornfeld.me.berkeley.edu
<http://euler.berkeley.edu/esrc>).

CIRP International Seminar on
Intelligent Computation in Manufacturing Engineering
July 1 - 3, 1998
Capri (Naples), Italy

Topics:

- ¥ Manufacturing applications of: expert systems, artificial neural networks, fuzzy and neuro-fuzzy models, multi agents, genetic algorithms, simulated annealing, hybrid approaches
- ¥ Manufacturing process modeling and monitoring
- ¥ Design, simulation and modeling
- ¥ Assembly and disassembly
- ¥ Sensors and sensing techniques for manufacturing
- ¥ Production planning and control
- ¥ Diagnostics, maintenance, automated inspection and quality control
- ¥ Concurrent/simultaneous engineering
- ¥ Rapid and virtual prototyping
- ¥ Distributed and co-operative production
- ¥ Intelligent manufacturing systems
- ¥ Intelligent machines, robots and systems
- ¥ Holonic manufacturing systems
- ¥ Virtual manufacturing
- ¥ Dynamic scheduling for complex manufacturing
- ¥ Evolutionary and emergent computation for manufacturing
- ¥ Product life cycle management
- ¥ Factory design and integration
- ¥ Any other topic related to the Seminar's scope

Deadlines

Submission of abstract: October 15, 1997
Submission of full papers: March 31, 1998

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AC'98 - IV International Conference on
Monitoring and Automatic Supervision in Manufacturing
20-21 August 1998
Warsaw University of Technology
Poland

Scope:

Scientific and technical developments in automatic supervision in each manufacturing method within CIRP scope of interest i.e.: cutting, abrasive machining, physical and chemical machining, forming, automatic assembly. There will be discussed: process, machine and control system supervisory techniques, including automatic supervision of multimachine manufacturing systems.

Deadlines

- .Submission of abstracts: December 15, 1997
- . Acceptance notification: January 31, 1998
- . Full manuscript submission: February 28, 1998

Conference Secretariat:

Krzysztof Jemielniak DSc. AC'98 Organizing Committee
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INTERNATIONAL SEMINAR ON
IMPROVING MACHINE-TOOL PERFORMANCE
July 6/8, 1998
San Sebastian. Spain

Topics:

- ; High-speed machining.
Referred to the components involved in the high speed cutting process.
 - á Machine-tools for high speed cutting (spindle, feed drives, guideways, CNC control systems, structures, carriages, etc.).
 - . Tools for high speed cutting.
- ; Precision machining.
 - á Reduction and compensation of errors.
 - á Strategies for machine-tool characterisation.
 - á Improving machine-tool accuracy.
 - á Improving surface quality.
- ; Clean/safe machining.
 - á Substitution of cutting fluids or using no or less pollutant fluids.
 - á Security devices.
 - á Handling residues and emissions (lubricants, cleaning agents, noise, etc.).

Deadlines:

Abstracts: 30th November 1997
Full papers: 15th March 1998

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