



**The International Academy for Production Engineering**

# **NEWSLETTER**

**N° 42 – May 2011**

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# From the President

Dear CIRP colleagues.

On 11 March 2011 one of the most very severe earthquake and subsequent tsunamis has hit northern Japan. We all were very worried about the wellbeing of our Japanese colleagues and their families. We hoped that no damage had been inflicted on their homes and labs. Many of you have corresponded with some of them on a personal basis.

On 16 March Professor Kanji Ueda, chairman of CIRP Japan and director of AIST in Tsukuba has written the following letter of gratitude to the CIRP colleagues:

*“On behalf of Japanese CIRP colleagues, I wish to express our gratitude for heartfelt sympathies received from many foreign CIRP colleagues on the serious events caused by the earthquake last week in the northeast area of Japan. The earthquake occurred about 130 kilometers away from Sendai city off the coast in Pacific Ocean March 11th afternoon. It was with the 4th largest magnitude since 1900 in the world. Although Tokyo area is more than 300km away from the earthquake point, we still feel quakes sometimes, but we rather feel shocked to know thousands of victims by the subsequent tsunami in the northeast area.*

*We concern very much about Fukushima Nuclear Power Station. How to control its activity development is so difficult. We are also suffering from ongoing damages with electricity shortage, logistics, networks etc., which reduce our activities in academia, industry and society, but we believe that we shall survive them.*

*Thank you very much again for thinking of us in this hard moment.  
Sincerely yours, Kanji Ueda, Chairman of CIRP Japan.”*

In my answer to him I wrote: Having lived and worked in Tokyo for half a year, I have learned much about the mentality of the Japanese people. They are very strong and inventive. I am sure the country will recover.



Since then many other incidents and issues have grabbed the attention of the media and we do not hear about the situation in Japan on a daily basis anymore. The loss of lives was much larger than expected and the loss of houses and property appeared to be huge. In the rest of the world it is noticeable that Japanese factories still have problems with supplies. The Fukushima nuclear disaster has major consequences for decision-making processes on energy supply on a global scale.

This tragedy has once more made us aware about the vulnerability of our man-made infrastructure and how little we can influence the course of nature. It makes us humble. However, that does not mean that we do not have the obligation to feel responsible for our impact on the environment. People who deal with the development of new technology and its application have a particular responsibility. In our field of Production Engineering that is even more prominent.

Within CIRP the cross-track Collaborate Working Group on Energy and Resource Efficiency and Effectiveness is working on a keynote paper on the topic. But it is a CIRP wide responsibility. The long term availability of energy and resources are crucial conditions for a sustainable society. The notion that we should reduce the creation of waste and stop spoiling the earth is not good enough. We should develop products and processes in such a way that we improve our environment. We do need cross disciplinary thinking to achieve that and feel our common responsibility. This certainly is the most important future goal for CIRP as technology oriented scientific community. Without any doubt this requires fundamental research within the disciplines covered by our STC's but we also need to show concrete examples of system/cycle oriented thinking preferably in cooperation with our corporate members companies.

Looking forward meeting you all in Budapest.

With friendly regards

Fred van Houten  
President of CIRP

# News about Members

## High honors for Professor Klocke:

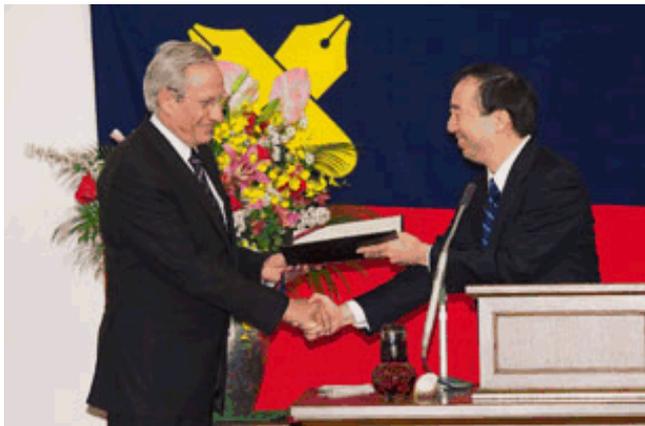
### - Fraunhofer Medal for achievements in production research

Professor Fritz Klocke has received the medal in recognition of his outstanding services to the Fraunhofer-Gesellschaft on 11 Oktober 2010. Professor Klocke is since January 1995 head of the Fraunhofer Institute for Production Technology IPT in Aachen. He is since 2007 also Chairman of the Fraunhofer Group production. Professor Hans-Jörg Bullinger from the Board of the Fraunhofer-Institute, mentioned in his Laudation the international activities of professor Klocke in the United States and Greece.. The "Aachen school" is famous in the world and Klocke is continuing this in an excellent manner. Klocke was honored for his scientific work, which he initiated and designed including active international cooperation, and his achievements as a teacher and supervisor of students in engineering.



*Photo: Professor Robert Schmitt (left) presenting the Fraunhofer Medal to Professor Fritz Klocke, Source: Fraunhofer IPT*

### - Honorary Doctorate



The prestigious Keio University, Tokyo, Japan, has awarded Prof. Dr.-Ing. Fritz Klocke an honorary doctorate. Prof. Klocke received this prestigious award for his outstanding performance in both research and teaching in the field of production technology as well as for his remarkable contribution to the development of international cooperation programs of Japan and Germany. Prof. Klocke has strongly contributed to the exchange between Keio University and

RWTH Aachen, and organized der Keio-Aachen Summer School, which has become an annual event since 2007. Many Keio students have studied German language, culture and engineering.

This Japanese award is the third honorary doctorate received by Prof Klocke, in 2006 he has received an honorary doctorate from the University of Hannover for his outstanding

achievements in science, his achievements in the industrial implementation and its exemplary character. Besides his numerous research activities professor Klocke has taken a variety of responsible positions. Among others, he is a member of the Foundation Board of the SEW-Euro Drive Foundation, Deputy Chairman of the Scientific Council of the Federation of Industrial Research Associations (AiF), Chairman of the review board production technology of the German Research Foundation (DFG), a member of the Strategy Group of the Federal Ministry of Education and Research's Research for Production of the Future and a member of the "proper" Scientific Advisory Group,

In 2009 he has received a second honorary doctorate from the Aristotele University of Thessaloniki for his scientific achievements in the field of production technology, international cooperation as well as his achievements as a teacher and supervisor of students in engineering.

## Prof Nam Pyo Su invented On-Line Electric Vehicle

The On-Line Electric Vehicle (OLEV) invented by Nam Pyo Suh with his colleagues at KAIST has been selected by the Time magazine as one of the 50 Best Inventions of 2010.



The prototype, at an amusement park in Gwacheon, just south of Seoul, is the first system in the world like it, and researchers say the technology could someday enable all electric vehicles to operate with one-fifth the battery size and at one-third the cost.

The commercialization of [technology](#) developed by researchers at the Korea Advanced Institute of Science and Technology (KAIST) has taken another step forward with the introduction of an OLEV “train” for public transportation in Seoul’s Grand Park in Gwacheon City. The vehicle picks up electricity from power cables buried underground through a non-contact magnetic charging method and replaces a trackless combustion engine train running inside the park.

The power pickup equipment installed underneath the OLEV collects [electricity from a roadway](#) and distributes the power either to operate the vehicle or for battery storage. Whether running or stopped, the OLEV constantly receives electric power through the underground cables. As a result, OLEV mitigates the burden of equipping electric vehicle with heavy, bulky batteries – the OLEV's battery size is one-fifth of the batteries installed in electric vehicles currently on the market.

A road embedded with underground recharging strips is divided into several segments so that, when a car drives on a certain segment, a sensor in the segment is turned on, and the car above the segment picks up electricity. Because charging occurs in transit there is no need to establish charging stations or set aside time for recharging that leaves the vehicle is idle.

KAIST says that if the OLEV charging method is applied to the public bus system in South Korea, the underground power lines need to be installed on only 20 percent of the total bus route at places like bus stops, parking lots, and intersections.

Also removing direct contact with charging sources prevents electrical hazards, such as electric shock. And the contactless-charging method is safe for pedestrians and other conventional vehicles, with electromagnetic radiation (EMF) test results for OLEV being well below the 1998 the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guideline, 62.5 mG at 20 khz.

The OLEV train running at Seoul Grand Park consists of one engine and three passenger cars and travels along a total length of 2.2 km. The route contains four sections of power supply infrastructure. The power supply cables were installed under the road surface for a total of 372.5 meters, which is 16 percent of the route's total distance. In terms of power system transmission efficiency, KAIST's research team achieved a maximum pick-up capacity of 62kW/h. The efficiency is 74% with an air gap height of 13cm from the road to the bottom of the vehicle

The introduction of the OLEV train is the second step in KAIST's roadmap that leads to the eventual commercialization of the technology. The next step involves the development of practical prototype technology for OLEV (2011), followed by the development of standard prototype technology (2012) and the introduction of a commercial product to the market.

The technology is also used for electric cars. This Online Electric Vehicle uses non-contact magnetic charging to draw its power needs from beneath the surface of the road.

Read more: [http://www.time.com/time/specials/packages/article/0,28804,2029497\\_2030622\\_2029703,00.html#ixzz1GaMVGph4](http://www.time.com/time/specials/packages/article/0,28804,2029497_2030622_2029703,00.html#ixzz1GaMVGph4)



## **Professor Alexander Verl received the IERA Award**

The 2010 IERA Award has been presented to Prof. Dr.-Ing. Alexander Verl (left) for his project "Inline Measurement Robots - Robots Get the Precision for Car Body Inspection".

The Award was presented by Åke Lindqvist of ABB Robotics (right), President of the International Federation of Robotics (IFR) during the International Symposium on Robotics ISR 2010 in conjunction with the German

Conference on Robotics ROBOTIK 2010 in Munich. The IFR President, Åke Lindqvist, recognized the outstanding achievements of the work at the ISR Gala Dinner.

The IEEE Robotics and Automation Society (IEEE RAS) and the International Federation of Robotics (IFR) jointly sponsor the Invention & Entrepreneurship Award (IERA Award). The purpose of this award is to highlight and honour the achievements of the inventors with value creating ideas and entrepreneurs who propel those ideas into world-class products.

Prof. Dr.-Ing. Alexander Verl is the head of Institute for Control Engineering of Machine Tools and Manufacturing Units (ISW at the University of Stuttgart and Director of the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Stuttgart

## Professor Inasaki addresses the Falling Walls Conference

Which are the next walls to fall – and what is their impact on our lives? This question was answered by 20 world class researchers during the second edition of Falling Walls, the Berlin Conference on Future Breakthroughs in Science and Society in November 2010.

The topics covered exclusive insights by world renowned experts on the consequences of Chinese and Indian neo-capitalism, next innovations in the treatment of radiotoxicity of nuclear waste, the different “pain-policies” between global South and North, a new intercultural vision of the three main monotheistic religions, the latest solutions in AIDS and blindness treatment, a system to record the movement of molecules, studies to make production and logistics more efficient and environmentally friendly, and the role of art and feelings to reinvent our public spaces.

Professor Inasaki offered the industrial policy makers a pioneering key to bridge the gap between environment and productivity by breaking the Wall of Manufacturing: How Symbiotic Technologies Can Reduce Environmental Impact.

One of the most urgent dilemmas of our society is the choice between ‘environmental protection’ and ‘productivity’: is it possible to achieve both? According to Ichiro Inasaki, one of the foremost researchers in the field of machining, machine tool technologies, and tribology, it is. Inasaki claims that while manufacturing technology faces strong criticism for its environmental impact, symbiotic technology has the ability to reduce the load of manufacturing on environment.



## SME International Honor Award Recipients:

The Society of Manufacturing Engineers (SME) has announced the recipients of the 2011 SME International Honor Awards recipients. These awards recognize those individuals who have made significant contributions to the field of manufacturing engineering in such areas as manufacturing technologies, technical writing, education, research, management and service to the Society.

“SME is proud to pay tribute to these individuals,” said Paul D. Bradley, PE, SME’s 2011 president. “Through their diligent research efforts and technical achievements, they have each significantly contributed to advancing the manufacturing industry. “The winners will be honored at the International Awards Gala, which takes place at the SME Annual Conference, June 5-7, 2011, at the Hyatt Regency Bellevue in Bellevue, WA.

Three of the six recipients are members of the CIRP:



### - Ekkard Brinksmeier,

Prof. Dr.-Ing. habil., FSME, Professor for Manufacturing Technologies, University of Bremen, Germany

Ekkard Brinksmeier is recognized with the **SME Frederick W. Taylor Research Medal** for his significant and leading-edge published research, which has led to a better understanding of materials, principles, operations and their application to improve manufacturing processes.

Brinksmeier studied mechanical engineering at the University of Hannover, Germany. After receiving his Dr.-Ing. in mechanical engineering in 1982, he worked as chief engineer at the Institute for Production Engineering and Machine Tools, Hannover. In 1992, Brinksmeier became a full professor at the University of Bremen and currently holds the chair of manufacturing technologies. Furthermore, he is director of the Foundation Institute for Materials Science IWT and the Laboratory for Precision Machining. Brinksmeier's scientific interests and research areas lie in the field of advanced manufacturing processes with special focus in the areas of ultraprecision machining processes down to nanometer tolerances, process integration, development of sensor-integrated tools, development of advanced coolants in metal cutting and the generation of functional surfaces by machining. He is a fellow of both SME and CIRP. Brinksmeier holds leadership positions in several associations and institutions including DFG, AiF, WGP and others. He is past president of the European Society for Precision Engineering and Nanotechnology. Brinksmeier has received several awards, most notably the CIRP F.W. Taylor Medal and the DFG Gottfried Wilhelm Leibniz Award.



### - W. Tyler Estler

is recognized with the **SME Albert M. Sargent Progress Award** for his significant accomplishments in the field of manufacturing processes, methods or systems.

Estler, a retired physicist in the Precision Engineering Division of the National Institute of Standards and Technology, has expertise and experience in high-accuracy dimensional metrology of precision machine tools, coordinate measuring machines and complex

workpieces; precision interferometric metrology for displacement, absolute distance, angle and surface figure measurements; laser alignment metrology; large-scale metrology; refractive index measurements; probability theory; and the fundamentals of measurement science and engineering metrology. Estler's major technical projects include field validation metrology of the large-optics diamond-turning machine at Lawrence Livermore National Laboratory, error budget and accuracy analysis for Space Shuttle Solid Rocket Motor metrology instrumentation, high-accuracy rail straightness metrology at the U.S Navy David Taylor Ship Research and Development Center, and development of the NIST Advanced Angle Metrology facility. He has published more than 40 peer-reviewed publications in precision engineering and metrology. Estler has a BS in physics from Florida Atlantic University and a PhD in physics from the State University of New York at Stony Brook.



### **- K. Scott Smith**

is recognized with the **SME Education Award** for developing manufacturing-related curricula, fostering sound training methods and inspiring students to enter the profession of manufacturing.

Smith has been an engineering educator for more than 25 years at the University of Florida and at the University of North Carolina at Charlotte. Currently, he is professor and chair of mechanical engineering and engineering science at the University of North Carolina at Charlotte. His teaching and research areas include high-speed machining, process optimization and machine dynamics. He is a fellow of SME, CIRP and ASME International.

Smith has served as president of the North American Manufacturing Research Institute of SME and as chair of the Manufacturing Engineering Division of ASME. Smith is also president of OpSource Inc. and vice president of Manufacturing Laboratories Inc. He is co-author of the book "Machining Dynamics: Frequency Response to Improved Productivity." Smith has received numerous awards, including the ASME Blackall Award, the AMT Charles F. Carter Advancing Manufacturing Award, the American Helicopter Society Pinckney Award, the SME Outstanding Young Manufacturing Engineer Award and the SAE Ralph R. Teetor Award. Smith holds five patents and is the recipient of a 2010 R&D 100 Award. He received his BS in mechanical engineering from Tennessee Technological University, and his master's and PhD from the University of Florida.

## **CIRP Corporate Members**

### **New aims, new organization, new board**

One of the strong assets of CIRP is that its membership not only represents top academic organizations but also leading industrial companies, small ones and large ones. Those CIRP "Corporate Members" (CM) are grouped in the CMAG: the Corporate Members Advisory Group. Each Corporate Member company has one or two CM delegates. Some CM delegates used to play an important role in CIRP (e.g. several CIRP presidents or STC-Chairmen originated from companies rather than universities, like Ten Horn from Philips, Gunther from

Siemens, and Rafi Wertheim when he was still with Iscar Ltd.). However, the fact that many people ignore that CIRP has as many CM delegates as Fellows (about 145 for each category), indicates that corporate members lack visibility or involvement within the CIRP organization. CIRP has therefore decided to restructure its CMAG with the aim of:

- giving more visibility to Corporate Members within CIRP;
- giving CMAG more authority;
- increasing CM involvement within CIRP activities (in particular within STCs);
- getting increased attention from academic CIRP members and from STCs for the corporate members and their concerns;
- increasing the return-on-investment for CM membership;
- taking profit of CM members to increasing CIRP visibility towards the external world.

To achieve those aims, following actions were taken:

**a) Establishing a close link between Corporate Members and STCs**

Besides indicating “STCs of interest”, each CM delegate is asked to indicate a “**primary STC of interest**”: to do so go to [www.cirp.net](http://www.cirp.net) and to “View my Profile” (link under your picture in the top right box “CIRP MEMBER LOGIN”) and click on “Update profile”. This allows CIRP to identify the major interest of each corporate member and to establish a privileged contact channel. An officer of that ‘primary STC of interest’ (normally the STC vice-chair) will be assigned as a privileged contact person to care for the concerns and integration of that corporate members within CIRP. The STCs are asked to pay special attention to those corporate members and to establish a regular link with associated CM delegates.

**b) Reorganizing the CMAG board:**

So far the chairman of CMAG was the CIRP Past President, changing every year. As a result corporate members could only be allocated the second role of vice-chair and could not be elected chairman. Since January 2011 the CMAG board consists of four members (see names below), assigned for three years:

- **Chairman:** elected among CM delegates (Dr. Joachim Schulz from B-Braun/Aesculap, Germany)
- **Corporate Vice-chairman:** elected among CM delegates (Dr. Masahiko Mori from Mori Seiki, Japan)
- **Council Vice-chairman:** designated member of the Council to insure a permanent link between CMAG and Council (Prof. Jean-Pierre Kruth, K.U.Leuven, Belgium).
- **Secretary:** nominated by CMAG and approved by Council (Matt Cotterell from CAMMS, Ireland).

Those actions will hopefully yield a better integration of corporate members within CIRP to the benefit of all parties (the corporate members themselves, the academic members and CIRP as an active and renowned academy). It should avoid corporate members to be somewhat isolated within the CIRP organization, having their own separate CMAG meeting, while not being well integrated within the STCs and the technical activities and exchanges of information. It will make CIRP more attractive and beneficial to corporate members and reinforce industrial presence within the CIRP academy.

Prof. Jean-Pierre Kruth

# News from CIRPedia

The CIRPedia project is now up and running. CIRPedia is a wiki type encyclopaedia developed in collaboration with Springer Publishing House. Its added value, compared to other wikis, is high quality content since each technical term it contains is described using CIRP member's expertise. It consists of ten sections, one for each of our STCs. Professor Reinhart and I are very happy to report that all ten Section Editors (actually, eleven) have now been nominated and have started their work with us in selecting a list of 25 terms for each section. The CIRPedia Section Editors are:

STC A: Sami Kara	STC C: Hans K. Toenshoff	STC DN: Eric Lutters	STC E: Ludger Overmeyer	STC F: Erman Tekkaya
				
STC G: Jan Aurich	STC M: Erhan Budak	STC O: Gunther Schuh	STC P: Robert Schmitt and Alkan Donmez	STC S: Chris Brown
				

The total 250 terms are being uploaded into the CIRPedia web site. For each term an essay must be written (2-5 web pages) that provides the term's definition, synonyms, theory, applications, links to other terms, and references. These essays can be edited directly into the CIRPedia web site for importing text, figures, equations, animations, hyperlinks to other CIRPedia terms, video-clips, interactive exercises, simulations, etc. It is very easy to work with and no expertise in web page design is necessary. Guidelines have been written by Springer staff to guide Authors in writing their essays.

We now write to you all because, as you may have guessed, the time has come to designate authors for each essay. The above editorial board will therefore contact some of you and ask if you would be interested in being an Author in Chief for one or more terms. Of course, we strongly encourage you to get involved. CIRPedia is a long term CIRP project that depends solely on CIRP members participation. To this end, if you accept an invitation to become an Author in Chief, you will further be contacted by Springer Publishing House who will give you access to the CIRPedia web site with full Authors editing privileges. You will work in collaboration with your Section Editor and other Authors.

Apart from the 250 terms which are the target for a first Edition, CIRPedia is already populated with all definitions of CIRP dictionaries, which amounts to about 2500 terms with definitions, synonyms, and translations into English, German and French.

In the contract that was signed with Springer Publishing House in Pisa last August, it is clearly mentioned that CIRP owns the Copyright for CIRPedia content. In fact the same formulation used for the Annals with Elsevier was used with Springer Publishing House for CIRPedia. This means that the original material that an Author in Chief puts into CIRPedia can be re-used by this Author. This also means that Springer Publishing House has the responsibility to ensure that the material is not copied anywhere else, unless permission is given by CIRP and Springer Publishing House.

We sincerely hope that you will contribute to the CIRPedia project. In the beginning only those who have accepted to become an Author in Chief will be able to access CIRPedia. When there is enough content, the site will be opened to the whole CIRP community such that those who are not Editors nor Authors will still have the opportunity to look at the essays and provide comments. There is an info site open to the general public that you can visit at:<http://refworks.springer.com/mrw/index.php?id=2580> Note that this is NOT the CIRPedia site, it is just a « teaser » site.

We thank you in advance for your help in what has become an excellent platform for CIRP external exposure, and we look forward to see your pictures in CIRPedia as Authors in Chief.



Prof. Luc Laperrière  
Terminology Committee Chair  
CIRPedia Editor in Chief



Prof. Gunther Reinhart  
Terminology Committee Vice-Chair  
CIRPedia Editor in Chief

## Photos from Pisa

A lot of photos have been shot during the 2010 General Assembly. The organisers have put them on the website <http://picasaweb.google.com/105399259077816087272> You can watch them as a slide show and download your own pictures.



# From the secretariat



*Chantal Timar-Schubert*

Papers/Keynote Papers, CIRP meetings, the Website, candidatures for Membership, Internal Regulations.



*Agnès Chelet*

Financial aspects in CIRP: fees, page charges, or any kind of payment or invoice.

## Important dates:

### **January meetings**

25-27 January 2012, Paris

23-25 January 2013, Paris

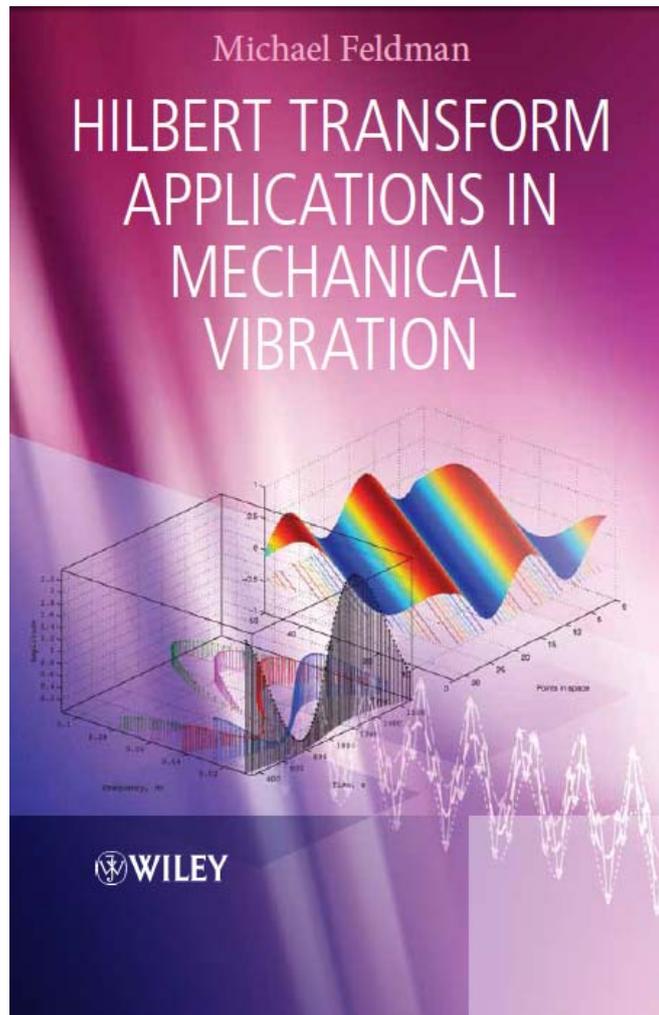
### **General Assembly's**

21-27 August 2011, Budapest, Hungary

19-25 August 2012, Hong Kong, China

- The list of the papers presented at the next General Assembly in Budapest is available online on the CIRP Website with the abstracts. They should be online in early July but they are already available through "articles in press" on the ScienceDirect website (through the CIRP portal).
- All the papers and keynote papers of the CIRP Annals are now available online on the CIRP Website from 1960 up to now (but you have to log in). You can find any paper through the Search Engine which is working well.
- The layout of the Home Page of the CIRP Website is being completely rethought, so that it will be easier for non-members to get information on CIRP - and it will be easier for members as well to find information they are looking for.
- The registrations to the January meetings, for the first time directly through the website, have been very successful.

# New Books



This book, written by Dr Michael Feldman - a world expert, will appeal to both professionals and students working in mechanical, aerospace, and civil engineering, as well as naval architecture, biomechanics, robotics, and mechatronics.

<http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470978279.html>

# Conferences

Date	CIRP Conferences	Place
27-29 March 2011	<a href="#">21st CIRP Design Conference</a>	Daejeon, Korea
2-4 May 2011	<a href="#">18th CIRP Conference On Life Cycle Engineering</a>	Braunschweig, Germany
5-6 May 2011	<a href="#">3rd CIRP IPS2 Conference</a>	Braunschweig, Germany
12-13 May 2011	<a href="#">13th CIRP Conference On Modelling Of Machining Operations</a>	Sintra-Lisbon, Portugal
1-3 June 2011	<a href="#">44th CIRP Conference On Manufacturing Systems</a>	Madison, USA
30 Jan - 1 Feb 2012	<a href="#">1st CIRP Conference On Surface Integrity (CSI)</a>	Bremen, Germany
18-19 April 2012	<a href="#">12th CIRP Conference On Computer Aided Tolerancing</a>	Huddersfield, U.K.
16 May 2012	<a href="#">45th CIRP Conference On Manufacturing Systems</a>	Athens, Greece
21-23 May 2012	<a href="#">4th CIRP Conf. On Assembly Technology Systems - CATS 2012</a>	Ann Arbor, USA
24-26 May 2010	<a href="#">19th CIRP Conference On Life Cycle Engineering</a>	Berkely USA
4-7 June 2012	<a href="#">5th CIRP Conference On High Performance Cutting</a>	Zürich, Switzerland
18-20 July 2012	<a href="#">8th CIRP Conference On Intelligent Computation In Manufacturing Engineering - CIRP ICME '12</a>	Gulf of Naples
29-30 Oct 2012	<a href="#">3rd CIRP Conference On Process Machine Interactions</a>	Nagoya, Japan
17-19 April 2013	<a href="#">20th CIRP Conference On Life Cycle Engineering</a>	Singapore
13 June 2013	<a href="#">14th CIRP Conference On Modelling Of Machining Operations</a>	Torino, Italy

Date	Sponsored Conferences	Place
19 May 2011	<a href="#">12th International Cold Forging Congress</a>	Fellbach, Germany
25-27 May 2011	<a href="#">ISAM 2011 - 2011 International Symposium On Assembly And Manufacturing</a>	Tampere, Finland
7 11 June 2011	<a href="#">6th International Conference TOTAL QUALITY MANAGEMENT"</a>	Belgrade, SERBIA
23-26 June 2011	<a href="#">6th International Working Conference &amp; Exhibitions On Design &amp; Production Of Machines And Dies/Molds</a>	Turkey
28 Sep - 2 Okt 2011	<a href="#">9th Global Conference On Sustainable Manufacturing</a>	St Petersburg, Russia
28 September 2011	<a href="#">DET 2011 - 8th Conference On Digital Enterprise Technology</a>	Athens, Greece
2-5 October 2011	<a href="#">4th Conf. on Changeable, Agile, Reconf. and Virtual Prod.(CARV2011)</a>	Montreal, Canada
6 -7 October 2011	<a href="#">9th International "THE" Coatings Conference</a>	Thessaloniki, Greece
6 October 2011	<a href="#">ICMEN 2011 - 4th International Conference On Manufacturing Engineering</a>	Thessaloniki, Greece
2-4 November 2011	<a href="#">TRIZ Future Conference 2011</a>	Dublin, Ireland
23-24 November 2011	<a href="#">1st International Conference On Stone And Concrete Machining</a>	Hannover, Germany
12-15 March 2012	<a href="#">XXIII Conference On Supervising And Diagnostics Of Machining Systems</a>	Karpacz, Poland
2-4 May 2012	<a href="#">PROMED -1st International Conference On Design And Manufacturing PROCesses For Medical Devices</a>	Brescia, Italy
25-27 July 2012	<a href="#">3rd International Conference On NanoManufacturing -nanoMan</a>	Wako- Satiama, Japan
8-12 April 2013	<a href="#">ISEM XVII - 17th International Symposium On Electromachining</a>	Leuven, Belgium
4-7 June 2013	<a href="#">7th International Workshop Conference On "Total Quality Management - Advanced And Intelligent Approaches"</a>	Belgrade, Serbia,