



**The International Academy for Production Engineering**

# **NEWSLETTER**

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CIRP Office: 9, rue Mayran, 75009 Paris France tel +33 1 45262180 - Fax +33 1 45269215  
e-mail [cirp@cirp.net](mailto:cirp@cirp.net) - web site: <http://www.cirp.net>

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# From the President



Dear CIRP colleagues,

The date of the 63rd General Assembly is approaching and our colleagues Hans Hansen and Leo Alting are now working to solve the last problems. Who organized a CIRP General Assembly in the past knows how hard and time consuming to make all the week activities run smoothly and to ensure the standard level of service participants and accompanying persons are expecting. From this point of view I can affirm that Hans and Leo have been working hard and well. Now it's up to us to reward their efforts by registering soon and keeping the number of participants and accompanying persons high as in the recent years.

Copenhagen is a worldwide famous centre of culture, business, media and science. Among the many attractive features of the city I wish to remind that it has repeatedly recognized as one of the cities with the best quality of life: it includes abundance of water, green parks, bicycle paths. In addition life science and research and development in biotechnologies and bioengineering play an important role in its economy. I am sure all the participants and accompanying persons may have the chance to appreciate these aspects of Copenhagen as well as its museums and monuments.

As Copenhagen demonstrates an appreciable attention to people, CIRP should continue, more than in the past, to direct its scientific interest to people as main actors of manufacturing processes in the shared view of a sustainable manufacturing.

Dark years have been foreseen by some economists: the threat is a "jobless generation". In the last years many countries have been facing the problem of the loss of existing jobs and the shortening of new jobs. As CIRP members we know that manufacturing can be a source of jobs as it has always been in the past. We also know that CIRP alone cannot solve the problem. However we must keep the high level of excellence achieved in the past, we must improve existing processes and invent new ones, design new products and services, study and test new manufacturing paradigms: our effort can foster the creation of new jobs and can improve the conditions of the already existing ones. Our work is our scientific and ethic contribution to the problem. The power of our academy is based also on the active presence of the Corporate Members and the Research Affiliates. The former are the main stakeholders of manufacturing and can suggest, drive and test research carried out in universities, while the latter represent the future of research with the richness of new ideas and unexplored fields of research.

Hoping that the "jobless generation" is only a transient nightmare I send you warm regards and I invite you to register for the General Assembly!

Looking forward to meeting you in Copenhagen in August.

Marco Santochi  
President of CIRP  
2012-2013

# News about Members

## Knighthood announcement – Professor Manfred Geiger

Professor Dr.-Ing. Geiger has been awarded as the 7<sup>th</sup> Knight of Laser Technology in the historical Cityhall of Nuremberg (D) at November 13<sup>th</sup> 2012 because of his leading contributions to the application of lasers in research and industry.

Directly after university he has entered the laser world, over 30 years ago as Abteilungsleiter “Grundlagen Entwicklung” by Triumph in Ditzingen and Farmington in the USA.



*Prof. Geiger (left) receives the Award from prof. Meijer*

After further industrial positions in research and management it was professor Kurt Lange who succeeded to call him back to University and in 1982 he became professor in Umformtechnik, Lasertechnik, Geratetechnik and later also Microproduction technik (LFT). It was not easy for him to leave the industry and until 1988 he still managed simultaneously a company producing electronic parts from metal and synthetic materials. Close ties to the industry have characterized his scientific approach.

He has introduced a holistic view which was in those years not common in universities. He combined that with a solid scientific basis, vision and hard work. Within the first ten years of his professorship the LFT already became well known with a well-equipped laboratory. An example was the in 1991 developed system for combined lasercutting and welding of 3D components for the Mercedes S-class. It was developed at the university and applied in industry.

When in 1993 the Bavarian Laser Center (BLZ) was founded it was on a solid base of knowledge and laboratory facilities. One year later the first LANE conference was held. At the second one in 1997 the first Knight of Laser Technology was awarded (prof Jean-Pierre Kruth). During those years and the years after, prof Geiger hold numerous important positions in the academic and industrial world. He received honorary doctorates in Budapest, Chemnitz, Dortmund, Ljubljana and Miskolc.

He was a member in the Senate of the German Research Foundation, he was appointed to the Science Council of the Federal Government; he was President of the prestigious society for production engineering, he has been Chairman of the University Council of the Leibniz University of Hanover and he has received a and a long list of awards.

When he received the Federal Cross of Merit (in recognition of extraordinary engagement and outstanding achievements) President Horst Köhler has said in his statement that Professor Geiger is one of the international leading scientists of production technology in the fields of laser material processing and forming technology. A lot of new technologies are traced back on him and his co-workers. Also several spin-offs have been established. With the Bavarian Laser Center he has found an efficient way to transfer research to applications.

## **Professor David A. Dornfeld member of the US National Academy of Engineering (NAE)**

Professor David A. Dornfeld, Will C. Hall Family Chair in Engineering, CIRP Fellow and professor of mechanical engineering at the University of California, Berkeley has been elected as NAE member. This has been announced by the NAE President Charles M. Vest (Feb. 7, 2013, WASHINGTON). Dornfeld was recognized for his contributions to sustainability in advanced manufacturing, sensors, and precision material processing

Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to "engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature," and to the "pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education."



## **Professor Yusuf Altintas and Donald McIntosh receive NSERC Synergy Award**



Professor Altintas with his partner from Pratt & Whitney Canada: Mr. Donald G. McIntosh, corporate member of CIRP, has received the best industrial research partnership award with a large company in Canada from National Sciences and Research Council of Canada.

The award brings \$200,000 to Prof. Altintas for general research and \$80,000 for Pratt & Whitney Canada for postdoctoral fellowship.

Altintas and P&WC were honoured at a ceremony hosted by His Excellency the Right Honourable Dr. David Johnston,

Governor General of Canada, at Rideau Hall in Ottawa on Wednesday, February 27, 2013.

On the picture from left to right: Prof. Altintas, Gov. General Dr. David Johnston, NSERC President Dr. Susan Portier and Donald McIntosh.

## Professor Kumara honoured as AAAS Fellow



Professor Soundar Kumara, Allen Pearce professor of industrial and manufacturing engineering at the Penn State University (USA), has received the honor of being named Fellow of the American Association for the Advancement of Science (AAAS).

Kumara was recognized by his peers for "pioneering contributions to interdisciplinary research in industrial engineering integrating, manufacturing, computing, complex networks and operations research". He has been inducted at a ceremony in Boston on February 16.

Professor Kumara received his Bachelor of Engineering degree in mechanical engineering from S.V.U. College of Engineering, Tirupati, India, and his Master of Technology degree in industrial engineering from the Indian Institute of Technology, Madras. He got his doctorate degree in industrial engineering from Purdue University, USA, in December 1985 and joined the Penn State IE department as an assistant professor in January 1986. Presently, he also holds appointments in Penn State's Department of Computer Science and Engineering and the College of Information Science and Technology. He also serves as an adjunct professor at the University of Hyderabad and has held visiting professorships at some of the leading institutions across the globe including the Massachusetts Institute of Technology, University of Tokyo, City University of Hong Kong, and Korea Institute of Science and Technology.

Prof. Kumara has done pioneering research in manufacturing process monitoring, IT in manufacturing and service, network mining, and large-scale complex networks. Currently, he is the lead from Penn State's College of Engineering on a \$48 million contract from the Defense Advanced Research Projects Agency (DARPA) to streamline the design and manufacture of battlefield technologies.

He has received many accolades including the Faculty Scholar Medal, the highest research award bestowed by Penn State, the Penn State Engineering Society's Outstanding Research Award, and numerous teaching and advising awards. He is an elected fellow of the Institution of Industrial Engineers (IIE), and the International Academy of Production Engineering (CIRP). Forty-three doctorate and 47 master's students have graduated under his guidance. In addition to being named a Fellow of AAAS, he is a Fellow of the Institute of Industrial Engineers, the International Academy of Production Engineering, and the American Society of Mechanical Engineering. He has more than 200 publications to his credit and several of his papers have won best paper awards. His work in agent based manufacturing, network mining and complex networks is highly cited.

# CIRP President Attends Meeting of CIRP UK and Ireland

3<sup>rd</sup> and 4<sup>th</sup> May 2013, Dublin, Ireland

A meeting of CIRP UK and Ireland took place in University College Dublin and Trinity College Dublin, Ireland in May. It was hosted by Past President Professor Gerry Byrne, Associate Members, Dr. Eamonn Ahearne and Dr. Garret O'Donnell and Corporate Member, Mr Matt Cotterell (Cork Institute of Technology). Our President, Professor Marco Santochi (Italy), opened the event. This was followed by an address from Professor Rajkumar Roy of Cranfield University and Chairman of CIRP UK.

A number of interesting Keynote Addresses from industry were then presented. They were followed by a [Debate on: Manufacturing in Ireland and the UK](#) where the debate question was: *“New Jobs and Added-Value through Manufacturing?”*. A panel of leading experts in various aspects of Manufacturing from industry and academia were present to contribute to the debate. In the debate it was evident that university-industry partnerships are critical to the development of both the Multi-National and indigenous industries. The enormous challenges associated with job creation particularly for the young generation were discussed.

Along with CIRP UK and Ireland members, guests were present from industry, academia and both the UK and Irish government funding agencies. This is indicative of the role CIRP is playing in influencing the manufacturing research agenda in the UK and Ireland. In total around 100 people attended the open CIRP Day.

It is evident that considerable momentum is building in the area of manufacturing, and manufacturing research and development, both in the UK and in Ireland. In that regard, this event was most timely as it provided an important forum for focussed discussions on the setting of new directions in this field; a field which is critical to economic recovery in both jurisdictions.



The President described his visit to Dublin was an important opportunity to experience in person the activities of CIRP UK and Ireland colleagues, and to appreciate the strong commitment to present CIRP as a fundamental factor in fostering research in production engineering and in helping to increase the competitiveness of local industries. It showed how CIRP can have political influence in a country. The President also lauded the idea of an organized debate on the potential for creating new jobs through manufacturing describing it as a “very timely initiative in these hard times”.

# Notes from the Editorial Committee

## Notes from the Editorial Committee

Our academy has decided to distribute the proceedings of all CIRP-owned conferences for the next years exclusively via Procedia CIRP by signing a contract with Elsevier. Procedia CIRP is an open access product focusing entirely on publishing high quality proceedings from CIRP conferences, enabling fast dissemination so that conference delegates can publish their papers in a dedicated online issue on ScienceDirect. With this system we can guarantee world-wide access of all contributions to our CIRP-owned conferences with a CIRP-approved review procedure. The established EES system known from the annals is also available for all our Procedia activities to handle the paper submission/review process. Procedia CIRP can also be used by CIRP-sponsored conferences if the local organization and the review process are in agreement with our CIRP standards. Elsevier has established a dedicated homepage for this product: <http://www.journals.elsevier.com/procedia-cirp/>

With this note we want to inform you that Procedia CIRP has been evaluated for inclusion in Scopus by the Content Selection & Advisory Board (CSAB). The review of this title is now complete and the CSAB has advised that the title will be accepted for inclusion in Scopus. Furthermore it is listed in the EI Compendex. This is an important next step in our strategy to further improve the visibility of our academy and its outcome.

Related to all these positive effects the number of submitted papers to the annals is continuously rising. In the last newsletter this challenge was already addressed. A special advisory committee consisting of the Secretary General Prof. Didier Dumur, the Technical Secretary Prof. Johan Meijer and the Chairman of the Editorial Committee has developed and discussed 5 options to deal with these future needs. In a presentation to the Liaison Committee in Paris 2013 the following proposal was made based on a comparison of the different options, Figure 1.

	No.1: No change, higher rejection	No.2: Present 145, print more	No.3: One more slot per day (6 parallel)	No. 4a/(4b): 20 min slots (25 min slots)	No. 5: Poster sessions
Max. number of papers (Vol. 1)	145	145 + X	175	175 – 210 (165)	165 (flex)
Quality of the CIRP annals	++	+	+	+	+
Chance to attract new members	-	+	+	+	+
Keeping CIRP tradition	++	-	+	+	-
Capability for future needs	-	++	0	++	++
Organizational continuity	++	-	+	++	-
Attractiveness to members/guests	0	-	-	++	?

Caption: ++ very good, + good, 0 neutral, - negative, ? unclear

**Proposed option of the advisory committee**

Figure 1: Comparison of options

As can be seen the best results are expected by reducing the individual slot time per paper to 25 or 20 minutes respectively. For the upcoming General Assembly in Copenhagen it was (maybe for the last time) possible to host all papers without this time reduction. But our academy is now prepared to react to further rising submissions without interfering with our spirit and continuity. In my Liaison Committee presentation also an enlargement of the number of Editorial committee members by 2 more experts (currently 12 including Chair and Vice-Chair) was proposed, because the individual load is already reaching 50 papers per reviewer. The LC was in favour of this enlargement, dependent on a positive board decision this measure will be established soon. As a change to long-running traditions I finally proposed to give up the discussion cards in the individual STC sessions. They are seen as a relic from the early days of CIRP. Nowadays they even prevent active participation of many members in discussions just to avoid question writing. Thus to stimulate a more vivid discussion the LC unanimously supported this idea.

Bernhard Karpuschewski  
EC-Chairman

# From the Research Affiliates

## From startup to a steady-state community

As a new offshoot of the CIRP community, in the last 6 years we have grown into a steady branch. In August 2007, the first 23 Research Affiliates (RAs) were officially nominated and, since the last Paris meeting, this number has increased to 116. RAs are nominated for a maximum of 2 x 3 years. The second term being conditional based on the individual activity and contribution to the RA and CIRP community.

This maximum of 6 years means that this summer in Copenhagen we will say goodbye to those who were members since the beginning. A number of them have already left the group: some became associate or corporate member, others found their path elsewhere. For us as an organization this means a transition from startup to a steady-state community. Guiding and successfully passing this transition phase is therefore one of main tasks of the new board.

## New RA officers

An important point on the Paris agenda was the election of a new board since both, Hans-Christian Möhring and Jose Yagüe-Fabra, left the RAs to become Associate members. The following new RA officers were appointed:

- Chair           Dr. Wessel W. Wits
- Vice-chair     Dr. Petra Kersting
- Secretary     Dr. Yasuhiro Kakinuma

## RA agenda

Looking ahead, this spring two interesting events are planned:

- 2<sup>nd</sup> CIRP Web Conference (CIRPe2013) on June 11-12, 2013.

This will be the sequel of the successful 1<sup>st</sup> Web Conference. The review process has just finished and more than 20 exciting papers made the cutoff.

More information: <http://lms.mech.upatras.gr/cirpe2013/>

- CIRP RA annual workshop on June 24-26 in Zaragoza, Spain.

This year we are planning a new event during the workshop. A substantial amount of time is allocated to a group exercise where all RAs contribute from their own background and experience; this year's topic: Technological Process Chains.

More information: <http://cirpra2013.unizar.es/>



*Research Affiliates group photo at the CIRP Paris meeting, January 2013.*

# From the STC's

The backbone of CIRP is formed by 10 Scientific Technical Committees. The activities of two of them are described below.

## STC-“G” - Abrasive Process

### About STC-G

Study and research into material removal processes using abrasive grains including grinding, lapping, polishing, superfinishing, jet finishing, mass finishing, etc. The research largely focuses on fundamentals of finishing processes, the integrity of finished surfaces and the economics of abrasive processes.

Main research topics are:

- Theoretical and experimental research in abrasive finishing processes
- Innovation and development of finishing technologies with fixed abrasive, free abrasive and flow abrasive tools
- Modeling, simulation and verification of abrasive finishing processes
- Optimization of technical and economic performance of the processes

### Recent STC-G keynote papers published in CIRP

- Gear finishing by abrasive processes
- Industrial challenges in grinding
- Ultra-precision grinding
- Wheel preparation
- Advances in centerless grinding technology
- Sustainability in abrasive processes



# STC “P” - Precision Engineering and Metrology

## Current research topics

STC P deals with research topics on development and application of measuring techniques to be used for quality control procedures, involving the measurement of size, shape and positional relationships in manufactured components and assemblies including machine-tools. Nanotechnology processes and equipment are also covered.

## Cooperative activities

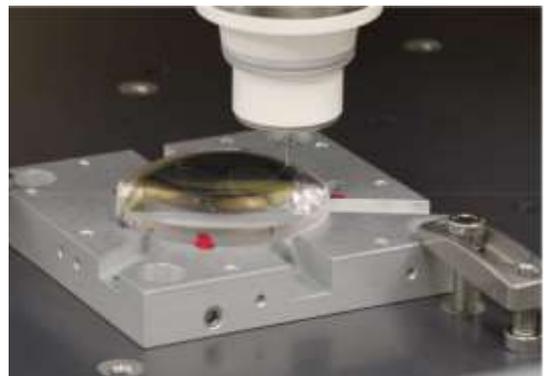
STC P participates actively in the Collaborative Working Group (CWG) “Micro-Production Engineering” to play an important role in verifying the evaluation-parts at identical conditions in the CWG. STP P is running a User group of Lasers Tracer and Tracker for the purposes of collaborations, technical exchanges, inter-comparisons and establishment of data base for laser tracers and laser trackers, which are widely used in machine tool metrology. Members of STC P are also playing a leading role in international standardization work on machine tool metrology and machining instruments for manufacturing.

**Round robins:** Currently STC P does not organize any round robins.

## Other activities in STC P.

STC P provides a platform for academics, professionals and engineers from different disciplines to exchange their ideas, opinions and state-of-the-art technologies related to precision engineering and metrology. Cooperate Members are extremely active in STC P. The following are some on-going research work reported by Cooperate Members in the recent STC P meeting. More Cooperate Members are welcome to join in STC P through attending meetings, making presentations and participating in discussions:

- Update on Isara400 and Triskelion probe (IBS) (see the picture)
- Tactile probing behavior characterized on reference spheres with nanometer accuracy (PTB)
- Optical micro-coordinate metrology using the focus variation technique (NPL)
- A novel absolute Interferometer with up to 88 channels for the monitoring of precision structures: Technology and applications (Etalon)



# Future Keynotes Papers

Our keynote papers are generally the result of an intensive collaboration between specialists working together during several years within an STC. They are important state of the art papers on important (new) technological areas. CIRP members who are willing to contribute are invited to contact the coordinator.

## 2014 Keynote Papers in preparation

STC	Proposed title	Coordinator/ first author	Contact
"A"	Grasping Devices and Methods in Automated Production Processes	M. Santochil	<a href="mailto:santochi@ing.unipi.it">santochi@ing.unipi.it</a>
"C"	Cutting Edge Micro Geometries	B. Denkena	<a href="mailto:denkena@ifw.uni-hannover.de">denkena@ifw.uni-hannover.de</a>
"Dn"	Tools & Techniques for Product Design	D. Lutters	<a href="mailto:e.lutters@utwente.nl">e.lutters@utwente.nl</a>
"E"	Electrical, Physical & Chemical Processes for Turb Machining Component Manufacture	F. Klocke	<a href="mailto:f.klocke@wzl.rwth-aachen.de">f.klocke@wzl.rwth-aachen.de</a>
"F"	Testing and Modelling Material Behaviour & Formability in Sheet Metal Forming Processes	S. Bruschi	<a href="mailto:stefania.bruschi@unipd.it">stefania.bruschi@unipd.it</a>
"G"	High Energy Fluid Jet Machining	D.A. Axinte	<a href="mailto:dragos.axinte@nottingham.ac.uk">dragos.axinte@nottingham.ac.uk</a>
"M"	Materials in Machine Structures	H.C. Möhring	<a href="mailto:hc.moehring@ovgu.de">hc.moehring@ovgu.de</a>
"O"	Design and Management of Manufacturing System for Production Quality	T. Tolio	<a href="mailto:direzione.itia@itia.cnr.it">direzione.itia@itia.cnr.it</a>
"P"	Industrial Applications of Computed Tomography	L. De Chiffre	<a href="mailto:ldch@mek.dtu.dk">ldch@mek.dtu.dk</a>
"S"	Role of Surfaces and Interfaces in Solar Cell Manufacturing	A. Chandra	<a href="mailto:achandra@iastate.edu">achandra@iastate.edu</a>
"1"	Hybrid Processes	B. Lauwers	<a href="mailto:bert.lauwers@mech.kuleuven.be">bert.lauwers@mech.kuleuven.be</a>

## 2015 Keynote Papers proposals/ in preparation

STC	Proposed title	First authors	Contact
"C"	High Performance Cutting of Advanced Aerospace Materials	R. M'Saou	<a href="mailto:rachid.msaoubi@secotools.com">rachid.msaoubi@secotools.com</a>
"E"	Laser Processing using Ultrashort Laser Pulses	-	-
"F"	Predicting and Controlling Product Properties in Metal Forming Processes	A.E. Tekkaya	<a href="mailto:erman.tekkaya@udo.edu">erman.tekkaya@udo.edu</a>
"G"	Abrasive Machining of Advanced Aerospace Alloy and Composites	F. Klocke	<a href="mailto:f.klocke@wzl.rwth-aachen.de">f.klocke@wzl.rwth-aachen.de</a>
"O"	1: Sociologically inspired manufacturing Or 2: Prognosis for cloud manufacturing	T. Kaihara R. Gao	<a href="mailto:kaihara@kobe-u.ac.jp">kaihara@kobe-u.ac.jp</a> <a href="mailto:rgao@engr.uconn.edu">rgao@engr.uconn.edu</a>
"P"	Measurement Technologies for Precision Positioning	W. Gao	<a href="mailto:gaowei@cc.mech.tohoku.ac.jp">gaowei@cc.mech.tohoku.ac.jp</a>
"1"	Metalworking Fluids – Mechanisms and Performance	E. Brinksmeier	<a href="mailto:brinksmeier@iwt.uni-bremen.de">brinksmeier@iwt.uni-bremen.de</a>

# From the Headquarters



*Chantal Timar-Schubert*

Annals papers/keynote papers submission process, CIRP meetings, the Website, candidatures for Membership, Internal Regulations and any internal information.



*Agnès Chelet*

Financial aspects: accountancy, membership fees, page charges, conferences sponsorships, January registration + Agendas & Minutes of the scientific meetings.

The lists of the [papers and keynote papers](#) for next General Assembly are now available online on the page “2013 General Assembly” (through the “Events” button).

**Website:** we regularly update the “[Latest News](#)” on the Home page to keep you informed of the current matters. We suggest you also look regularly at your [Dashboard](#) (once logged in), you will get lots of useful information only for members/RAs: a “[To do](#)” list (to remind you some upcoming deadlines), “[Your contribution to CIRP Publications](#)” (to give your contribution to future keynote papers, to the future White paper and to the CIRP Encyclopedia online – CIRPedia), the “[News Flash](#)” (including jobs adverts, announcements from members and information on the CIRP office), “[General Information](#)” (the printed Directory under pdf and updated recently, with the list of the various CIRP committees; All kinds of Forms and documents to download; Info on conferences proceedings on Procedia; Info on special low rates to purchase the Annals, the JMST or the Dictionaries; Dates of the future CIRP Meetings; Registration and access to ScienceDirect; Various direct links), “[Minutes and Reports](#)” (one page gathering all the Agendas and Minutes of the last CIRP Scientific Groups Meetings; CIRP Internal Documents & Reports from last GAs; Minutes of the last “General Assembly Meetings”), the list and the number of “[Members and visitors presently online](#)”, and lastly a direct “[access to vote](#)” when needed.

## **Future CIRP Meetings**

### **January meetings**

22-24 January 2014, Paris

21-23 January 2015, Paris

### **General Assemblies**

18-24 August 2013, Copenhagen, Denmark

24-30 August 2014, Nantes, France

23-29 August 2015, Cape Town, South Africa

21-27 August 2016, Guimaraes, Portugal

# Our Conferences

Date	CIRP Conferences	Place
29-31 May 2013	<a href="#">46th CIRP Conference On Manufacturing Systems</a>	Setubal, Portugal
11 -12 June 2013	<a href="#">2nd CIRP Global Web Conference</a>	Internet
13-14 June 2013	<a href="#">14th CIRP Conference On Modelling Of Machining Operations</a>	Torino, Italy
<b>2014</b>		
12 -13 May 2014	13th CIRP Conference On Computer Aided Tolerancing	Zhejiang, China
15 -16May 2014	<a href="#">5th CIRP Conf. on Assembly Technologies and Systems, CATS 2014</a>	Dresden, Germany
27-30 April, 2014	47th CIRP Conference on Manufacturing Systems	Windsor, Canada
30 April - 2 May 2014	6th CIRP Conference on Industrial Product Service Systems, IPS2	Windsor, Canada
28 -30 May 2014	2nd CIRP Conference on Surface Integrity	Nottingham, UK
18 -20 June 2014	21st CIRP Conference on Life Cycle Engineering	Trondheim, Norway
22 -25 June 2014	<a href="#">6th CIRP Conference. on High Performance Cutting, HPC2014</a>	Berkeley California
16 -18 July 2014	<a href="#">9th CIRP Conference on Intelligent Computation in Manufacturing</a>	Gulf of Naples, Italy

Date	CIRP Sponsored Conferences	Place
13-17 May 2013	<a href="#">Virtual Machining Process Technology (VMPT) Conference</a>	Hamilton, Canada
4-7 June 2013	<a href="#">7th International Workshop Conference On "Total Quality Management - Advanced And Intelligent Approaches"</a>	Belgrade, Serbia,
20-22 June 2013	<a href="#">7th International Conference And Exhibition On Design And Production Of Machines And Dies/Molds</a>	Turkey
24-26 June 2013	<a href="#">CIRP Research Affiliates Workshop 2013</a>	Zaragoza, Spain
26-28 June	<a href="#">7th International Conference on Axiomatic Design, ICAD 2013</a>	Worcester Massachussetts
30 July - 2 Aug 2013	<a href="#">ISAM 2013, International Symposium on Assembly and Manufacturing,</a>	X'ian, P.R. China
23- 25 Sept. 2013	<a href="#">11th Global Conference On Sustainable Manufacturing</a>	Berlin, Germany
6 -9 Oct. 2013	<a href="#">5th International Conference On Changeable, Agile, Reconfigurable And Virtual Production CARV 2013</a>	Munich, Germany
16-18 Oct. 2013	<a href="#">15th International Manufacturing Conference - IMCC 2013</a>	Nanjing, China
29 -31 Oct. 2013	<a href="#">The 13th TRIZ Future Conference</a>	Paris, France
5 -06 Nov. 2013	<a href="#">2nd International Through-life Engineering Services Conference</a>	Cranfield, U.K
<b>2014</b>		
25 -28 March 2014	8th International Conference on Digital Enterprise Technology - DET2014	Stuttgart, Germany
3 -4 April 2014	Conference on Manufacture of Lightweight Components (ManuLight2014)	Dortmund, Germany
8 – 9 April 2014	<a href="#">ICMC 2014/ 3rd ENIPROD Colloquium</a>	Chemnitz, Germany
12 -13 June 2014	2nd International Conference on Ramp-Up Management.	Aachen, Germany
2 -4 July 2014	2nd International Conference on System-Integrated Intelligence:	Hanover, Germany

# New Books

## Hydrostatic, Aerostatic and Hybrid Bearing Design, 1st Edition

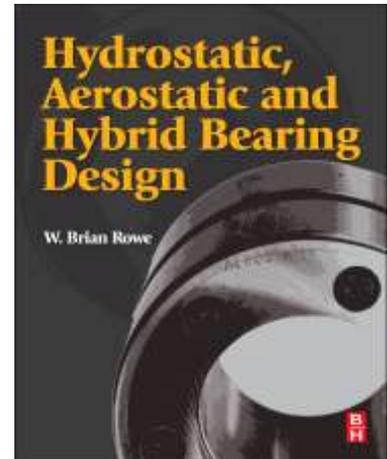
By Professor W Brian Rowe

Aimed at both experienced designers and those new to bearing design, Hydrostatic, Aerostatic and Hybrid Bearing Design provides engineers, tribologists and students with a one-stop source of inspiration, information and critical considerations for bearing design success.

In this valuable reference and design companion, author and expert W. Brian Rowe shares the hard-won lessons and figures from a lifetime's research and consultancy experience. It includes:

- Clear explanation of background theory such as factors governing pressure, flow and forces, followed by worked examples that allow you to check your knowledge and understanding
- Easy-to-follow design procedures that provide step-by-step blueprints for solving your own design problems
- Information on a wide selection of bearing shapes, offering a range and depth of bearing coverage not found elsewhere
- Critical data on optimum performance from load and film stiffness data to pressure ratio considerations
- Operating safeguards you need to keep in mind to prevent hot-spots and cavitation effects, helping your bearing design to withstand the demands of its intended application

ISBN: 9780123969941, 352 pages



## The next General Assembly

Copenhagen Denmark

18 – 24 August 2013



Don't forget to register (reduced fees until May 17<sup>th</sup>): <http://www.cirp2013.com/>

Further information: [cirp2013@discongress.com](mailto:cirp2013@discongress.com)