「智慧機械與智能化製造技術」論壇
Smart Machinery & Intelligent Manufacturing Forum

製造業是一個國家的經濟命脈，且長久以來一直被視為勞力密集產業，因此各企業為了降低生產成本，多會將工廠遷移至薪資成本較低的地區，如早期的台灣、現今的大陸及東南亞等地。麥肯錫全球研究院分析(HIS 環球透視)自 1980 年至 2010 年全球前 15 強製造業國家，新興國家所佔的比例愈來愈高。對此美國、德國、英國等國為了振興製造業分別提出國家級重要政策，期望藉此吸引高附加價值之航太、汽車、IT 模具、紡織、光電、鐘錶、醫療、國防、自動化、能源及半導體等產業相關零組件之製造業企業回流，並帶動該國經濟。

本論壇特邀參與推動美國先進製造計畫的世界知名的智慧製造學者-美國西北大學 Kornel Ehmann 教授來分享有關製造科技的演變，將會從技術面與社面面來探討，介紹各項先進製造科技的發展與應用，例如先進加工技術、IT 技術、數位製造、供應鏈管理等。也邀請了在智慧機械技術上深度投入的鄭志鈞教授，來分享於智能加值技術研發的經驗。論壇同時也邀請執行科技部價創計畫，並成立新創公司的陳政雄教授，透過他的創業經驗來探討智慧機械產業。

主辦單位：科技部中部科學工業園區管理局
國立中興大學智慧機械與智能化製造人才培育聯盟中心
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舉辦日期：108 年 10 月 31 日（星期四）13:00~17:00（12:30 開始報到）
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報名時間：即日起至 108 年 10 月 28 日中午 12:00 前（額滿為止）
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智慧機械與航太產業創新創業論壇		
時間	**主題**	**演講者**
1：20-1：30	**貴賓致詞**	**-**
1：30-3：00	**The Changing Landscape of Manufacturing**	**Prof. Kornel Ehmann Department of Mechanical Engineering Northwestern University, USA**
3：00-3：15	**茶點**	
3：15-4：00	**Developments of Value-added Smart Functions for Machine Tools 工具機智能化加值技術之研發**	**鄭志鈞 特聘教授 機械工程系 國立中正大學**
4：00-4：45	**精密機械產業智慧化痛點觀察與建議-從漢鼎經驗談起**	**陳政雄 教授 機械工程系，國立中興大學 漢鼎智慧科技公司技術長**

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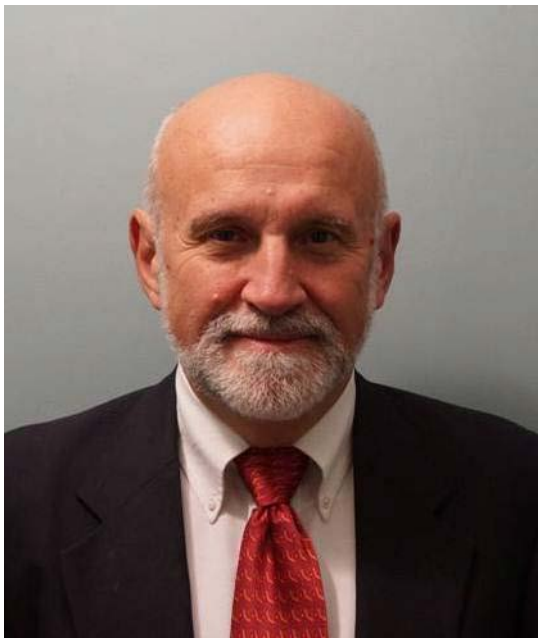
◆ Prof. Kornel Ehmann



◆ Professor Ehmann has received his B.S. and M.S., degrees in 1970 and 1974 respectively from the University of Belgrade, Yugoslavia and his Ph.D. degree from the University of Wisconsin-Madison in 1979, all in Mechanical Engineering. He has served as a Professor from 1990 – current, an Associate Professor from 1985 – 1990, both in the Department of Mechanical Engineering at Northwestern University, and as an Assistant Professor from 1981 – 1985 in the Department of Mechanical Engineering at the University of Wisconsin-Madison. He has also held positions as an Adjunct Professor of the Department of Mechanical and Industrial Engineering at the University of Illinois at Urbana/Champaign, a Distinguished Honorary Professor of the Department of Mechanical Engineering at IIT-Kanpur, India, a University Chair Professor of Chung Yuan Christian University, Chung Li, Taiwan, a Visiting Professor at the University of Belgrade and a Visiting Professor at the Nanjing University of Aeronautics and Astronautics. Dr. Ehmann's main research interests are in the interrelated areas of machine tool structural and metal cutting processes and dynamics, computer control of machine tools and robots, accuracy control in machining, and micro/meso-scale manufacturing. He has published over 400 articles and supervised over 50 MS and 50 Ph.D. students. He has served as the Editor in Chief of the Elsevier/Society of Manufacturing Engineers (SME) Journal – Manufacturing Letters and of the Technical Editor of the American Society of Mechanical Engineers (ASME) Transactions: Journal of Manufacturing Science and Engineering, as the President of the North American Manufacturing Research Institution of SME (NAMRI/SME), as the Chair of the Manufacturing Engineering Division of ASME and as the director of the International Institution for Micromanufacturing (I2M2). In 2004 he was named the James N. and Nancy J. Farley Professor in Manufacturing and Entrepreneurship at Northwestern. He was awarded a Distinguished Visiting Fellowship by the Royal Academy of Engineering at Cardiff University, the SME Gold Medal, MED/ASME Outstanding Service Award, NAMRI/SME Outstanding Lifetime Service Award, ASME Blackall Machine Tool and Gage Award, the ASME Milton C. Shaw Manufacturing Research Medal, SME Education Award, and the Hideo Hanafusa Outstanding Investigator Award (ASME and the Institute of Systems, Control and Information Engineers (ISCIE) in Japan). ASME established the Kornel F. Ehmann Manufacturing Medal is his name. Professor Ehmann is a Fellow of ASME, SME and of the International Society for Nanomanufacturing (ISNM).

ABSTRACT

演講摘要

Throughout history, manufacturing has evolved from cottage industries to capital-intensive enterprises. In this process, as it became more geared toward mass production, undesired consequences, e.g., excessive use of resources, waste and limited choices, are increasingly imposing more profound challenges. On the other hand, the demand for highly-customized products available at the point-of-need suggests that complementary manufacturing paradigms need to emerge. The evolving 3D printing technologies the Fab Lab and Maker movements are charting the path toward plausibly more distributed and democratized manufacturing models. Following a brief history of manufacturing, a reflection on technical enablers and challenges, and the potential impacts of distributed and customized manufacturing from both technological and social perspectives will be given. Specifically, the impetus provided by advances in new processing methods, digital manufacturing and IT technologies that are gradually finding inroads into all realms of advanced manufacturing enterprises ranging from the basic monitoring and control of the process and of the hardware functions of the production machinery through the management of the supply chains will be discussed. To this end, examples of hybrid intelligent process developments, the creation of a generic process control platform for distributed systems and process chains and current efforts toward the development of an operating system for cyber-physical manufacturing will be presented.

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