2024 CIRP Annals' papers

Life-Cycle Engineering and Assembly (A)

A1 - A stepwise approach for determining absolute environmental sustainability targets for an electric vehicle battery.
Abdur-Rahman Ali, Mauricio Schlösser Castillo, Felipe Cerdas, Christoph Herrmann (2)

A2 - Inclusive manufacturing: a contribution to assembly processes with human-machine reciprocal learning
Alessandro Simeone, Yuchen Fan, Dario Antonelli, Angioletta R. Catalano, Paolo C. Priarone (2), Luca Settineri (1)

A3 - An LLM-based approach for enabling seamless Human-Robot collaboration in assembly.
Christos Gkournelos, Christos Konstantinou, Sotiris Makris (2)

A4 - Vision AI-based human-robot collaborative assembly driven by autonomous robots.
Sichao Liu, Jianjing Zhang, Lihui Wang (1), Robert X. Gao (1)

A5 - A hand-interaction model for augmented reality enhanced human-robot collaboration
Sebastian Blankemeyer, David Wendorff, Annika Raatz / H.K. Toenshoff (1)

A6 - Generative AI and Neural Networks towards advanced robot cognition
Christoforos Aristeidou, Nikos Dimitropoulos, George Michalos (2)

A7 - Precision optimized process design for highly repeatable handling with articulated industrial robots
Philip Gümbel, Klaus Dröder (2)

A8 - Dynamic characterization and control of a back-support exoskeleton 3D-printed cycloidal actuator
Charbel Barsomian, Narayana Babu Paulsamy Eswaran, Mattia Pesenti, Marta Gandolla, Francesco Braghin, Emanuele Carpanzano (1), Loris Roveda

Cutting (C)

C1 - Nanometric cutting of plasma modified polycrystalline tin.
Peng Lyu, Fengzhou Fang (1), Daniel Meyer (2)

C2 - Effects of single-crystalline diamond quality on tool wear resistance and cutting performance.
Hirofumi Suzuki (1), Tatsuya Furuki, Akinori Yui, Hisamitsu Awaki, Toshiyuki Moriizumi

C3 - Study of the effect of oxygen level on tool wear in machining Ti-6Al-4V
Benjamin Bergmann (2), Florian Schaper

C4 - Effect of ageing on machining performance of grey cast iron and its compensation by cutting speed management.
Volodymyr Bushlya, Rebecka Lindvall, Filip Lenrick, Lena Magnusson Aberg, Rachid M'Saoubi (1), Jan-Eric Stahl

C5 - An analytical power-based approach to predict orthogonal cutting force for sintered Al2124/SiC metal matrix composite.
Hassan Ghadbeigi, Saeid Taghizadeh, Sabino Ayvar-Soberanis, Will Baines / D.J. Williams (1)

C6 - Machining SiC fibre reinforced metal matrix composites – How do different matrix materials affect the cutting performance?
Shusong Zan, Zhirong Liao (2), Omkar Mypati, Dragos Axinte (1), Rachid M'Saoubi (1), Mark Walsh, Jose A. Robles-Linares

C7 - Modeling of process-induced geometrical deviation in broaching for fir-tree slots
Thomas Bergs (2), Tobias Seelbach, Christoph Zachert, Markus Meurer

C8 - Non-Circular-Rotary-Turning process for manufacturing parts with non-circular contours
Tassilo Arndt, Volker Schulze (2)

C9 - Laser powder bed fusion of WC-Co form turning tools with integrated cooling features: Design, printing, and test machining of Ti6Al4V.
Mahmoud Seyam, Philip Koshy (1), Mohamed Elbestawi (1)

C10 - Impact of directionality and heat treatment on machining of additively manufactured Inconel 718
Joseph Betts, Sarah Glanvill, Alborz Shokrani (2)

C11 - Recycling of Ti-6Al-4V chips for closed-loop manufacturing
Berend Denkena (1), Marc-André Dittrich (3), Vino Suntharakumaran, Simon Kettelmann

C12 - The impact of airborne emissions from coolants and lubricants on machining costs
Inigo Rodriguez, Pedro J. Arrazola (1), Franci Pusavec (2)

C13 In-process self-configuring approach to develop intelligent tool condition monitoring systems
Mahmoud Hassan, Ahmad Sadek (2), Helmi Attia (1)

Design (Dn)

Dn1 - Synthesis of design prompts for large language models in conceptual design
Yu Tian, Ang Liu (2), Yun Dai, Keisuke Nagato (2), Masayuki Nakao (1)

Dn2 - Optimizing lightweight lattice structures through integrated parameterized design and fiber-reinforced additive manufacturing.
Ke Xu, Yingguang Li (2), Lufeng Chen, Paul Maropoulos (1)

Dn3 - A generative design method based on spline scanning for additive manufacturing.
Shujie Tan, Yicha Zhang (2)

Dn4 - Finite manufacturing primitives: a representation scheme for additive manufacturing quality assurance
Weizhi Lin, Yuanxiang Wang, Stephen Lu (1), Qiang Huang

Dn5 - Bio-inspired non-assembly joints: design, fabrication and wear performance
Santiago Arroyave-Tobon, David Hernandez-Aristizabal, Julien Diperi, Jean-Marc Linares (1)

Dn6 - Functional specification of complex assemblies using projective geometric algebra.
Yifan Qie, Bertrand Nicquevert, Nabil Anwer (1)

Electro-Physical, Chemical, Laser, and related Additive Manufacturing Processes (E)

E1 - Wire EDM roughing and Wire ECM finishing of 316L stainless steel on a single platform - an investigation of the combined strategy on surface quality and precision.

Thomas Van Riel, Jun Qian, Bert Lauwers (1)

E2 - Improving machining characteristics of electrical discharge machining by superimposing impulse current
Qi Li, Xiaodong Yang, Masanori Kunieda (1)

E3 Submerged electrochemical jet machining with in-situ gas assistance.
Yonghua Zhao, Zhaozhi Lyu, Weidong Liu, Bi Zhang (1), Adam T. Clare (1)

E4 - Fast ED-milling of high-volume fraction Al/SiCp metal matrix composites
Jian Wang, Qiang Gao, Juncheng Lu, Qian Zheng, Xuecheng Xi, Yaou Zhang, Wansheng Zhao (2)

E5 - Multi-task deep learning-empowered digital twin for functional composite materials fabricated by laser additive remanufacturing
Haihong Huang, Hongmeng Xu, Zhifeng Liu / D. Dauw (1)

E6 - Addressing the challenge of process stability control in wire DED-LB/M process
Panagiotis Stavropoulos, George Pastras, Konstantinos Tzimanis, Nikos Bourlesas / G. Chryssolouris (1)

E7 - Investigation on influence of thermal history on quality of workpiece created by directed energy deposition.
Yoko Hirono, Takanori Mori, Shogo Sugimoto, Yuichiro Miyata / T. Aoyama (1)

E8 - In-situ blended 316L-Si and PH48S via laser directed energy deposition for functionally graded applications
Rujing Zha, Nhung Thi-Cam Nguyen, Gregory B. Olson, Jian Cao (1)

E9 - Laser powder bed fusion of planar bi-metallic thermally auxetic lattice structures
Markus Bambach (2), Michael R. Tucker

E10 - Interfacial characteristics in multi-material laser powder bed fusion of CuZr/316L stainless steel
Yuan-Hui Chueh, Bing-Yen Hsieh, Albert J. Shih (1)

E11 - Machine learning guided adaptive laser power control in selective laser melting for pore reduction
Fred M. Carter III (3), Conor Porter, Dominik Kozjek, Kento Shimoyoshi, Makoto Fujishima (3), Naruhiro Irino (2), Jian Cao (1)

E12 - Effect of NiO nanoparticles on duplex stainless steel processed via DED-LB and PBF-LB
Florian Nahr, Boyuan Li, Dominic Bartels, Kun Zhou, Paulo Jorge Da Silva Bartolo (1), Michael Schmidt (1)

E13 - Toward efficient fabrication of microstructures on SiC with nanometric surface quality
Jinshi Wang, Fengzhou Fang (1)

E14 Formation mechanism of optical waveguide in α-quartz by ultrashort pulse laser
Reina Yoshizaki, Tomohiro Fukui, Masayuki Nakao (1)

E15 - Laser-induced fabrication of doped-graphene based on collagen for bone tissue engineering scaffold applications
Weiguang Wang, Yihe Huang, Yanhao Hou, Duo Meng, Kewen Pan, Paulo Bartolo (1), Lin Li (1)

E16 - Cryo-FIB machining of group III-V semiconductors suppresses surface nanodroplets.
Jining Sun, Yi Zhang, Qianhao Xiao, Yunlong Han, Lei Zhang / H.C. Zhang (1)

E17 - Metal Additive manufacturing using Powder Sheets (MAPS) of HEA CoNiCrFeMn: the effect of the polymer content on microstructure and mechanical properties.
Arnoldas Sasnauskas, Asli Coban, Wenyou Zhang, William M. Abbot, Ramesh Padamati Babu, Minh-Son Pham, Rocco Lupoi (2)

E18 - Throughput scaling and thermomechanical behaviour in Multiplexed Fused Filament Fabrication
Rajiv Malhotra, Jeremy Cleeman, Adrian Jackson, Anandkumar Patel, Assimina A. Pelegri / A. Donmez (1)

E19 - Upflow mitigation strategy for nested printing
Yunxia Chen, Steven Chase Allo, Bing Ren, Yuetong Wu, Hitomi Yamaguchi (1), Yong Huang

E20 - Pre-programing the glass transition temperature and transformation strain of shape memory polymers in fused deposition modeling process.
Apostolis Argyros, Andreas K. Lianos, Dimitris Lagoudas, Nikolaos Michailidis (1), Satish Bukkapatnam (2)

E21 - Additive manufacturing of polyethylene-based composites sourced from industrial waste.
Ayman Karaki, Apostolos Argyros, Vasileios Stratiotou-Efstratiadis, Marwan Khraisheh (2), Eyad Masad, Nikolaos Michailidis (1)

E22 - Effect of recycled swarf and spherical Ti-6Al-4V feedstocks on laser directed energy deposition additive manufacturing.
Sarah Wolff, Marwan Haddad, Jianyue Zhang, Alan Luo / F. Pfefferkorn (1)

E23 - Analytical modeling of residual stress formation in hybrid additive manufacturing
Rakeshkumar Karunakaran, George H. Klein, Michael P. Sealy (2)

Forming (F)

F1 - Mechanical and thermal processing of wire-arc additively deposited stainless steel.
Carlos M.A. Silva, Joao P.M. Pragana, Ivo M.F. Bragança, Paulo A. F. Martins (1)

F2 - Thin-film sensors for data-driven concentricity prediction in cup backward extrusion
Martin Rekowski, Karl C. Grötzinger, Anna Schott, Mathias Liewald (2)

F3 - Transfer mechanism of printed patterns on a soft film to metal surface in compression
Yasuharu Yoshikawa, Tomoyuki Hakoyama, Zhigang Wang (2)

F4 - Sequentially tailored profiles with adjustable transition zones by roll-slide-drawing
Niklas Hoenen, Joshua Grodotzki, Patrik Bieker, Marlon Hahn, Yannis P. Korkolis, A. Erman Tekkaya (1)

F5 - Kinematical study on bonding criterion in cold roll bonding
Hiroshi Utsunomiya (2), Takash Jinnouchi, Takao Kitagawa, Ryo Matsumoto

F6 - Creasing and folding of paper-based sandwich material – phenomena and modelling.
Enrico Simonetto, Praveen Singh, Andrea Ghiotti (1), Stefania Bruschi (1), Nicola Jessen, Peter Groche (1)

F7 - Characterization of layered anisotropic properties for Li-ion battery pouch film and its application to forming.
Taek Jin Jang, Sagong Cheol, Taegyun Ahn, Jeong Whan Yoon / D.Y. Yang (1)

F8 - Novel prediction model for microforming limit curves considering material inhomogeneity based on surface roughening.
Tatsuyuki Inoue, Tsuyoshi Furushima (2)

F9 - Identification of Yld2000-2d anisotropic yield function parameters from single hole expansion test using machine learning.
Jinjae Kim, Abrar S. Ebrahim, Brad L. Kinsey (2), Jinjin Ha

F10 - Reliable determination of interfacial heat transfer coefficients for hot sheet metal forming
Lukas Schell, Erik Sellner, Benjamin Heller, Timo Wenzel, Peter Groche (1)

F11 - Forming of ultra-thin titanium sheets with intermediate electropulsing treatment.
Junying Min, Xianglu Zhang, Xiaolong Ma, Bo Chen / D. Banabic (1)

Abrasive Process (G)

G1 - A unified approach to traverse dressing with radiused diamond tools
Jeffrey Badger (3), Hastings Wyman / F. Hashimoto (1)

G2 - Rotary dressing and cylindrical grinding simulation for lead pattern prediction
Maria Garcia, Jorge Alvarez, Iñigo Pombo, David Barrenetxea (1)

G3 - Effect of alloy-specific case-hardening layers on the grindability of gears
Tobias Hüsemann, Nikolai Guba, Holger Surm, Carsten Heinzel (2)

G4 - An investigation into the grindability of additively manufactured 42CrMo4 steel
Philipp Hoier, Deepa Kareepadath Santhosh, Eduard Hryha, Peter Krajnik (2)

G5 - Abrasive finishing of surface structures with diamond-coated foams
Monika Kipp, Jan Peters, Timo Platt, Dirk Biermann (1)

G6 - A new internal surface polishing method for sub-millimeter slender tube with varying diameters
Jiang Guo, Qikai Li, Zhen Tong, Wansheng Zhao (2), Lin Li (1)

G7 - Real-Time Prediction of material removal rate for advanced process control of chemical mechanical polishing
Kodai Hirano, Takumi Sato, Norikazu Suzuki (2)

G8 - Changes in edge shape during silicon wafer polishing: Roll-off and roll-up formation
Urara Satake, Toshiyuki Enomoto (2)

G9 - Oxidation mechanism of 4H-SiC in slurry-less ECMP with weak alkaline electrolyte
Rongyan Sun, Ryosuke Kinoshita, Kazufumi Aoki, Shota Hayakawa, Kantaro Hori, Koichiro Yasuda, Yuji Ohkubo, Kazuya Yamamura (2)

Machines (M)

M1 - Flexure-based torque and thrust force drilling dynamometer with Hall effect sensor displacement measurement.
Ross Zameroski, Christoph Ramsauer, Christoph Habersohn, Friedrich Bleicher (2), Tony Schmitz (2)

M2 - Sensory chuck jaw for enhancing accuracy in turning thin-walled parts
Hans-Christian Moehring (2), Daniel Gutsche

M3 - "L-stock method" - High-efficiency high-chatter-stability high-precision thin-wall milling strategy with aggressive use of plunge milling.
Takehiro Hayasaka (2), Keigo Miyagawa, Kyungki Lee, Akira Saito, Eiji Shamoto (1)

M4 - Optimal stock removal to reduce chatter and deflection errors for five-axis ball-end milling of thin-walled blades.
Behnam Karimi, Yusuf Altintas (1)

M5 - Machine learning based substructure coupling of machine tool dynamics and chatter stability
Simon S. Park (2), Soheil Amani, Dong Yoon Lee, Jihyun Lee, Eunseok Nam

M6 - Reduction of experimental efforts for predicting milling stability affected by concept drift using transfer learning on multiple machine tools.
Petra Wiederkehr (2), Felix Finkeldey, Tobias Siebrecht

M7 - Improvement of surface quality in simultaneous machining of multiple workpieces on a single machine
Yuta Shinba, Naruhiro Irino (2), Yasuhiro Imabeppu, Erhan Budak (1), Norikazu Suzuki (2), Atsuo Kishimoto

M8 - Accuracy evaluation of squareness identification by vision-based circular tests for machine tools
Daisuke Kono (2), Soma Kondo

M9 - Dual motor position feedback control for electrically preloaded rack-and-pinion drive systems to increase accuracy.
Alexander Verl (2), Valentin Leipe

M10 - Data-driven feedforward control of inertial dampers for accuracy improvement
Kaan Bahtiyar, Burak Sencer (2), Xavier Beudaert (2)

M11 - Feedforward compensation of the pose-dependent vibration of a silicon wafer handling robot
Cheng-Hao Chou, Chen Qian, Yung-Chun Lin, Shorya Awtar, Chinedum E. Okwudire (2)

M12 - Milling process monitoring based on intelligent real-time parameter identification for unmanned manufacturing.
Arash Ebrahimi Araghizad, Faraz Tehranizadeh, Farzad Pashmforoush, Erhan Budak (1)

M13 - Investigation of cutting force in gear skiving by measurement and simulation.
Haythem Boujnah, Yuki Yamada, Kengo Kawai, Masahiko Mori (1)

Production Systems and Organizations (O)

O1 - Dual-perspective capacity planning in interconnected multi-product production networks using stochastic optimization.
Martin Benfer, Niklas Steinkühler, Gisela Lanza (1)

O2 - Self-organization in open and very large and complex design and manufacturing networks through entropy and power law distribution
Goran D. Putnik (2), Pedro Pinheiro, Leonilde Varela, Catia Alves

O3 - A vision-language-guided and deep reinforcement learning-enabled approach for unstructured human-robot collaborative manufacturing task fulfilment
Pai Zheng, Chengxi Li, Junming Fan, Lihui Wang (1)

O4 - Human-centric integrated safety and quality assurance in collaborative robotic manufacturing systems
Yuhao Zhong, Adithyaa Karthikeyan, Prabhakar Pagilla, Ranjana Mehta, Satish Bukkapatnam (2)

O5 - Performance evaluation of multi-stage manufacturing systems operating under feedback and feedforward quality control loops.
Maria Chiara Magnanini, Ozan Demir, Marcello Colledani (1), Tullio Tolio (1)

O6 - Dynamic task planning for autonomous reconfigurable manufacturing systems by knowledge-based multi-agent reinforcement learning
Haochen Hu, Amin Ghadami, Bogdan I. Epureanu (2)

O7 - Bi-objective scheduling for energy-efficient distributed assembly blocking flow shop
Song-Lin Du, Wenju Zhou, Minrui Fei, A. Y. C. Nee (1), S.K. Ong (1)

O8 - Ontology-integrated tuning of large language model for intelligent maintenance
Peng Wang, John Karigiannis, Robert X. Gao (1)

O9 - Integration of multimodal data and explainable artificial intelligence for root cause analysis in manufacturing processes
Matteo Calaon, Tingting Chen, Guido Tosello (2)

Precision Engineering & Metrology (P)

P1 - Influence of rotary axis angular positioning error motions on robotic probing
Soichi Ibaraki (2), Keisuke Masamine, Minoru Hamamura, Osamu Takahara

P2 - Estimation of kinematic errors of rotary axis with wide indexing range
Kotaro Mori (2), Daisuke Iwabuchi, Keinosuke Yoshinaga, Masahiro Shimoike / A. Matsubara (1)

P3 - Predictive digital twin-driven dynamic error control for slow-tool-servo ultraprecision diamond turning.
Xichun Luo, Qi Liu, Abhilash Puthanveettil Madathil, Wenkun Xie / W.B. Rowe (1)

P4 - Deep learning reconstruction of few-view X-ray CT measurements of mono-material objects with validation in additive manufacturing
Simon Bellens, Patricio Guerrero, Michel Janssens, Patrick Vandewalle, Wim Dewulf (1)

P5 - The measurand in ISO GPS verification
Roberto Frizza, Alessandro Balsamo (1)

P6 - Measurability of quality characteristics identified in latent spaces of Generative AI Models
Robert H. Schmitt (2), Dominik Wolfschläger, Jan-Henrik Woltersmann, Lennart Stohrer

P7 - Development of residual stress evaluation method for polymer products using THz polarization measurement.
Yusuke Kajihara (2), Atsushi Tanaka, Weiyan Chen, Shuohan Wang, Kosaku Tao, Fuminobu Kimura / H. Shinno (1)

P8 - A novel dynamic interferometric measurement method based on liquid level reference.
Yufeng Yuan, S.K. Ong (1), Yuehong Yin (1), Yueqi He, Junyang Qiu

P9 - Surface asymmetry measurements by single shot-cyclic azimuthal shearing interferometry
Ki-Nam Joo, Hyo Mi Park / S.W. Kim (1)

P10 - In-situ measurement of thickness distribution of fluid at the interface of tool and workpiece via fluorescence
Masaki Michihata, Saeko Fujii, Motoya Yoshikawa, Shotaro Kadoya, Tatsuya Sugihara, Satoru Takahashi (1)

2024 CIRP Annals' papers

Surfaces (S)

S1 - Thin coatings thickness measurement by augmented nanoindentation data fusion
Gianfranco Genta, Giacomo Maculotti / R. Levi (1)

S2 - Highly efficient figuring of Si mirrors using an atmosphere plasma jet with concentrated electric field.
Hui Deng, Bing Wu, Junqi Zhang, Zhe Zhang, XinQuan Zhang (2)

S3 - Active control of surface integrity in thin film scratching and finishing.
Wu-Le Zhu, Wei Gao, Fang Han, Qi Sun, Bingchun Jia, Peipei Jing, Bing-Feng Ju, Anthony Beaucamp (2)

S4 - Exploring scanning strategies for enhanced surface integrity in thin-walled nozzles.
Michele Abruzzo, Giuseppe Macoretta, Luca Romoli (2)

S5 - Parallel tool servo turning of microstructured surfaces.
Hao Wu, XinQuan Zhang (2), LiMin Zhu, MingJun Ren, Mustafizur Rahman (1)

S6 - High-frequency diamond imprinting of fine-crystallized micro-structured surfaces
Zhanwen Sun, Suet To (2), Jie Jiao, Waisze Yip, Sujuan Wang, Haiqing Wu

S7 - On machine frequency analysis of diamond turned surfaces with surface intrinsic mode decomposition.
Maomao Wang, Wenbin Zhong, Wenhan Zeng, Xiangqian Jiang (1)

S8 - On the role of metal surface modification and polymer matrix characteristics when drilling thermoplastic fibre metal laminates.
Rachele Bertolini, Andrea Stramare, Marco Sorgato, Enrico Savio (1), Andrea Ghiotti (1), Stefania Bruschi (1)

S9 - Static friction of magneto-rheological elastomer pads in wall-climbing robots
Seounghee Yun, Yong Um, Hae-Won Park, Sanha Kim (2)

S10 - One-shot acquisition of intermediate feature values for in-process parameter exploration in PBF-LB of ultrafine porous metallic structure
Keisuke Nagato (2), Ryo Okawara, Hiroshi Yoshizaki, Masahiko Sairaiji, Moju Zhao

S11 - Reducing rubber-plastic friction in syringes through microstructured surface design and manufacturing.
Marco Sorgato, Kristal Bornillo, Giovanni Lucchetta (2)

S12 - Surface functionalization of titanium screws for orthopaedic implant applications
Giovanna Rotella, Chiara Morano, Maria Rosaria Saffioti, Domenico Umbrello (1)