

# Karl Haapala

## List of Publications by Year in descending order

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Version: 2024-02-01

110  
papers

1,979  
citations

331670

21  
h-index

276875

41  
g-index

111  
all docs

111  
docs citations

111  
times ranked

1896  
citing authors

#	ARTICLE	IF	CITATIONS
1	A Review of Engineering Research in Sustainable Manufacturing. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2013, 135, .	2.2	272
2	A comparison of manufacturing and remanufacturing energy intensities with application to diesel engine production. CIRP Annals - Manufacturing Technology, 2008, 57, 5-8.	3.6	167
3	A review and future directions in techno-economic modeling and optimization of upstream forest biomass to bio-oil supply chains. Renewable and Sustainable Energy Reviews, 2017, 67, 15-35.	16.4	106
4	Integrating sustainable manufacturing assessment into decision making for a production work cell. Journal of Cleaner Production, 2015, 105, 52-63.	9.3	104
5	A mixed biomass-based energy supply chain for enhancing economic and environmental sustainability benefits: A multi-criteria decision making framework. Applied Energy, 2017, 206, 1088-1101.	10.1	79
6	Comparative life cycle assessment of 2.0 MW wind turbines. International Journal of Sustainable Manufacturing, 2014, 3, 170.	0.3	69
7	A unit process model based methodology to assist product sustainability assessment during design for manufacturing. Journal of Cleaner Production, 2015, 108, 54-64.	9.3	64
8	A conceptual model for assisting sustainable manufacturing through system dynamics. Journal of Manufacturing Systems, 2013, 32, 543-549.	13.9	58
9	Infusing sustainability principles into manufacturing/mechanical engineering curricula. Journal of Manufacturing Systems, 2005, 24, 215-225.	13.9	50
10	Terminology to support manufacturing process characterization and assessment for sustainable production. Journal of Cleaner Production, 2016, 139, 986-1000.	9.3	49
11	Reducing the cost and environmental impact of integrated fixed and mobile bio-oil refinery supply chains. Journal of Cleaner Production, 2016, 113, 495-507.	9.3	46
12	Directions for instilling economic and environmental sustainability across product supply chains. Journal of Cleaner Production, 2016, 112, 2066-2078.	9.3	45
13	Technical and economic feasibility of solar flat-plate collector thermal energy systems for small and medium manufacturers. Applied Energy, 2019, 254, 113649.	10.1	44
14	Characterizing the influence of resource-energy-exergy factors on the environmental performance of additive manufacturing systems. Journal of Manufacturing Systems, 2018, 48, 87-96.	13.9	39
15	Integrating Life Cycle Assessment Into the Conceptual Phase of Design Using a Design Repository. Journal of Mechanical Design, Transactions of the ASME, 2010, 132, .	2.9	35
16	Simultaneous Consideration of Unit Manufacturing Processes and Supply Chain Activities for Reduction of Product Environmental and Social Impacts. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2016, 138, .	2.2	25
17	Development of a cost model and its application in determining optimal size of a diesel engine remanufacturing facility. CIRP Annals - Manufacturing Technology, 2010, 59, 49-52.	3.6	24
18	Environmental impact and cost assessment of incineration and ethanol production as municipal solid waste management strategies. International Journal of Life Cycle Assessment, 2013, 18, 1502-1512.	4.7	24

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19	Real-time monitoring and evaluation of energy efficiency and thermal management of data centers. Journal of Manufacturing Systems, 2015, 37, 511-516.	13.9	24
20	An economic and environmental assessment model for microchannel device manufacturing: part 1 " Methodology. Journal of Cleaner Production, 2016, 120, 135-145.	9.3	24
21	Industrial Sustainability: Reviewing the Past and Envisioning the Future. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2020, 142, .	2.2	24
22	Investigation of the combined efficiency of a solar/gas hybrid water heating system. Applied Thermal Engineering, 2019, 149, 1035-1043.	6.0	22
23	Environmental Performance Evaluation of a Fast Mask Image Projection Stereolithography Process Through Time and Energy Modeling. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2016, 138, .	2.2	21
24	An economic and environmental assessment model for microchannel device manufacturing: part 2 " Application. Journal of Cleaner Production, 2016, 120, 146-156.	9.3	21
25	Making the business case for sustainable manufacturing in small and medium-sized manufacturing enterprises: A systems decision making approach. Journal of Cleaner Production, 2021, 287, 125038.	9.3	21
26	A Pedagogical Module Framework to Improve Scaffolded Active Learning in Manufacturing Engineering Education. Procedia Manufacturing, 2016, 5, 1128-1142.	1.9	20
27	Fermentation and distillation of cheese whey: Carbon dioxide-equivalent emissions and water use in the production of whey spirits and white whiskey. Journal of Dairy Science, 2018, 101, 2963-2973.	3.4	20
28	Optimizing a sustainable logistics problem in a renewable energy network using a Genetic algorithm. Opsearch, 2019, 56, 73-90.	1.8	20
29	A cyberlearning platform for enhancing undergraduate engineering education in sustainable product design. Journal of Cleaner Production, 2019, 211, 730-741.	9.3	20
30	Leveraging Open-Source Tools for Collaborative Macro-energy System Modeling Efforts. Joule, 2020, 4, 2523-2526.	24.0	18
31	Development and Application of Models for Steelmaking and Casting Environmental Performance. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2012, 134, .	2.2	17
32	A Review of Engineering Research in Sustainable Manufacturing. , 2011, , .		15
33	Profile of Sustainability in Additive Manufacturing and Environmental Assessment of a Novel Stereolithography Process. , 2015, , .		15
34	Enabling Non-expert Sustainable Manufacturing Process and Supply Chain Analysis During the Early Product Design Phase. Procedia Manufacturing, 2017, 10, 1097-1108.	1.9	15
35	Research directions for an open unit manufacturing process repository: A collaborative vision. Manufacturing Letters, 2018, 15, 71-75.	2.2	15
36	Defining Near-Term to Long-Term Research Opportunities to Advance Metrics, Models, and Methods for Smart and Sustainable Manufacturing. Smart and Sustainable Manufacturing Systems, 2020, 4, 1-24.	0.7	15

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37	Evaluating the use of zinc oxide and titanium dioxide nanoparticles in a metalworking fluid from a toxicological perspective. <i>Journal of Nanoparticle Research</i> , 2015, 17, 1.	1.9	14
38	A Sustainability Assessment Framework for Dynamic Cloud-based Distributed Manufacturing. <i>Procedia CIRP</i> , 2018, 69, 136-141.	1.9	13
39	Optimization of Steel Production to Improve Lifecycle Environmental Performance. <i>CIRP Annals - Manufacturing Technology</i> , 2007, 56, 5-8.	3.6	12
40	Tracing the Interrelationship between Key Performance Indicators and Production Cost using Bayesian Networks. <i>Procedia CIRP</i> , 2019, 81, 500-505.	1.9	12
41	Cost and environmental impact assessment of stainless steel microscale chemical reactor components using conventional and additive manufacturing processes. <i>Journal of Manufacturing Systems</i> , 2022, 62, 202-217.	13.9	12
42	Establishing foundational concepts for sustainable manufacturing systems assessment through systems thinking. <i>International Journal of Strategic Engineering Asset Management</i> , 2015, 2, 249.	0.6	11
43	Visual Communication Methods and Tools for Sustainability Performance Assessment: Linking Academic and Industry Perspectives. <i>Procedia CIRP</i> , 2019, 80, 215-220.	1.9	11
44	A questionnaire-based methodology to assist non-experts in selecting sustainable engineering analysis methods and software tools. <i>Journal of Cleaner Production</i> , 2019, 229, 528-541.	9.3	11
45	Reusable unit process life cycle inventory for manufacturing: metal injection molding. <i>Production Engineering</i> , 2020, 14, 707-716.	2.3	11
46	Integrating Sustainability Assessment into Manufacturing Decision Making. , 2012, , 551-556.		10
47	Environmental Performance Evaluation of Direct Metal Laser Sintering through Exergy Analysis. <i>Procedia Manufacturing</i> , 2017, 10, 957-967.	1.9	10
48	Systematic manufacturability evaluation using dimensionless metrics and singular value decomposition: a case study for additive manufacturing. <i>International Journal of Advanced Manufacturing Technology</i> , 2020, 115, 715.	3.0	10
49	Stability and Biological Responses of Zinc Oxide Metalworking Nanofluids (ZnO MWnFâ,,ç) using Dynamic Light Scattering and Zebrafish Assays. <i>Tribology Transactions</i> , 2014, 57, 730-739.	2.0	9
50	An induction hardening process model to assist sustainability assessment of a steel bevel gear. <i>International Journal of Advanced Manufacturing Technology</i> , 2015, 80, 1113-1125.	3.0	9
51	Translating Constructionist Learning to Engineering Design Education. <i>Journal of Integrated Design and Process Science</i> , 2017, 21, 3-20.	0.5	9
52	Probabilistic Modelling of Defects in Additive Manufacturing: A Case Study in Powder Bed Fusion Technology. <i>Procedia CIRP</i> , 2019, 81, 956-961.	1.9	9
53	Synergizing Product Design Information and Unit Manufacturing Process Analysis to Support Sustainable Engineering Education. <i>Journal of Manufacturing Science and Engineering, Transactions of the ASME</i> , 2019, 141, .	2.2	9
54	Benchmarking Undergraduate Manufacturing Engineering Curricula in the United States. <i>Procedia Manufacturing</i> , 2018, 26, 1378-1387.	1.9	8

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55	Cost and Environmental Impact Assessment of Stainless Steel Microreactor Plates using Binder Jetting and Metal Injection Molding Processes. <i>Procedia Manufacturing</i> , 2020, 48, 311-319.	1.9	8
56	Sustainable Manufacturing Analysis for Titanium Components. , 2011, , .		6
57	Application of Artificial Intelligence in Incremental Sheet Metal Forming: A Review. <i>Procedia Manufacturing</i> , 2021, 53, 606-617.	1.9	6
58	Integration of machine learning and mathematical programming methods into the biomass feedstock supplier selection process. , 2014, , .		6
59	Cyber Collaboratory-based Sustainable Design Education: A Pedagogical Framework. <i>Journal of Computational Science Education</i> , 2012, 3, 2-10.	0.3	6
60	An Open Online Product Marketplace to Overcome Supply and Demand Chain Inefficiencies in Times of Crisis. <i>Smart and Sustainable Manufacturing Systems</i> , 2020, 4, 20200055.	0.7	6
61	A Process-Based Approach for Cradle-to-Gate Energy and Carbon Footprint Reduction in Product Design. , 2012, , .		5
62	Increasing the Utility of Sustainability Assessment in Product Design. , 2012, , .		5
63	Enabling Cyber-Based Learning of Product Sustainability Assessment Using Unit Manufacturing Process Analysis. , 2017, , .		5
64	Integration of Sustainability Indicators and the Viable System Model Towards a Systemic Sustainability Assessment Methodology. <i>Systems Research and Behavioral Science</i> , 2018, 35, 564-587.	1.6	5
65	Improving worker health and safety in wire arc additive manufacturing: A graph-based approach. <i>Procedia CIRP</i> , 2020, 90, 461-466.	1.9	5
66	Graph-Based Metamodeling for Characterizing Cold Metal Transfer Process Performance. <i>Smart and Sustainable Manufacturing Systems</i> , 2019, 3, 20190026.	0.7	5
67	A Conceptual Framework for a Sustainable Product Development Collaboratory to Support Integrated Sustainable Design and Manufacturing. , 2011, , .		4
68	A Software Tool for Unit Process-Based Sustainable Manufacturing Assessment of Metal Components and Assemblies. , 2014, , .		4
69	Reducing Greenhouse Gas Emissions for Sustainable Bio-Oil Production Using a Mixed Supply Chain. , 2016, , .		4
70	Using Industry Focus Groups and Literature Review to Identify Challenges in Sustainable Assessment Theory and Practice. , 2016, , .		4
71	Reducing supply chain costs and carbon footprint during product design. , 2010, , .		3
72	Comparison of Environmental Impacts of Innovative and Common Products. , 2012, , .		3

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73	Functional Impact Comparison of Common and Innovative Products. , 2013, , .		3
74	Gate-to-Gate Sustainability Assessment for Small-Scale Manufacturing Businesses: Caddisfly Jewelry Production. , 2014, , .		3
75	An Approach to Compare Sustainability Performance of Additive and Subtractive Manufacturing During Process Planning. , 2016, , .		3
76	A Framework for the Evaluation and Redesign of Human Work Based on Societal Factors. , 2012, , 575-580.		3
77	Validating the Sustainability of Eco-Labeled Products Using a Triple-Bottom-Line Analysis. Smart and Sustainable Manufacturing Systems, 2019, 3, 20190022.	0.7	3
78	Development and Implementation of a Framework for Adaptive Undergraduate Curricula in Manufacturing Engineering. Smart and Sustainable Manufacturing Systems, 2021, 5, 60-79.	0.7	3
79	Design and Development of the 2001 Michigan Tech FutureTruck, a Power-Split Hybrid Electric Vehicle. , 2002, , .		2
80	Computer-Aided Generation of Modular Designs Considering Component End-of-Life Options: Implications for the Supply Chain. , 2012, , .		2
81	Comparison of Sustainability Performance for Cross Laminated Timber and Concrete. , 2013, , .		2
82	A Network Model to Optimize Upstream and Midstream Biomass-to-Bioenergy Supply Chain Costs. , 2015, , .		2
83	Manufacturing Energy Analysis of a Microchannel Heat Exchanger for High-density Servers. Procedia Manufacturing, 2015, 1, 792-803.	1.9	2
84	Development of Learning Modules for Sustainable Life Cycle Product Design: A Constructionist Approach. , 0, , .		2
85	A Grey Box Software Framework for Sustainability Assessment of Composed Manufacturing Processes: A Hybrid Manufacturing Case. Procedia CIRP, 2019, 80, 440-445.	1.9	2
86	Specialty chemicals production case study: Economic analysis of modular chemical process intensification versus conventional <scp>stickâ€built</scp> approaches. Journal of Advanced Manufacturing and Processing, 2021, 3, .	2.4	2
87	Defining Near-Term to Long-Term Research Opportunities to Advance Metrics, Models, and Methods for Smart and Sustainable Manufacturing. Smart and Sustainable Manufacturing Systems, 2020, 4, .	0.7	2
88	Prioritizing actions and outcomes for community-based future manufacturing workforce development and education. Journal of Integrated Design and Process Science, 2023, 26, 415-441.	0.5	2
89	Constructionist Learning for Environmentally Responsible Product Design. , 2015, , 26.398.1.		1
90	An Environmental Analysis of Nanoparticle-Assisted Diffusion Brazing. , 2009, , .		1

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91	Addressing Uncertainty in the Environmental Analysis of Nickel Nanoparticle Production. , 2010, , .		1
92	Environmental and Cost Assessment of Several Injection Molded Powder Electronics Packaging Materials. , 2011, , .		1
93	Application of Sustainability Assessment to a Novel Plastic Recycling Process. , 2015, , .		1
94	Composability of Unit Manufacturing Process Models for Manufacturing Systems Analysis. , 2016, , .		1
95	A Desktop Application for Sustainability Performance Assessment of Composed Unit-Based Manufacturing Systems. , 2017, , .		1
96	Comparing the Sustainability Performance of Metal-Based Additive Manufacturing Processes. , 2017, , .		1
97	Understanding the Sustainability of Eco-Labeled Products When Compared to Conventional Alternatives. , 2017, , .		1
98	Energy and carbon footprint reduction during textile-based product design and manufacturing. International Journal of Strategic Engineering Asset Management, 2018, 3, 109.	0.6	1
99	Leveraging Open-Source Tools for Collaborative Macro-energy System Modeling Efforts. Joule, 2021, 5, 507.	24.0	1
100	Economic risk analysis for the capture of a distributed energy resource using modular chemical process intensification. Journal of Advanced Manufacturing and Processing, 2021, 3, .	2.4	1
101	Life Cycle Assessment of Modern Wind Power Plants. , 2010, , .		1
102	Environmental Analysis of Consumer Products During the Conceptual Phase of Product Design. , 2010, , .		0
103	Consideration of Manufacturing Processes and the Supply Chain in Product Design. , 2011, , .		0
104	Environmental impacts of integrating wind energy systems and supplemental energy generation and storage systems. International Journal of Sustainable Manufacturing, 2014, 3, 186.	0.3	0
105	Towards sustainable manufacturing by extending Manufacturing Execution System functions. , 2019, , .		0
106	Characterising the sustainability performance of cyclic manufacturing processes: a hybrid manufacturing case. International Journal of Sustainable Manufacturing, 2020, 4, 216.	0.3	0
107	Unit Manufacturing Process Models for Ferromagnetic and Non-Ferromagnetic Alloy Surface Inspection Methods. , 2015, , .		0
108	Characterising the sustainability performance of cyclic manufacturing processes: a hybrid manufacturing case. International Journal of Sustainable Manufacturing, 2020, 4, 216.	0.3	0

#	ARTICLE	IF	CITATIONS
109	Board # 72 : Constructionism in Learning: Sustainable Life Cycle Engineering Project (Cool:SLICE). , 0, , .		0
110	Advancing transformative STEM learning: Converging perspectives from education, social science, mathematics, and engineering. Journal of Integrated Design and Process Science, 2022, , 1-22.	0.5	0