

Philip Hackney
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Mechanical and Construction Engineering
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Qualifications

Engineering, MSc
31 Mar 2014 → 31 Dec 2099
Award Date: 31 Mar 2014

Engineering, BSc (Hons)
31 Mar 2014 → 31 Dec 2099
Award Date: 31 Mar 2014

Engineering, PhD
30 Jul 2007 → 31 Dec 2099
Award Date: 30 Jul 2007

Teacher Training, PGCE
1 Sep 1987 → 31 Dec 2099
Award Date: 1 Sep 1987

Employment

Associate Professor

Mechanical and Construction Engineering
Northumbria University
1 Jun 1999 → present

Research outputs

A-State-Of-The-Art review on modular building connections

Rajanayagam, H., Poologanathan, K., Perampalam, G., Varelis, G. E., Sherlock, P., Nagaratnam, B. & Hackney, P., 1 Dec 2021, In: Structures. 34, p. 1903-1922 20 p.

Materials for Building Construction with Additive Manufacturing Techniques

Hackney, P., Foster, L., Viney, A., Kelly, K. & Richardson, A., 18 May 2021, (Accepted/In press) In: International Journal of Rapid Manufacturing.

Effect of Polypropylene fibres on the Workability parameters of Extrudable Cementitious Material

Suntharalingam, T., Poologanathan, K., Nagaratnam, B., Hackney, P. & Ramli, J., 2021, *ICSECM 2019: Proceedings of the 10th International Conference on Structural Engineering and Construction Management*. Dissanayake, R., Mendis, P., Weerasekera, K., De Silva, S. & Shiroma, F. (eds.). Singapore: Springer, Vol. 94. p. 427-435 9 p. (Lecture Notes in Civil Engineering; vol. 94).

Effect of polypropylene fibres on the workability parameters of extrudable cementitious materials

Suntharalingam, T., Nagaratnam, B., Poologanathan, K., Hackney, P. & Ramli, J., 2020, *Second RILEM International Conference on Concrete and Digital Fabrication: Digital Concrete 2020*. Bos, F. P., Lucas, S. S., Wolfs, R. J. M. & Salet, T. A. M. (eds.). Cham: Springer, p. 516-526 11 p. (RILEM Bookseries; vol. 28).

Fatigue Analysis of Additive Manufactured Long Fibre Reinforced Nylon Materials

Hackney, P. & Oppon, C., 2020, In: Procedia Manufacturing. 51, p. 678-683 6 p.

An experimental strategy for fractionating 33 and 34 factorial experiments

Ozoemena, C., Hackney, P., Birkett, M. & Bell, D., 15 Sep 2019, In: International Journal for Quality Research. 13, 3, p. 505-520 16 p.

Building Additive Manufacturing – Materials Evaluation

Kelly, K., Foster, L., Hackney, P., Richardson, A. & Viney, A., 13 Mar 2019, (Accepted/In press).

Job Shop Planning and Scheduling for Manufacturers with Manual Operations

Yang, L., Li, J., Chao, F., Hackney, P. & Flanagan, M., 30 Aug 2018, In: Expert Systems.

Manual Task Completion Time Estimation for Job Shop Scheduling Using a Fuzzy Inference System

Yang, L., Li, J., Hackney, P., Chao, F. & Flanagan, M., 30 Jan 2018, *Proceedings - 2017 IEEE International Conference on Internet of Things, IEEE Green Computing and Communications, IEEE Cyber, Physical and Social Computing, IEEE Smart Data, iThings-GreenCom-CPSCoM-SmartData 2017*. 9781538630679: IEEE, Vol. 2018-January. p. 139-146 8 p.

Optimisation of Additive Manufactured Sand Printed Mould Material for Aluminium Castings

Hackney, P., Wooldridge, R. & Connor, C., 18 Sep 2017, In: Procedia Manufacturing. 11, p. 457-465

Manual Collate and Pack Area Completion Time Estimation for POS and POP Manufacturing Scheduling

Hackney, P., Yang, L., Li, J., Chao, F. & Flanagan, M., 23 Jun 2017.

3D Sand Printing for Automotive Mass Production Applications

Hackney, P. & Wooldridge, R., 1 Jun 2017, In: International Journal of Rapid Manufacturing. 6, 3, p. 134-154

Operational performance of individual handsaw teeth

Naylor, A., Huo, D., Hackney, P. & Perera, N., 31 May 2017.

Building of Polyurethane Foams Structures Using Additive Manufacturing Technology

Oppon, C. & Hackney, P., 27 Apr 2017.

Process Optimisation for Internal Cylindrical Rough Turning of Nickel Alloy 625 Weld Overlay

Chan, L., Shyha, I., Dreyer, D., Hamilton, J. & Hackney, P., 20 Apr 2017, In: International Journal of Chemical, Molecular, Nuclear, Materials and Metallurgical Engineering. 11, 4

Characterisation of direct 3D sand printing process for the production of sand cast mould tools

Hackney, P. & Wooldridge, R., 16 Jan 2017, In: Rapid Prototyping Journal. 23, 1, p. 7-15 9 p.

Efficient nondominated sorting with genetic algorithm for solving multi-objective job shop scheduling problems

Ali, A., Birkett, M., Hackney, P. & Bell, D., 17 Nov 2016, *2016 International Conference Multidisciplinary Engineering Design Optimization (MEDO)*. Piscataway: IEEE

Weld overlay cladding repair - An investigation of tensile strength variation in processed metallic substrate

Chan, L., Shyha, I., Dreyer, D., Hamilton, J. & Hackney, P., 11 May 2016.

Effect of varying mixing ratios and foaming direction on polyurethane foam for additive manufacturing applications

Oppon, C., Hackney, P., Shyha, I. & Birkett, M., 16 Dec 2015, *Proceedings of the 14th Conference on Rapid Design, Prototyping and Manufacturing (RDPM) 2015*. Rennie, A. E. W. & Bibb, R. (eds.). Lancaster: Lancaster University, p. 69-77

Genetic algorithms for solving bicriteria dynamic job shop scheduling problems with alternative routes

Ali, A., Hackney, P., Bell, D. & Birkett, M., 24 Sep 2015, *ICEMIS '15 Proceedings of The International Conference on Engineering & MIS 2015*. New York: ACM

Genetic algorithms for minimizing the number of tardy jobs in job shop scheduling with machine setup issue

Ali, A., Hackney, P., Birkett, M. & Bell, D., Sep 2015, *Proceedings of the 13th International Conference on Manufacturing Research (ICMR)*. University of Bath, p. 63-69

Effect of Varying Mixing Ratios and Pre-Heat Temperature on the Mechanical Properties of Polyurethane (PU) Foam
Oppon, C., Hackney, P., Shyha, I. & Birkett, M., 2015, In: *Procedia Engineering*. 132, p. 701-708

Investigation into the Development of an Additive Manufacturing Technique for the Production of Fibre Composite Products

Bade, L., Hackney, P., Shyha, I. & Birkett, M., 2015, In: *Procedia Engineering*. 132, p. 86-93

Dynamic job shop scheduling with alternative routes based on genetic algorithm

Ali, A., Hackney, P., Bell, D. & Birkett, M., 26 Sep 2014, *Engineering Optimization*. Araujo, A. (ed.). Boca Raton, FL: Taylor & Francis, Vol. IV. p. 827-832 1078 p.

Advances in Additive Manufacturing Processes

Oppon, C., Hackney, P., Shyha, I. & Beeby, J., 7 Aug 2014.

A hybrid Data Quality Indicator and statistical method for improving uncertainty analysis in LCA of a small off-grid wind turbine

Ozoemena, M., Cheung, W. M., Hasan, R. & Hackney, P., 18 Jun 2014.

Dynamic Job Shop Scheduling with Alternative Routes based on Genetic Algorithm

Hackney, P., Ali, A., Bell, D. & Birkett, M., 2014.

A Review of Life Cycle Assessment of Renewable Energy Systems

Ozoemena, M., Cheung, W. M., Hasan, R. & Hackney, P., 20 Sep 2013.

A review of wood machining literature with a special focus on sawing

Naylor, A. & Hackney, P., 2013, In: *BioResources*. 8, 5, p. 3122-3135

Determination of wood strength properties through standard test procedures

Naylor, A., Hackney, P. & Perera, N., Sep 2012.

Evaluation of handsaw tooth performance through the development of a controlled cutting test rig

Naylor, A., Hackney, P. & Perera, N., Sep 2012.

A predictive model for the cutting force in wood machining developed using mechanical properties

Naylor, A., Hackney, P., Perera, N. & Clahr, E., 22 May 2012, In: *Bioresources.com*. 7, 3, p. 2883-2894

An analytical model for deformation analysis of wind turbine adaptive blades

Zhang, H., Maheri, A., Daadbin, A. & Hackney, P., 2012, *High Performance Structure and Materials VI*. de Wilde, W. P., Brebbia, C. A. & Hernandez, S. (eds.). Southampton, UK: WIT Press, Vol. 124. p. 13-26 528 p. (WIT transactions on the built environment).

An analytical model for frequency analysis of composite wind turbine adaptive blades

Zhang, H., Daadbin, A., Meheri, A. & Hackney, P., 2012, *Proceedings of the 2012 2nd International Symposium On Environment Friendly Energies And Applications*. Piscataway, NJ: IEEE, p. 406-411

An analytical model for frequency analysis of composite wind turbine blades

Zhang, H., Maheri, A., Daadbin, A. & Hackney, P., 2012, *2012 2nd International Symposium On Environment Friendly Energies and Applications*. Piscataway, NJ: IEEE, p. 415-420

Effect of laminate configuration and shell-thickness variation on the inducted twist distribution in wind turbine adaptive blades

Zhang, H., Maheri, A., Daadbin, A. & Hackney, P., 2012, *2012 2nd International Symposium On Environment Friendly Energies and Applications*. Piscataway, NJ: IEEE, p. 415-420

A case study of the benefits and conflicts of knowledge between industry, academia and government
Hackney, P. & Curry, P., 23 May 2011.

Rapid manufacturing- state of the art, analysis and future perspectives
Hackney, P. & Ainsley, C., 23 May 2011.

A predictive model for the major cutting forces in wood machining developed using mechanical properties
Naylor, A., Hackney, P., Clahr, E. & Perera, N., 2011, In: *BioResources*. 7, 3, p. 2883-2894 12 p.

Machining of wood using a Rip Tooth: effects of work-piece variations on cutting mechanics
Naylor, A., Hackney, P. & Clahr, E., 2011.

An investigation into the characteristics of materials and processes, for the production of accurate direct parts and tools using 3D rapid prototyping technologies
Hackney, P., 24 Jul 2007, (Accepted/In press) Northumbria University.

Analysis of the application of the "digital light" rapid prototyping processing for functional rapid manufactured components
Hackney, P., 2006.

Introduction of CAD/CAM Technology into MKW Engineering
Hackney, P., Venus, T. & Davidson, A., 2006.

Product Enhancement with a systems approach, utilising Time Compression Technologies
Hackney, P., Sarwar, M. & Van Bedaf, J., 2006.

Rapid Manufacturing of Polymer Injection Mould Tool Inserts for Prototype Tooling Production
Hackney, P. & Sarwar, M., 2006.

Development of a Build Monitoring System for the EnvisionTec PerFactory Rapid Prototyping Process
Hackney, P., Chinnaswamy, G. K. & Arulraj, A. C., 2005.

Implementing Time Compression Technologies to Assist Small to Medium Size Enterprises for Product Development
Hackney, P., Sarwar, M. & Van Bedaf, J., 2005.

Investigation into Surface Finish of Parts Built by the EnvisionTec PerFactory Rapid Prototyping Process
Hackney, P., Chinnaswamy, G. K., Arulraj, A. C. & Nair, B. T., 2005.

Investigation into the EnvisionTec PerFactory® Rapid Prototyping Process for Production of Accurate and Strong Functional Parts
Hackney, P., Arulraj, A. C. & Chinnaswamy, G. K., 2005.

Reverse Engineering – Speeds up manufacture of thermoforming tools
Hackney, P., Sarwar, M. & Van Bedaf, J., 2005.

Erosion modelling using Bayesian regulated artificial neural networks
Danaher, S., Datta, P., Hackney, P. & Waddle, I., Apr 2004, In: *Wear*. 256, 9-10, p. 879-888

Analysis of the application of the Z-Corps three-dimensional printing system for rapid tooling for plastic injection moulded components
Hackney, P. & Pancholi, K., 2004, *Fifth National Conference on Rapid Design, Prototyping, and Manufacturing*. Oxford: Wiley, p. 3-11

Analysis of the EnvisionTec PerFactory System for Rapid Production of Components and Validation Utilising FEA and Photo elastic Analysis

Hackney, P. & Pancholi, K., 2004, p. 93-99. 7 p.

Analysis of the EnvisionTec PerFactory system for rapid production of components and validation utilizing finite element and photo-elastic analysis

Hackney, P. & Pancholi, K., 2004.

Application of the Z-Corps three-dimensional printing processes using novel material to manufacture bio-scaffold for bone replacement

Hackney, P. & Pancholi, K., 2004, *Fifth National Conference on Rapid Design, Prototyping, and Manufacturing*. Oxford: Wiley, p. 53-60

Development of systems to increase the green part strength of the three-dimensional printed Z-Corps manufactured parts by infiltration processes to improve their range of application

Hackney, P. & Channappa, L., 2004, *Fifth National Conference on Rapid Design, Prototyping and Manufacture*. Oxford: Wiley, p. 87-92

The Application of the Z-Corps 3D-Printing System for the Manufacture of Rapid Tooling inserts, for the Production Polymer Injection Moulded Parts

Hackney, P., 2004.

A Study of Build Accuracy of the Z-Corps 3D Printing Technique and Related Seepage Control

Hackney, P., Jun 2003.

A Comparison of "Concept Modeling" Techniques for Rapid Prototyping

Hackney, P. & Sarwar, M., 2003.

Analysis of the build quality of the "Digital Light Processing" Rapid Prototyping Process

Hackney, P., 2003.

An Evaluation of Rapid Prototyping "Concept Modelling" Techniques for New Product Development

Hackney, P. & Sarwar, M., 2003.

Production of Roughing Electro Discharge Machining Electrodes from the Z-Corps 3D Printing Process

Hackney, P., 2002.

The Development of 3D Printing Techniques for "Concept Modellers" to Competitive Rapid Prototyping Systems

Hackney, P., 2002.

Development of Time Compression Techniques to Assist SMEs with Product Competitiveness

Hackney, P. & Sarwar, M., 2001.

Operating Characteristics of the Z-Corps 3D Printing Process

Hackney, P., 2001.

Reverse Engineering: A Simple Concept, A Complex Process

Hackney, P., 2001.

The Revolution of Mid-Range Low Cost 3D Solid Modellers to Small Engineering Companies within the UK

Hackney, P. & Sarwar, M., 2001.

Spin casting of metal parts directly from RP masters

Hackney, P., Sarwar, M. & Widdows, S., Jun 1997.

Getting started in Rapid Prototyping

Hackney, P. & Sarwar, M., 1997.

Thermal and Mechanical Characteristics of the Laminated Object Manufacturing Process used for Rapid Prototyping

Hackney, P. & Sarwar, M., 1997.

Awards

Anti choking device

Hackney, P. & Scott-Harden, S.

South Tyneside and Sunderland NHS Foundation Trust

31/03/21 → 30/09/21

Projects