

III International Workshop on Autonomous Remanufacturing

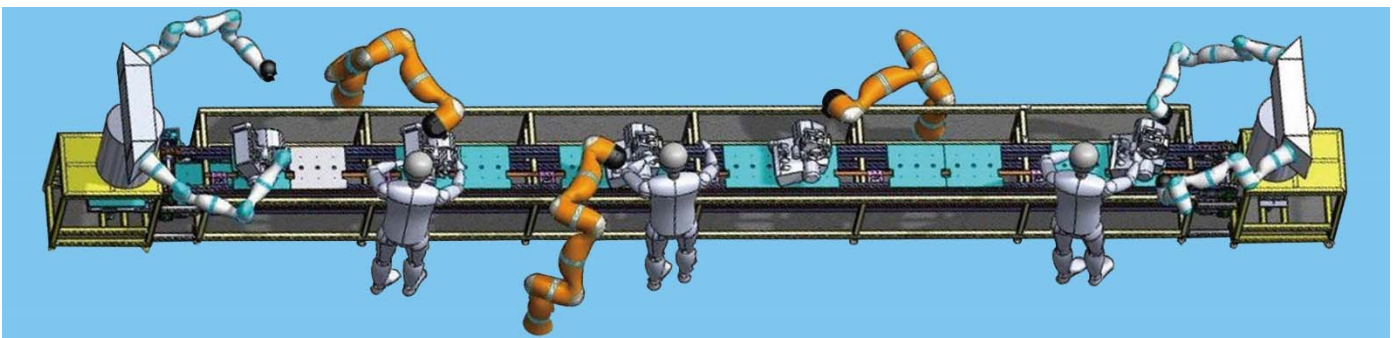
IWAR 2019

Sustainable remanufacturing in the transition towards Circular Economy and Industry 4.0

October 1 and 2, 2019

School of Industrial Engineering, University of Castilla- La Mancha, Albacete, Spain

CONFERENCE PROGRAM



Day 1. Tuesday, 01 October.

Location of the event: “Salón de Actos”. [Escuela Técnica Superior de Ingenieros Industriales](#), Edificio Infante D. Juan Manuel, Campus Universitario, 02071 Albacete.

15:15 - 15:45. Registration.

15:45 - 16:00. Welcome & Official Inauguration.

Prof. Valentín Miguel Eguía, Head of the School of Industrial Engineering

Dr. F. Javier Ramírez, Chair of the IWAR 2019

Dr. Andrés Honrubia Escribano, Program Chair of the IWAR 2019

16:00 - 16:30. Keynote Session I.

Human Robot Collaboration in Product Disassembly for Remanufacturing

Prof. Duc T. Pham, University of Birmingham, UK.

16:30 - 17:00. Keynote Session II.

Robotics and automation for remanufacturing

Prof. Dr.-Ing. Wolfgang Gerke, Trier University of Applied Sciences, Germany.

17:00 - 17:30. IWAR 2019 Group Photo & Coffee Break.

17:30 - 18:00. Keynote Session III.

Digital Twin-Based Intelligent Manufacturing

Prof. Zude Zhou, Wuhan University of Technology, China.

18:00 - 19:30. Oral Session 1 - Robotic disassembly.

Session Chair: Dr. Yongjing Wang, Research Fellow, Autonomous Remanufacturing Laboratory, School of Engineering, University of Birmingham, UK

Modeling for component relations in robotic disassembly

Xiang Lii, Yuanjun Laili, Lin Zhang

Application of LORRE, a Novel Algorithm for Multi-Objective Optimisation to Shape Recognition for Robotic Manipulation in Disassembly Operations

Luca Baronti, Marco Castellani

Applying Reinforcement Learning to Robotic Disassembly Operations

Mo Qu

Automating Unfastening of a Hexagonal Headed Screw for Robotic Disassembly

Ruiya Li, Duc Pham, Jun Huang, Yuegang Tan, Mo Qu, Yongjing Wang, Mairi Kerin, Kaiwen Jiang, ShiZhong Su, Chunqian Ji, Zude Zhou

Disassembly Process Online Prediction
Yongjing Wang

Identification of Mechanical Parts for Robotic Disassembly from Point Cloud Scenes
Senjing Zheng, Marco Castellani

Versatile and Autonomous Robots for dis-assembly in Reman... a big challenge!
Damien Sallé

19:30 - 21:00. Oral Session 2 – Robots and disassembly mechanisms.

Session Chair: Dr. Damien Sallé, TECNALIA - Division Industry and Transports, Manager of Business and Technology strategies in Robotics for Advanced Manufacturing

Improving Manufacturing and Remanufacturing Process Efficiencies and Sustainability through Collaborative Robots
Michael Packianather

BA-SVD: Bees Algorithm with SVD Optimization for 3D Registration
Feiyang Lan, Marco Castellani, Yongjing Wang

Theory of Wedging
Joey Lim

3D modelling and FEA simulation for separation operations in robotic disassembly
Shizhong Su, Duc Pham, Chunqian Ji, Yongjing Wang, Jun Huang

Information modelling for disassembly planning
Chunqian Ji

Peg-hole disassembly using active compliance
Yongquan Zhang

Study of the mechanical response of recycled ABS and comparison of its mechanical properties with a commercial ABS filament for 3D printing
Elena Verdejo de Toro, Juana Coello Sobrino, Alberto Martínez Martínez, Jorge Ayllón Pérez, Valentín Miguel Eguía

21:30. IWAR Gala Dinner.

[Restaurant “Martina”. Sercotel Los Llanos Hotel](#). Avenida de España 9,
Albacete.

Day 2. Wednesday, 02 October.

08:30 - 10:00. **Oral Session 3 – Remanufacturing, end-of-life and lifetime extension.**

Session Chair: Dr. Estefanía Artigao Andicoberry, Research Fellow, Renewable Energy Research Institute, University of Castilla-La Mancha, Spain.

Building Circular Supply Chains: A Literature Review

Rocío González-Sánchez, Davide Settembre-Blundo, Anna Maria Ferrari, Fernando E. García-Muiña

Digital Intelligence for a Circular Economy- A Simulation-Based Understanding of Remanufacturing

Okechukwu Okorie, Fiona Charnely, Konstantinos Salonitis

Battery-pack remanufacturing: A diagnosis and prognosis strategy for lithium cells

J. M. Campillo-Robles, R. Fuente, G. A. López, B. Ballesteros

Neural Network Identification of Geometric Shapes for Machine Vision in Automatic Disassembly

Marco Castellani, Luca Baronti, Senjing Zheng

Cost analysis and multi-objective optimisation for End-of-Life strategies

Yuchun Xu

Condition Monitoring based on electrical measurements of in-service Wind Turbine DFIGs - Operational data analyses

Estefanía Artigao, Andrés Honrubia-Escribano, Emilio Gómez-Lázaro

Technical, Economic and Operational Improvement of the “Virgen de Belén I” Wind Farm in Bonete (Albacete) via Repowering. Assessment of the Different Alternatives and Choice of the Most Suitable Technical and Economic Solution

Raquel Villena-Ruiz, Antonio José Pérez Barroso, Andrés Honrubia-Escribano, F. Javier Ramírez, Emilio Gómez-Lázaro

PV modules revamping methodology with different plant mounting and structure

Sergio Martín-Martínez, Alberto Lorenzo-Bonache, Andrés Honrubia-Escribano, Emilio Gómez-Lázaro

10:00 - 10:30. **Keynote Session IV.**

Manipulation of deformable objects in industrial applications

Dr. Santiago T. Puente, University of Alicante, Spain.

10:30 - 11:00. **Coffee break.**

11:00 - 11:30. **Keynote Session V.**

Multimaterial 3D printing for functional devices fabrication

Dr. Marc Torrell, Catalonia Institute for Energy Research (IREC), Spain.

11:30 - 12:30. Oral Session 4 – Sustainable production technologies.

Session Chair: Dr. Jesús Canales, UCLM/Print3D Solutions: Associate Professor. Head of the Materials for Energy & 3D Printing Lab at IER-UCLM. Senior Scientific Advisor. University of Castilla-La Mancha, Spain

The CO₂-AFP Strategy: A novel approach to reduce Carbon Footprint in industry
Abdessamad Gueddari, Santiago Garcia-Yuste, Carlos Alonso-Moreno, Jesús Canales Vázquez, Jorge E. Zafrilla

3D Printing of Lithium-Ion Batteries via Fused Deposition Modelling
José Fernando Valera Jiménez, Juan Ramón Marín Rueda, Juan Carlos Pérez Flores, Miguel Castro García, Jesús Canales Vázquez

A comparative experimental study of the mechanical behaviour of a short carbon fiber-reinforced polyamide manufactured by injection moulding and 3D printing
Elena Verdejo de Toro, Juana Coello Sobrino, Alberto Martínez Martínez, Jorge Ayllón Pérez, Valentín Miguel Eguía

Machinability improvement of copper-nickel 70/30 ASTM B122 alloy under low initial lubrication condition on turning processes
Enrique García Martínez, Valentín Miguel Eguía, Alberto Martínez Martínez, Juana Coello Sobrino, María Carmen Manjabacas Tendero

12:30 - 13:00. Keynote Session VI.

IoT improving reverse logistics

Mr. Fernando Martín, SIGFOX, Spain.

13:00 - 14:00. Oral Session 4 – IoT and Industry 4.0.

Session Chair: Dr. Teresa Olivares, Assistant Professor, Computing Systems Department, University of Castilla-La Mancha, Spain

Optimized and flexible scheduling of AGVs and process machines in Remanufacturing 4.0 Systems using multi-agent technology and simultaneous scheduling
Sebastian Groß, Wolfgang Gerke, Peter Plapper

A new approach of Human-Robot Interaction for Industry 4.0
Luis Roda Sánchez, Teresa Olivares Montes, Antonio Fernández Caballero

Development of an Optical Six-Axis Force/Torque Sensor for Robotic Applications
Jun Huang, Duc Pham

Industry 4.0 in Remanufacturing: The Digital Product Twin
Mairi Kerin

Leveraging the potential of the Internet of Things for End-of-Life recovery of Electric Vehicle Batteries in Industry 4.0
Celia Garrido Hidalgo, F. Javier Ramírez, Teresa Olivares Montes

- 14:00 - 15:00. Lunch in the [School of Industrial Engineering](#).
- 15:30 - 17:30. Visit to [AIRBUS HELICOPTERS factory](#) (Albacete). Bus will depart from the principal entrance of the School of Industrial Engineering at 15:10.
- 18:00 - 21:15. Visit to ["Los Aljibes" winery](#) (Chinchilla de Montearagón, Albacete).
- 22:00. Expected arrival time to Albacete.

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