



University of Zagreb Faculty of Textile Technology & AMCA TTF

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LECTURE

entitled

Industry 4.0 and circular economy principles in Garment and Leather Footwear Industry

by

Albana LETI, PhD

Lecturer at Polytechnic University of Tirana, Albania

on Thursday, 15th May 2025 at 13:30

in lecture hall **A-101**, Prilaz baruna Filipovića 28a, Zagreb

Abstract:

In the evolving landscape of global manufacturing, the apparel and footwear industry faces increasing pressure to modernize for competitiveness, efficiency, and sustainability. The garment and leather footwear industry contributes up to 10% of global CO₂ emissions. Integrating Industry 4.0 technologies with circular economy principles offers a path to reduce waste, improve efficiency, and enable sustainable production.

Key strategies include circular design (e.g., Cradle-to-Cradle, mono-materials), sustainable materials, and smart production using Cyber-Physical Systems (CPS), the Internet of Things (IoT), Artificial Intelligence (AI), Big Data Analytics, and Radio Frequency Identification (RFID)—in garment manufacturing. Business models such as rental, resale, and take-back programs extend product life. Digital tools and consumer engagement further support transparency and recycling.

Despite challenges like high costs and technical barriers, this transformation is vital for creating competitive, low-impact, and future-ready manufacturing systems.

Biography:



Albana Leti, PhD graduated 2005 at the Polytechnic University of Tirana, Faculty of Mechanical Engineering (5 year study program) gaining title Textile Engineer. In 2006 become lecturer in Textile and Fashion Engineering, engaged in: teaching, scientific research, 2D & 3D software consultancy for industry. She was a supervisor of over 100 Bachelor and Master theses. She is lecturer on subjects: Pattern Making manually and with CAD/CAM Software, Interior Design, Industry 4.0, Resources Efficiency and Cleaned Production.

Projects & Affiliation:

- ILO (International Labour Organization), (2023 – Ongoing): Expert on national standards and uniform development for police & army. Consultant for quality improvement and LEAN processes in the garment and leather footwear industry.
- FIBERS Interreg Project (Co-funded by EU, IPA-ADRION00004): International project on footwear and apparel product innovation.
- USAID & NOA, Tirana, Albania: Member of scientific committees (GS-SIGRET, ICITBT, QBATS).
- Local Expert for GIZ, USAID & UNIDO: Involved in various development projects.