Project Result 5:
Digital Course in Circular Agriculture

"SKILLS"

https://www.euskills.info/home

"Strengthening Key Competences in Agriculture
for Value Chain Knowledge"

Digital Course:
Introduction to Circular Agriculture
Chapter 4
Value chain for minimizing waste resources in CA

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4.3 Manufacturing Processes-Introduction

- **Context**: Need for sustainable city development and eco-friendly manufacturing.

- **Goal**: Reduce waste, energy, and water use in manufacturing.

- **Outcome**: Environmentally friendly products.

Lean Manufacturing

- **Focus**: Efficient processes and waste reduction.

- **Principles**:

- Value from consumer's perspective.

- Mapping value stream.

- Harmonized processes.

- Continuous improvement.

- Demand-driven activities.

Green-Lean Six Sigma (GLSS)

•**Strategy**: Combines green practices with Lean Six Sigma.

•**Benefits**:

•Minimize resource waste.

•Eliminate non-value-added activities.

•Streamline and control processes.

•Produce defect-free products.

•**Focus Areas**: Material/resource circulation and environmental conservation.

Automation Technology

- **Integration**: Sustainability with smart automation.

- **Technologies**:

- Robotic Process Automation (RPA): Increases precision, reduces errors.

- CAD/CAM: Optimizes designs and processes.

- IoT Devices: Monitors equipment, predicts maintenance, reduces downtime and waste.

Product-Oriented and Process-Oriented Optimization

- **Objective**: Optimize material use and waste reduction.

- **Techniques**:

- Replace materials with eco-friendly options.

- Collect, recycle, and reuse scrap materials.

- Use inventory management to avoid overstocking.

- Implement closed-loop systems.

Employee Training and Engagement

•**Importance**: Ensures successful adoption of new technologies.

•**Training Goals**:

•Develop multidisciplinary expertise in smart manufacturing.

•Provide solutions for societal challenges.

•**Outcome**: Trained experts drive innovative and sustainable practices

Conclusions

- **Key Strategies**:

- Lean manufacturing.

- Green-Lean Six Sigma.

- Automation technology.

- Sustainable material management.

- Energy efficiency.

- Employee engagement.

- **Benefits**: Reduced waste, enhanced productivity, and profitability.

- **Result**: Sustainable, resilient manufacturing operations that benefit the environment.

References

SKILLS

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