Simulation Games – A Method for Uncovering Resource Efficiency Potentials in Manufacturing Companies

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## 1. Overview and Introduction

### RE:PLAN

Simulation Games to Uncover Resource and Energy Efficiency Measures

| **Background** | Energy and material costs are major cost factors in manufacturing companies  
|                | High saving potential expected  
|                | Positive influence on competitiveness and environmental impact |
| **Goal**       | Creation of long-term competences in advanced trainings  
|                | Increasing the resource efficiency awareness in manufacturing companies  
|                | Contribution to the reduction of greenhouse gas emissions |
| **Target Group** | Employees of manufacturing companies |
| **Topics**     | Energy and material flow analysis  
|                | Material Flow Cost Accounting (MFCA)  
|                | Lean Production |
2. Methods

- Experience complex real-life processes
- Long-term learning success by haptic games
- Theoretical inputs combined with direct application
- Cooperative learning
- Reflection and transfer to everyday working life
- Learning by doing
- Problem-oriented learning
- Playful teaching
- Teamwork
- Exchange across departments and hierarchies
- Training of soft skills
3. Results – Possible Impacts on Resource Efficiency

- Change of corporate culture → increased resource efficiency awareness
- Application of new analysis methods → transparent process analysis
- Critical analysis of existing processes → process optimization
- Economical use of resources
  - Reduction of material losses
  - Closed-loop circulation
  - Lean processes
- Increased focus on technology and innovation management
3. Results –
Impacts after the Trainings

Have concrete optimization measures been taken after playing the game?

- 71% yes
- 29% no
- 0% maybe
3. Results –
Projects Initiated after the Game

- Implementation of different methods learned in practice
- Enabling of self-reliant and self-organized working
- Process optimizations for single production lines
- Usage of simulation game in in-house training academy
- Initiation of a corporate case study with focus on material losses (MFCA)
- Introduction of a new environmental performance indicator (material efficiency) for all company sites
3. Results – Long-term Implementation

Simulation games will be integrated in advanced training concepts in the future

- **Institute for Industrial Ecology**
- **Train-the-Trainer concept:**
  - Participants are educated to become trainers
  - Promote the application of the simulation games
- **Cooperation with different networks:**
  - Chamber of Industry and Commerce (Germany)
  - Chamber of Crafts (Germany)
  - Resource Efficiency Networks (e.g. BilRess, VDI ZRE)
- **Cooperation with consultants as multipliers**
4. Conclusion

- Improved Resource Efficiency Awareness within companies
- Suitable for different sectors and company sizes
- Highlight the link between resource efficiency and climate protection
- Business examples show applicability of the taught methods
- Initiation of first projects – more optimizations expected
- Players become multipliers within and beyond the companies
- Exchange across hierarchies and departments important
„I hear and I forget.
I see and I remember.
I do and I understand.“

Confucius (551 – 479 v. Chr.)

Thank you for your attention!

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