



13<sup>th</sup> International Conference on Industrial  
Engineering and Industrial Management

XXIII Congreso de Ingeniería de Organización



**Organizational  
Engineering  
in Industry 4.0**

**BOOK OF ABSTRACTS**

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## Sustainability and Industry 4.0. A case study

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**Keywords:** Industry 4.0, sustainability, problem-oriented monitoring, agri-food;

### 1 Introduction

The Fourth Industrial Revolution combines a set of technological developments that allow companies to advance, simultaneously, in several improvements: digitalization of processes by IoT-Internet of Things (Birkel et al., 2019); data acquisition by sensorization (Stock & Seliger, 2016) and analysis by big data (Khan, et al., 2017); productivity improvement by robotization; material consumption reduction by additive manufacturing; and reducing the costs of analyzing improvement alternatives by simulation (Muhuri et al., 2019).

There are many success cases of application of these principles in companies but in the majority of those cases, the objectives are focused on productivity (Muhuri et al., 2019). Scientific literature presenting success stories related to Industry 4.0 and sustainability are limited (Sachin et al., 2018).

### 2 Objectives

This paper presents a practical success case study, which combines some of the technologies included in the Industry 4.0 strategy, to offer an efficient water management proposal in the agri-food sector. The work is framed in the European project called LIFE MCUBO.

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### **3 Methods**

During the project a three-step methodology was developed. The demonstration activities carried out in the companies involved in the project have shown that it is not necessary to apply systematically all the methodology steps to accomplish good results. For this reason, the methodology is represented as a circle without a specific starting step for the implementation process.

### **4 Results**

The paper presents the results derived from the application of the methodology to a case study. The company selected in this case study is dedicated to the processing and packaging of vegetables. The company has modern production facilities and a WWTP to treat the wastewater generated before sending it, through a collector, to the public water treatment plant.

The company improvement team was interested in the analysis of three improvement scenarios related to the capacity of the treatment plant which are briefly explained in the paper.

### **5 Conclusion**

This paper has demonstrated how the use of technology connected to the equipment that manages water in the agri-food industry, and combined with simulation, reduces the environmental impact of water management. This, in turn, reduces the energy consumption associated with water treatment. The methodology developed in the MCUBO project also allows to know and reduce the main sources of water consumption in the production process.

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