

Santiago Lina-Fernandez^a, Robert Edwards-Conger-Gibson^a

Different methods and technologies for welding are known today, some already consolidated and others recent in the manufacturing industry, but there are common points about the social and environmental impact of the process that need attention. This article seeks to evaluate how companies have dealt with sustainability in the context of welding process, developing a literature review in order to raise the academic results of the topic, and to evaluate how the industry has received this information through a case study.

Sustainably, setting process, health

Since the mid-1980s, industrial manufacturing power has been expanded due to the Technological Scientific Revolution, fostering the need of natural resources to obtain energy and produce manufactured goods. Considering the three pillars of sustainability (social, economic, and environmental), sustainable development and standardization of work conditions are crucial to avoid compromising the needs of future generations and to guarantee a satisfactory quality of life. In this regard, the production processes involving welding techniques can have considerable consequences on energy consumption, particulate emission of heavy metals, as well as providing diverse sources of risks to the health operators. The aim of this study is to identify the variables that influence the aspects of sustainability of the welding process and to verify its occurrence in a manufacturing plant. This work is part of a more general project on sustainability in manufacturing processes coordinated by professors Robert Cooper and Renato Amorim.

To reach the proposed objective, it was agreed on research methodology to begin with a literature review and with the information obtained from interviews with semistructured questions in the company developing the case study in the health sector. The questionnaire was approved by the Research Ethics Committee of Universidad del Cauca and CADE's number 000968-2010-0000.

The authors collected the case study were synthesized in two ways: to provide an internal analysis of its content and the external equivalence with the information found in the scientific articles, thus providing a critical analysis for improvement, as well as those that are directly or indirectly observed in the field.

Through the literature review the variables that impact the pillars of sustainability in the wedding process were identified, which were divided into 3 groups, as below:

Source: Operator health risks through exposure to heavy metal fumes, toxic gases, reflect energy, heat, electricity and noise.

Economic: Low productivity and higher production cost

Environmental: Uncontrolled energy consumption and waste of natural

Evaluated practices that positively interfere with the reduction of the impacts described may be listed as follows: 1 - Life cycle assessment (LCA) and Social life

1 - Use of existing data for the purpose of future generation, 2 - Activation of the existing data, 3 - Continuous study of the existing data for the most appropriate strategy, 4 - Activation and implementation of energy conservation, 5 - Application of measures to protect the health of the population.

During the audit, the following was carried out, the volunteer company was asked to satisfy the standards of quality management, environmental management, safety and health requirements. Although, it did not have any score about the practices 1, 2 and 3, the company showed to follow the practices 4, 4 and 6.

... of interview responses also demonstrates a focus on the economic aspects of sustainability with subsequent improvements to the socio-environmental area, but in a secondary way. Its clients conduct periodic audits to verify the quality of production and the fulfillment with the normative certification they have. Thus, this study can generally highlight an initial contribution to achieving the goals of the UN 2030 Agenda for Sustainable Development, as follows from the last item: Use Area 33.



The proposed methodologies allowed to identify the variables that can influence the sustainability of the sewing process and its evidences in a company of the manufacturing sector. Future research may continue the literary review and apply the case study at a national level in order to obtain a more representative sample.

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Source: Development Bank, Cambridge Metrics, 15, 2011, available at: <http://www.developmentbank.org>. Accessed on Sep 10, 2015.