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Continuous Improvement of Processes on the Electronic Sector: obtaining Environmental Indicators using Software

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Abstract

The need to ensure the sustainability of human endeavors makes the business management tends to change and, therefore, the concept of Industrial Ecology and the use of control software can be of great value. The objective of this work was the development of a methodology for use of software in implementing the concept of Industrial Ecology in electronics industry companies. The software is used to define appropriate sustainability indicators to the system and indicate potential process improvements for the formation of Industrial Ecosystems. The electronics sector was evaluated and presented various cost reduction opportunities, environmental and social improvement in the supply chain due to the reuse of by-products generated internally or by other companies, suggesting an effort to increase the formation of industrial ecosystems in this sector. As the formation of industrial ecosystems is very dependent on the exchange, the fact of the case studies is relevant show the importance of the distances and thus among the likely significant impacts, carbon emissions must be strongly considered. For the area of raw materials for microelectronics, the possibility of using silicon and sugarcane bagasse chips is hampered by the distances between the products and their carbon emissions resulting from the transport. Other inputs are typically acquired and disposed of in even more open cycles. In microelectronics, water reuse cycles with galvanic exist, but not other products, such as acidic or alkaline aqueous solutions, which could be recycled in steel. In printed circuit, area and surface mount several co-products are already recycled, however, an exchange between producers, not involving recycling, would provide greater economic gain. The recycling of complete equipment runs into several difficulties, including the legal aspects. For the micro and small business, the development of a database enables the deployment of Industrial Ecology without high costs

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