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Environmental efficiency as enhanced productivity generating factor - Presentation of the results obtained in a ceramic industry from Ceará State

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Abstract

The research was carried through in the *Cajazeiras* Ceramics, industry of the ceramic sector located in *Cascavel-Ceará*. The main products produced and commercialized for the company are sealing blocks, flagstone and structural blocks. Clay is the main raw material. Effluent liquids, solid residues and atmospheric emissions are generated during production. Solid residues are generated from the loss of materials for defects in the finished product. A production of more than 2500 thousand-pieces of blocks damaged per year is esteemed. The consumption of water, raw material, energy and solid residues production per product were defined as environmental indexes, with the aim to identify consumption rate per ceramics block produced, besides identifying the economic loss generated by waste of blocks damaged during production. With this analysis, some alternatives were suggested for minimizing production of residues, effluent and emissions, inside the Program of Cleaner Production, such as modifications in the product, change of technology, reuse and recycling, composting, alterations in the process, among others. From the evaluation of the data collected, the company was divided into sectors (preparation, extrusion and burning) for identification of opportunities and/or problems, plan of action and strategies, barriers and necessities, besides the identification of the priority level. Due to the use of an inadequate extruder nozzle, the extrusion process of the ceramic blocks presented an index of verified reworking of up to 30%. With the switch to a new and balanced nozzle, a decrease of 12% in the index of re-work was verified, generating a better exploitation of the natural resources and energy and, consequently, faring better indices of productivity and income. Associated with the technological improvement of the change of the nozzle, a survey of impurities was carried through that allowed for the planning of a more adequate handling of the extraction and preparation of the clay, allowing the clay to get into the productive free of impurities, thus faring better production results. Through *in loco* surveys, it was evidenced that the use of single door Hoffman ovens generates a consumption 0,08m³/thousand-piece-pack higher than with the use of double doors. As for environmental improvements: lower consumption of firewood per produced piece. At the end of one year we will have an area of 36Ha of non-deforested bushes of *bioma caatinga*, considering that 1ha of *bioma caatinga* bushes produces 52m³ of native firewood (data from FIERN), providing a lower environmental impact than the one before the implementation of the Program of Cleaner Production.

Keywords: Cleaner production, environmental impact, solid residues, generation of effluent.
