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R4th INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“INTEGRATING CLEANER PRODUCTION INTO SUSTAINABILITY STRATEGIES”

Thermic Curing Using Solar Heating and Water Spray

OESTREICH, A. M. E. ^{a*}, COSTA, C. L. P. ^b, DURAN, A. P. F. A. ^c

a. Centro de Tecnologia SENAI Ambiental, Rio de Janeiro

b. Centro de Tecnologia SENAI Ambiental, Rio de Janeiro

c. Centro de Tecnologia SENAI Ambiental, Rio de Janeiro

**Ana Maria Evangelho Oestreich, aoestreich@gmail.com*

Abstract

The Center of Technologies SENAI for the Environment (Centro de Tecnologia SENAI Ambiental) developed a Cleaner Production Program in a cluster of concrete blocks producers in Rio de Janeiro state, according United Nations for Industrial Development Organization (UNIDO) methodology, in a period between the end of 2011 and beginning of 2012.

The cleaner production diagnosis identified as an opportunity of improvement the change of the curing concrete process used by most of the companies in the cluster. The proposed process improves their productivity compared to the process they normally use: dry curing at air temperature. In the study developed in a company, it was proposed a change for concrete curing at higher temperature in a wet environment, based on reference methods. The cleaner production project suggested the use of rainwater and solar thermal system as a sustainable alternative.

The cleaner production study includes the technical and economic feasibility to keep the water temperature at 60°C and the internal air temperature at 50°C inside the curing chamber. During low solar radiation days, the warming system must be kept using natural gas.

This option cans double the company productivity with high standards of quality in a more sustainable process than the conventional one which uses drinking water and fossil combustible or electricity.

Keywords: Concrete Curing, Solar Heating, Productivity

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