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Treatment of emissions of VOC's

Gamadecor Spain

In partnership with:

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from the EU



Introduction:

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Company's Description:

The company belongs to the PROCELANOSA Group. It was founded in 1987 to manufacture bathroom and kitchen furniture with the objective of obtaining high quality, high tech and advanced designed products. A company with a special awareness towards environmental issues carries out the exhaustive control of all of its processes and products, applying continuous improvements at every stage, while taking into account a working philosophy that implies the least possible effect on the environment.

Sub-sectors affected:

- X Furniture (2nd Transformation)

Implementation Process:

The furniture industry emits a number of pollutants in the atmosphere in the form of gases or particles, among which are the Volatile Organic Compounds, because of the use of organic solvents and products which contain solvents, mainly, during the processes of varnishing and the operations of application, drying and cleaning. A Research Project is being carried out focused on the treatment of emissions of volatile organic compounds (VOCs) in air from the use of solvents in the application of paints and varnishes in the products through an innovative treatment process: Biotrickling Filtration.

In this sense, an industrial prototype (VOCUSTM), has been installed in the factory in order to obtain the design and operational conditions necessary to determine the viability of this emerging biotechnology. The Biotrickling Filter performance is based on the natural process of biological oxidation (aerobic degradation) of organic compounds (VOCs) that yields ultimately inert products such as carbon dioxide (CO2) and water. In a Biotrickling filter reactor, the polluted air to be treated is passed through a bed on which it has developed a film of microorganisms

(biofilm) which are the responsible for degrading organic contaminants to carbon dioxide and water. In turn, an aqueous phase is circulated continuously through the bed allowing adequate biofilm irrigation.

Initiated practices:

Environmental awareness beyond standard requirements such as the use of wood from sustainably managed forests, three year plans for the prevention of waste from packaging materials, raw materials subject to exhaustive controls and analytical controls for the ecosystem in the zone. The company has adhered to the Integral Management System of Ecoembes, a company that focuses its efforts on collecting and treating packaging with an ecological approach. Furthermore, the raw materials selected are subjected to exhaustive controls, both in the selection stage and during verification for their subsequent use. This means that all of the wood used in the production process is from sustainable forests. The different types of residues that are generated during the production processes are stored in perfectly indicated zones, conditioned for their subsequent handling by authorised waste companies.

Results:

As a result, GAMADÉCOR is the first company in Spain to set up this pioneering and ecological treatment system that it will lead to reduced energy consumption with respect to those already on the market, and the elimination of other combustion gases produced by other treatments. This cleaning technology is especially attractive for treating large volumes of polluted air with low concentrations of (VOCs) because of simplicity, low operational cost and minimal environmental impact since it does not generate toxic or hazardous waste products.

The manufacturing plants have vacuum systems installed with filtering processes designed to prevent atmospheric pollution, recovering all of the dust generated in the different processes using a selective system, preventing emissions into the atmosphere and recovering the waste produced by untreated wood, which is recycled and commercialised through an authorised waste handler. With regard to the emission of greenhouse gases, it is working in two different areas in order to reduce emissions in situ, by adapting its manufacturing processes, using products with a low concentration of VOCs in their composition, as well as working with water based products as far as possible.

Recommendations:

The adaption of using products of lower concentration in Volatile Organic Compounds in processes of manufacturing is more than vital but also it's possible to lead to the elimination of the air emissions caused by their use.

Conclusions:

The output of the investigation can possibly be the procurement of innovative processes for the addressing of the issue of the emissions of VOC as a result of the use of the solvents during the application paint and varnish. These simple and low cost processes have a minimum environmental impact since neither toxic nor dangerous residues are produced.

Keywords:

X Processes