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Research area: Product aims

Raw materials // Wood

Key words:

Demolition wood, waste wood, sorting, pulp production, particle board production, combustion plants, liquid biofuels production

TITLE:**Optimisation of material recycling and energy recovery from waste and demolition wood in different value chains****Background/Problem area**

There is a significant amount of wood based materials coming from end of life products. The main sources of this recovered wood are packaging materials, demolition wood, timber from building sites, and fractions of used wood from residential, industrial and commercial activities.

The main user of recovered wood in Europe is probably the particleboard manufacturing industry, but other uses are increasing in importance. One of the great advantages of wood is that it can be recycled several times before, eventually, being disposed of by incineration with energy recovery. The pulp industry is not using recovered wood up to now, because in many cases the purity requirements for the pulp process and for the paper quality and characteristics have stopped the use of a raw material which could be contaminated by non-biomass materials (metal pieces, paint, varnishes...).

The biomass energy field is certainly the fastest growing sector among the wood users. Considering the very high objectives of development of the biomass energy in Europe, this trend is certainly durable and the biomass demand for energy will strongly grow in the coming years.

At the same time when the wood using sectors are facing some difficulties and economic tensions on the raw material supply, there are still million tons of waste wood which are either not handled properly (disposal by landfilling, incineration or combustion without efficient energy recovery). These situations, which are clearly the worst case scenarios in the frame of the waste national regulations and the waste directive, generate environmental impacts. Moreover, these impacts can reduce the positive environmental profile of wood product. Increasing the level of material recycling and energy recovery from recovered wood is today to a very large extent a regulatory objective and a European wide public policy.

Objectives/Research results

The general aim of the project was to investigate valorisation concepts for maximising the added value of waste wood in value chains such as pulp production for paper products, particle board production and large scale energy recovery systems: combustion plants and liquid biofuels production. This would help saving the forest resource, reducing the environmental impact of waste wood management, while contributing to the objectives of increasing the use of a renewable resource and reducing the greenhouse gases emissions in the materials and energy sectors.

In the last part of the project all works were finished and after a prolongation of the project the results were transferred by a final workshop and by DEMOWOOD homepage (www.wwnet-demowood.eu).

Application/Economic benefits

The results of this project have firstly given a realistic overview about the waste wood sources and paths in selected EU countries. With already existing and newly developed innovative detection and sorting techniques the quality and the quantity of good wood without contaminations were largely extended. After finishing this project, there is an optimized end-of-life concept for wood based products considering their total life cycle.

For instance, good quality waste wood can better be used in the pulp and paper industry while darker fractions can still be used as core material in the particleboard industry. From an environmental point of view, the increased recycling of recovered wood can be seen as a positive evolution because this increases the total volume of CO₂ stored in wood-panels or in paper products for many years. However, a negative effect is that waste wood currently contains more contaminants than fresh wood. With the success of the proposed new concepts and in cooperation with sorting and recycling companies (mainly organized as SMEs), the amount of contaminants in waste wood will be drastically reduced. Therefore the acceptance of the larger organized paper mill and particleboard companies to take waste wood as a cheap alternative to fresh wood seems reasonable. The results of this project were disseminated and exploited to the different industrial branches in different way, either directly to the companies in conferences, symposia and on fairs.

Period of time: 01.01.2011 – 31.05.2014

Remarks

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