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## Zero emission smart rural fuel

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Diesel as fossil fuel in power application (combined heat power unit) and in mobile application like heavy trucks, heavy working machines in economy are well known. Using biogenic mass for producing substitute fuel for fossil diesel is well known. We specialize only on DME (dimethyl ether) and DEE (diethyl ether). There are several established pathways in producing DME and DEE as substitute for fossil diesel from biogenic mass. But all pathways describe the conversion of biogenic mass to the fuel. In this presentation, we focus on zero emission in production of DME and DEE and in the application of DME and DEE in power generation and mobile applications. As a result of the zero emission process, we collect carbon dioxide and water in tanks. Carbon dioxide are compared in different forms of energy (electric energy, solar energy and heat) and efficiency. If we apply a smart system, this has an influence on the selection of pathway producing DME and DEE. As a result, we are lead to synthetic production of DME and DEE like plants are doing every day: smart, de-central and solar energy, energy efficiency and zero emission. This result is not surprising, but it is a pathway in a new direction, based on the discovery that biogenic mass alone is too small to fulfill the global demand on fuel consumption in a sustainable way. Under sustainability, we understand reducing landscape, synthetic fertilizer and water consumption. The producing of DME and DEE is shown in a practical project in lower Austria in realization of a small plant with 500 kW electric power and 200 l/h DME and DEE is shown in a practical project in lower Austria in realization of a small plant with 500 kW electric power and 200 l/h DME and DEE production with zero EMI.

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## Biomass, energy and employment in agro forestry regions, the example of Serra

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Serra is a small mountain town of 3,000 inhabitants in the Region of Valencia on the Spanish Mediterranean coast. The municipality Covers an area of 5,730 hectares, with 95% of this territory lying within the Sierra Calderona Natural Park and 85% being forest. Due to its location in the heart of a Natural Park, Serra has natural resources that together with its location close to Valencia, grant it a privileged position from which to boost agricultural and forestry activities in line with others related to tourism and recreation, as a new model of socio-economic development. Since 2010 the biomass management project in order to produce solid fuel to heat municipal buildings, has applied these principles with very positive results. The first step was turning local administration into a biomass fuel consumer, by replacing the traditional heat sources with biomass boilers systems in the Municipal Nursery, Public School and Town Hall buildings, with an overall power of 250 kW. The municipality had also to convert green waste into an energetically usable fuel at the lowest possible cost, first producing wood chips and then producing wood pellets. The fuel production of wood pellets per year, which surplus production is sold in the nearby markets. In summary, the project aims to close a cycle of circular economy based on the re-use of green waste as energy that permits the generation of savings which are redirected towards job creation, this allows the incorporation of new forestry and agricultural waste, which helps to protect against forest fires and to conserve the area's natural heritage. This in turn allows more tourism activities in the area, which drives yet more employment generation and ultimately socio-economic growth.

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