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Civil buildings heating by forestry biomass. A case in Central Italy

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The purpose of this paper is to describe a wood centralenergy plant, designed to meet the heating needs of residential and institutional buildings in a town of the Mounts Lucretili Park, a protected area in Central Italy, not far from Rome. One of the roles of a protected area could be the bio-energy question, because wood fuel has several environmental advantages, compared with fossil fuels. Wood can be continually replenished, which leads to a sustainable and dependable supply and ash, sulfur and metals are minimum. Furthermore, there is little net production of carbon dioxide, the major greenhouse gas, from wood combustion, because the CO2 generated during combustion of wood equals the CO2 consumed during the lifecycle of the tree. The abundance of woods of the Lucretili Park can give a 7000 t/y biomass production, while the main design limiting factor is the available budget, which amounts to 600000 EUR. In any case, it has been considered important, due to the demonstrative and educational value of this project, above all in forestry vocated areas and natural reserves. In consequence, main plant design characteristics are: 600 kW thermal power, using about 400 t/y of chipper, with 35% humidity. It could be roughly evaluated a positive impact, consisting in saving about 200 t/y CO2. The plant has two principal components: the biomass collecting and storing center and the centralenergy plant, while main project choices aim to simplify the plant management and to repeat easily the experience, in similar cases. In consequence, it was preferred: containers for transport; the more possible prefabricated plant components, the simpler control systems, plastic pipes etc. The main problems to afford for an economically sustainable plant are logistic, i.e. to find users sufficiently large to assure the plant economical benefit, but also the creation of a local biomass market. In both cases, it is necessary a strong engagement of public administration, to start and maintain the initial phase of the plant management. In this sense, considered the environmental and educational role of the

project, could be very important the Park Management Staff.