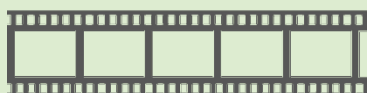


The utility company to produce heat in municipal buildings with orchard prunings in the City of Križevci

100 tons/year of prunings residues
Heating of the municipal building
and sorting room
Started in 2012



THE STORY

Križevci is the oldest town in Koprivnica-Križevci County in central Croatia, and agriculture is the main economic activity for most of the 21,000 inhabitants. Since the majority of the population lives in houses with gardens and orchards, the question of managing the amount of pruning residues still arises. The issue has encouraged the utility company in the city of Križevci to initiate the project of heating using agrobiomass residues collected from the residents of the city. The project of collecting agrobiomass residues has received national funding from the Environmental Protection and Energy Efficiency Fund. It started in 2012 and is still active.

Sustainable development, environmental protection and adequate waste management are foundations of systematic education that the city of Križevci implements in kindergartens, primary schools and high schools. Moreover, the city of Križevci frequently organizes public forums and lectures that can be attended by all interested participants on similar topics.

Heating with agrobiomass started in 2014, when the utility company Križevci purchased a shredder that connects to a truck. The truck passes through the streets according to the schedule given in time to the residents so that they can prepare the remains of agricultural biomass in advance. The shredder shreds the biomass on the street and puts the shredded biomass on the truck. When the cargo space of the truck is filled, the shredded material is transported to the recycling yard and placed on a plateau in a layer about 50 cm thick, where it dries for the next 2 weeks. Once dried, it is stored in a covered warehouse until use. The screw conveyor moves the shredded biomass to the boiler room, which heats the premises.

The power of the boiler is 150 kW for which for their heating needs, it is enough about 100 tons of agrobiomass/year. The most commonly grown fruit crops are apples, pears, plums and cherries. If the consumption was lower (due to short and warm winters), then the surplus is forwarded free of charge to other utility companies (eg Univerzal d.o.o. from the city of Varaždin).



Challenges

- During early phases, the significant challenge was to determine the right granulation of the pruning residues to prevent clogging of the heating boiler dosing system
- The current COVID-19 pandemic makes it difficult to educate in kindergartens and schools and to hold public forums to involve the local community
- Storage space for large quantities of pruning residues



Keys of success

- Acceptance of the local community and their willingness to cooperate
- Systematic education of the residents at young age
- Locally available RE resource
- Support of the local government
- Abundance of pruning residues



Technology

- 150 kW boiler manufactured by HDG (Germany)
- Transport of the agrobiomass residues to the boiler via screw conveyor
- GreenMech Arborist 19-28 shredder (British/American manufacturer) for shredding pruning residues on the street before transport to the recycling yard



Economics

- Initial investment (the shredder with new agrobiomass heating system installation) financed through 2 projects
- Initial investment is worth 130,000 €, of which 40% was financed by the national Environmental Protection and Energy Efficiency Fund and 60% by the City of Križevci
- Reduced incentive fee costs, as less biowaste ends up in landfills
- Reduced heating costs of buildings



Community

- Often presented in the Croatian media as a good practice example
- Locally supported project due to adequate disposal of agricultural biomass
- New green jobs created
- Involve the community in various events to educate about proper waste management