

# EFFICIENT METHOD OF GENERATING HEAT AND ELECTRICITY FROM AGRICULTURAL BY-PRODUCTS – Project No A07



Furnace for the combustion of biomass bales with automatic fuel feeding which enables an efficient, controlled and continuous combustion process.

## Market Opportunity

The production of electricity in Serbia and worldwide is heavily dependent on the burning of coal - in 2008, coal accounted for around 41% of electricity production. In order to reduce the harmful emissions of carbon dioxide (CO<sub>2</sub>) released during the production of electricity, there has been an increasing focus on sources of renewable energy, such as biomass.

Around 140 billion tons of agricultural by-products is produced annually – most of which is either left to rot in the field or burnt, leading to environmental damage through greenhouse gas emissions. There is the potential, however, to use this kind of waste to produce electricity.

Researchers from the University of Belgrade have developed a furnace for the combustion of biomass hay bales, with automatic fuel feeding which enables an efficient, controlled and continuous combustion process. The system uses agricultural by-products in standard bales form from fields to create thermal energy. It can be used for the production of thermal energy only (for heating and industrial purposes) but also for the combined production of heat and electricity (CHP facilities).

## The Invention

The solution is simple and cheaper in terms of investment than traditional furnaces, and is designed to provide efficient burning of agricultural waste in bale form, as such no additional preparation and manipulation of the biomass is needed. This invention overcomes disadvantages of classic furnaces as it enables control over the combustion process, and increases the total efficiency of the biomass utilization and decreases the levels of pollutants released.

## Project Status

This technology is an improved solution of an existing patent (Patent number 51771). Improvements will be patent protected.

## Research Group

This system was developed by researchers from the University of Belgrade, Institute for Nuclear Sciences "Vinca", and the Innovation Center Faculty of Mechanical Engineering.



## Commercial Status

We are looking for potential licensees and collaborators to develop and commercialise the invention.

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## About Center for Technology Transfer

Center for technology transfer was founded by the decision of the University Council with the purpose of identifying, protecting and commercializing the results of scientific, research and expert work and the protection of intellectual property of the University of Belgrade.