

**THE VARIABLE-VOLUME PRESSING CHAMBER FOR
FORMING SMALL-SIZED FUEL ROLLS FROM THE BIOMASS
OF THE AGRICULTURAL PLANT STEMS**

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After a combine harvesting biomass of stems of agricultural plants, such as wheat, rye, flax, corn, etc. is formed in the field. According to modern data, the amount of burned stems biomass is about 400 million tons annually in the world. It has been established that during the burning of plant biomass, solid particles (soot), nitrogen oxide, various carcinogens and carbon monoxide are emitted, which pollute the surface layer of ozone. This, in turn, leads to negative climate changes. Problem of utilization of stem residues is considered in the publications of Ukrainian and foreign scientists. Many researchers propose ways to solve the problem of utilization. The most appropriate simple and economically justified way of using the biomass (residues) of agricultural plant stems is the production of Small-sized Fuel Rolls (SFR) for modern heating solid fuel boilers. The determining quality indicators for SFR are the twisting density of biomass and the geometric dimensions of the roll. It is advisable to use a specially designed Variable-Volume Pressing Chamber for the production of fuel SFRs. In this case, the twisting density of the biomass and the geometric dimensions of the SFR depend on the pressure created by the rollers in chamber and the volume of a linear meter of the biomass tape that is fed into the Variable-volume Pressing Chamber.

The article presents the results of an experimental study of the operation of a Variable-volume Pressing Chamber for forming Small-sized Fuel Rolls (SFR). As a result of the conducted research, rational technological parameters of the Variable-volume Pressing Chamber were established, which allow the formation of high-quality SFR. The effect of the pressure created by the rollers in the pressing chamber and the volume of a running meter of the biomass of the agricultural plant stem fed into the pressing chamber on the density of the obtained MPRs was investigated. The obtained results show that the rational density for SFR is 100-130 kg/m³.

Based on the generalization of the conducted research, it can be stated that at the current stage of the development of agro-industrial production, the most rational way of processing the stem biomass of the agricultural plants is the production of SFR in the Variable-volume Pressing Chamber.

Keywords: biomass, density, small-sized fuel rolls (SFR), stems, variable-volume Chamber.