

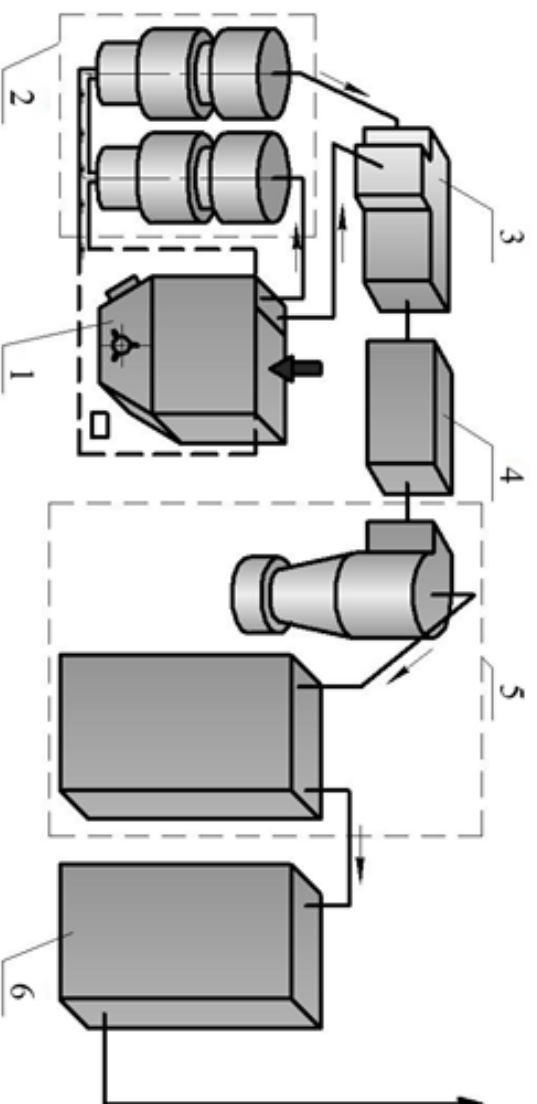
Study of technological modes of formaldehyde- containing solid waste pyrolysis

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ABSTRACT

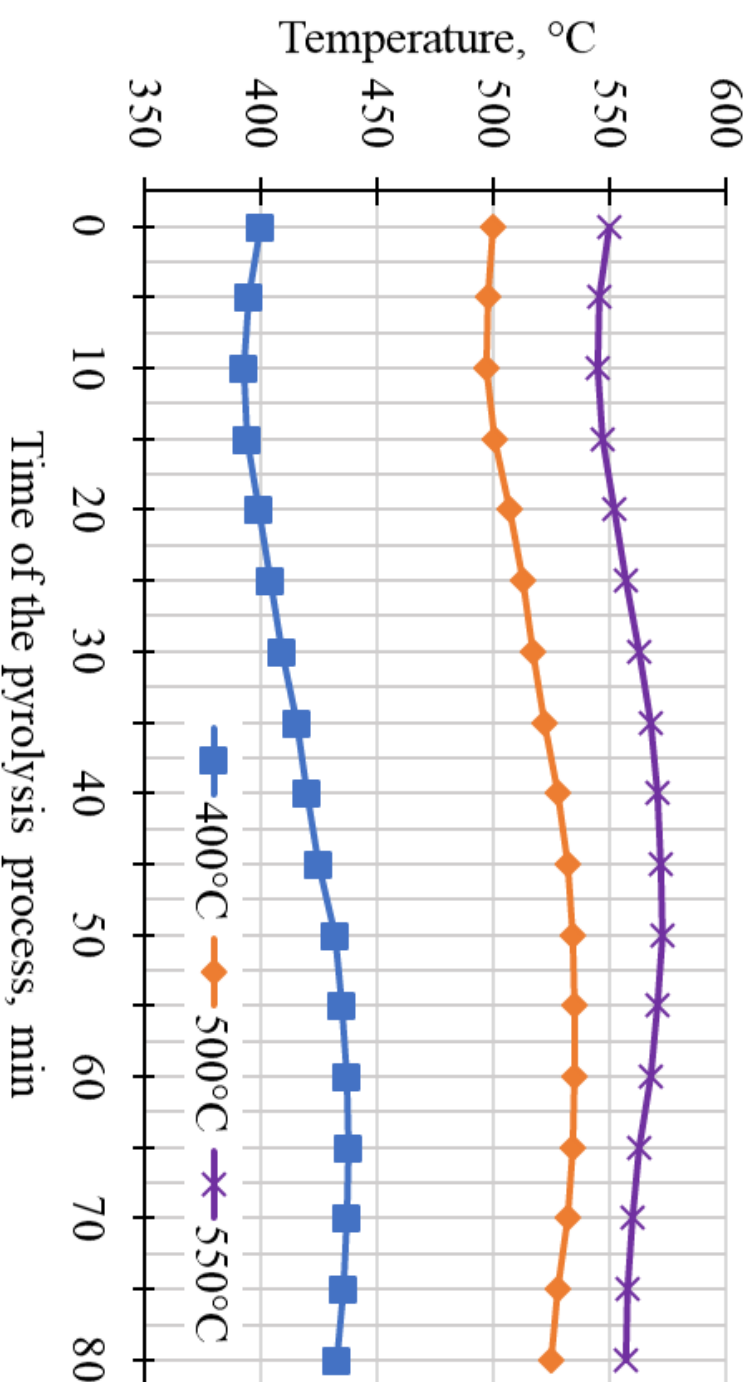
The technological modes of medium-temperature non-oxidative pyrolysis of formaldehyde-containing solid waste are studied, using the example of particle boards waste. During the study, the moisture content of formaldehyde-containing waste of particle boards and the preheating temperature of the pyrolysis chamber varied in intervals of 5...35 % and 400...700 °C respectively. It is established that the most rational value of the preheating temperature of the pyrolysis chamber is in the interval of 550...600 °C. It was found that temperatures more 600 °C do not lead to a significant decrease in the duration of the pyrolysis process of formaldehyde-containing waste of particle boards, and temperatures less 550 °C lead to a significant increase in the duration of the pyrolysis process. It is shown that the moisture content of the waste of particle boards has a great influence on the duration of the pyrolysis process, when the waste moisture content is more than 15%, the total pyrolysis process time is significantly increased

Scheme of the experimental thermal decomposition unit

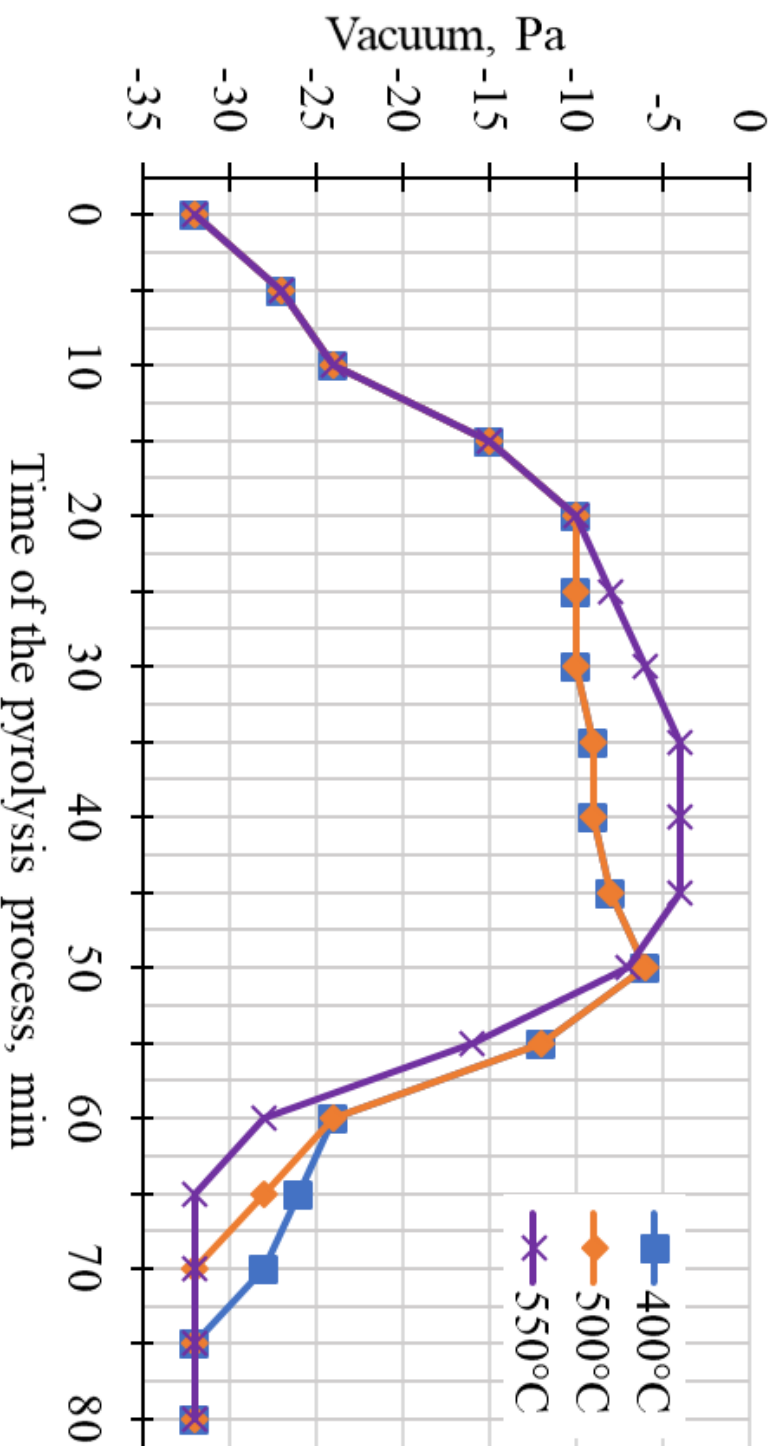


- 1 – chamber of pyrolysis
- 2 – afterburning unit of light hydrocarbons
- 3 – gas distribution system
- 4 – outgoing gases cooling unit,
- 5 – unit of rough cleaning of outgoing gases
- 6 – unit of plasma cleaning of outgoing gases

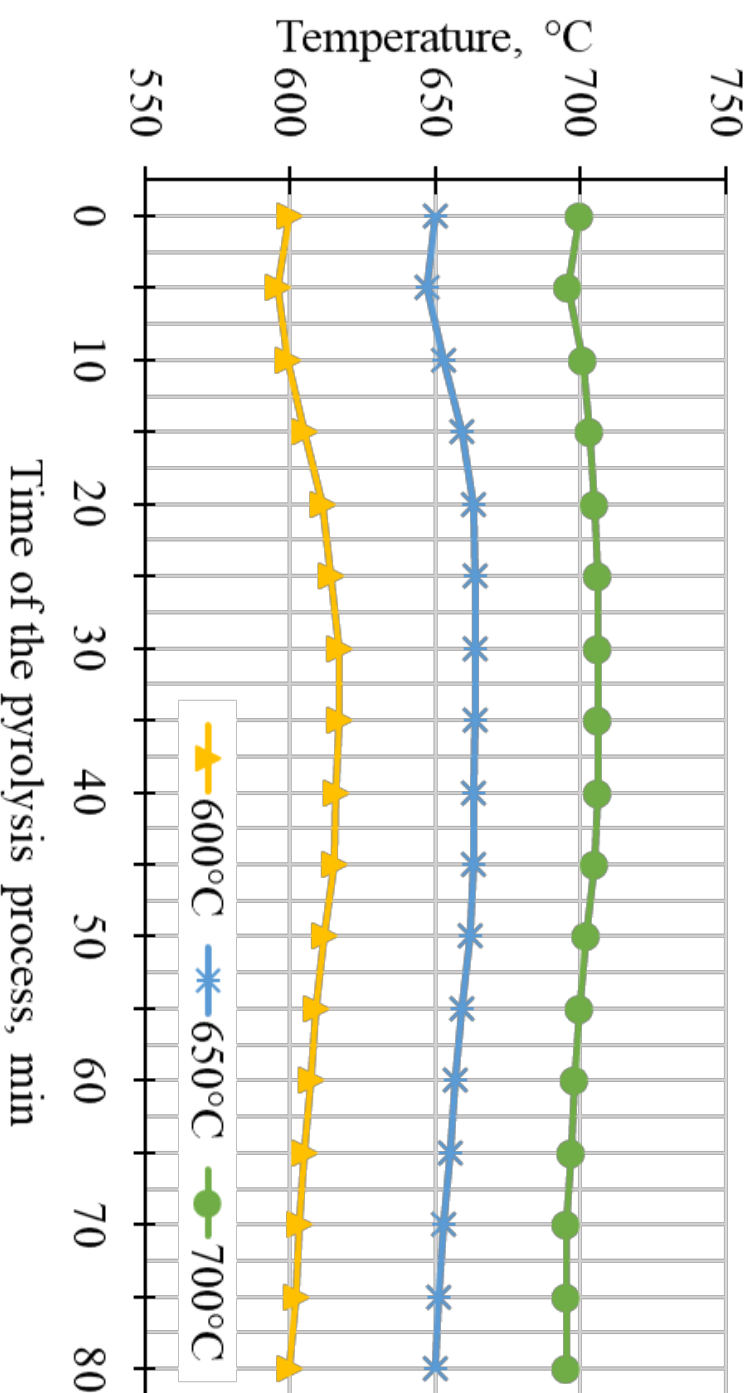
Graphs of change of temperature in the pyrolysis chamber for preheating temperatures 400, 500 and 550°C



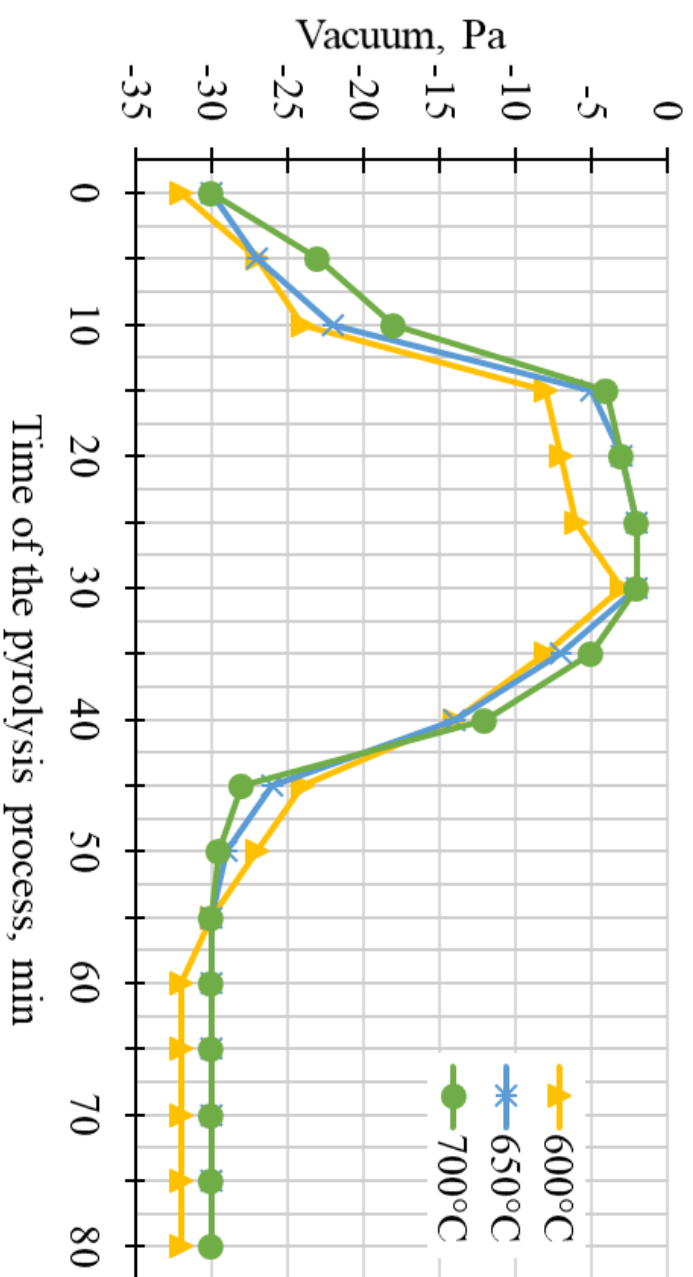
Graphs of change of vacuum in the pyrolysis chamber for preheating temperatures 400, 500 and 550°C



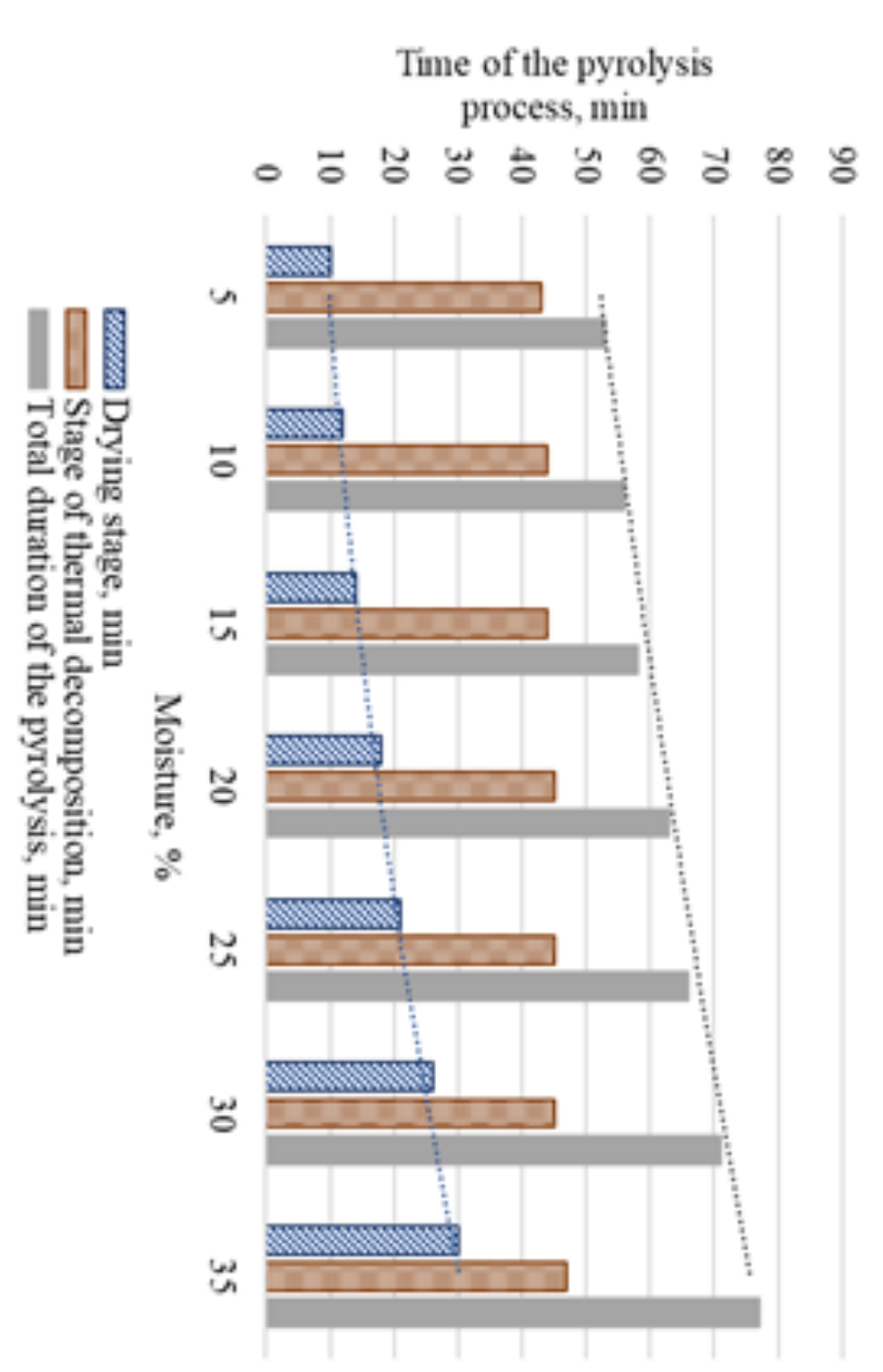
Graphs of change of temperature in the pyrolysis chamber for preheating temperatures 600, 650 and 700°C



Graphs of change of vacuum in the pyrolysis chamber for preheating temperatures 600, 650 and 700°C



Time of the pyrolysis process stages, depending on the initial moisture content of formaldehyde-containing waste of particle boards



CONCLUSION

The obtained results allow us to draw the following conclusions and recommendations for the implementation of the pyrolysis process of formaldehyde-containing waste:

- the most rational preheating temperature of the pyrolysis chamber is 550...600 °C, at these temperatures the process proceeds stably, predictably, with minimal energy costs for heating the device and maintaining the process;
- to ensure the economic feasibility of pyrolysis, it is recommended to use waste of particle boards with a moisture content of not more than 15%, waste with greater moisture content is recommended to dry beforehand.

**We are waiting for proposals, always ready
to cooperate, we guarantee the result**

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