CLAIMS

1.

Method for thermal pretreatment of organic material, in particular, biomass for conversion to energy, said method incorporates a first preheating step with a preheating tank (4), a hydrolysis step with a hydrolysis reactor (5) and a pressure reduction step with a pressure reduction tank (6),

- supply organic material (1) with a dry matter content of 5 – 40%, preferably 10 – 25 % to a preheating tank (4),
- heat the organic material (1) in the preheating tank (4) with flash steam from a pressure reduction tank (6),

c h a r a c t e r i s e d i n that the method comprises the following steps:

- provide a vacuum in the hydrolysis reactor (5) by the supply of cold water (2A) in the hydrolysis reactor (5), open the supply valve (7) between the preheating tank (4) and the reactor (5), transfer heated organic material from the preheating tank (4) to the reactor (5) with the help of vacuum and gravity, and fill this essentially full,
- measure the pressure in the reactor (5) with the help of a sensitive high-frequency pressure sensor that measures the pressure and analyses pressure oscillations in the reactor to detect the level,
- recycle surplus organic material from the reactor (5) to the preheating tank (4) with the supply of steam (3A) to the top of the reactor (5) until the pressure sensor registers that a required level in the reactor (5) is reached,
- close the supply valve (7) between the reactor (5) and the preheating tank (4),
- supply new organic material (1) to the preheating tank (4),
- heat the organic material in the reactor (5) by the supply of steam (3B) and maintain the desired temperature for a sufficient length of time,
- open a blow valve (10) between the reactor (5) and the pressure reduction tank (6) and transfer the treated organic material from the reactor (5) to the pressure reduction tank (6) and obtain a steam explosion as a consequence of the pressure difference between the reactor (5) and the pressure reduction tank (6),

- lead the flash steam that is released in the steam explosion in the previous step via a steam return line (9) to under the liquid level in the preheating tank (4) and recover the heat by steam condensation in the organic material in the preheating tank (4),
- close the steam return line (9) and open a steam return line (11) from the pressure reduction tank (6) to above the liquid level in the preheating tank (4) to further reduce the pressure difference between the pressure reduction tank (6) and the preheating tank (4) beyond the pressure which the liquid column in the preheating tank (4) represents.

2.

Method according to claim 1,

c h a r a c t e r i s e d i n that it increases the contact surface between the organic material (1) that is supplied to the preheating tank (4) and the steam in the preheating tank (4).

3.

Method according to any of the preceding claims,

c h a r a c t e r i s e d i n that the organic material (1) in the preheating tank (4) is heated to typically 80-100 ^{o}C.

4.

Method according to any of the preceding claims,

c h a r a c t e r i s e d i n that the liquid level in the reactor (5) is detected by high frequency registering of the pressure in the reactor (5) combined with pressure oscillation analysis.

5.

Device according to any of the claims 1 to 4,

c h a r a c t e r i s e d i n that the preheating tank (4) is connected with the reactor (5) via a pipe (16) fitted with a valve (7), said pipe (16) sticks some distance down in the reactor (5), said lower end of the pipe (16) defines a filling level in the reactor (5).

6.

Device according to any of the claims 1-5,

c h a r a c t e r i s e d i n that the pipe (16) sticks down vertically in the reactor (5) or sticks into the reactor (5) through an upper sidewall thereof, the distance between the end of the pipe (16) and the bottom of the reactor (5) defines a filling level in the reactor (5).