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THE FRICTION EFFECTS IN THE SONIC CIRCUIT FORMED BY THE BIG CAPACITY CYLINDER AND THE FRICTION RESISTANCE

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ABSTRACT
In this paper we present the application of thermic effect on sonicity's theory into practice. The sonic actions permit the best combination of facilities offered by the processing of electrical signals (reduces energy) with sonical actions of great power and efficiency, which give the possibility of eliminating the beigest parts of a classical hydraulically system (hydraulic reservoir, valve of regulating the debit), resulting on action which combine the opportunities offered by the processing the signals of low energy and the compact sonic actions, with high efficiency, with reduced volume, so very economic. In the paper we present the effect of the friction using the pressure sonic and the sonic flow by one sonic installation. This installation is formed by one serial cylinders and one resistance of frictions. The effects made in this case are the caloric effects, showed by the upper of the temperature in the friction resistance.
Keywords: sonic pressure, temperature, sonic flow, sonic circuit, friction, resistance series assembling.

1. GENERAL NOTIONS
The science which is based on the application of elastic proprieties of matter at energy transmission has the name of *sonic science* or *sonicity*. The sonicity is different by the hydraulic in the sneeze of this last one, in practical applications considered fluids as being practically incomprehensible.
The energy in the new system is transmission from one point to other point, at a distance which could be considered considerable, with the help of imparting some periodical variations of compression which produced longitudinal vibrations in solid, liquid or gaze columns. The energy with is transmitted through this periodical pressure and volume vibrations in longitudinal direction could be characterized as power transmission through *sonic waves*.
The aim of the experimental study is to obtain the caloric effect as succession of the transmission of the caloric effect at distance by vibration (through the sonic wave in liquids).
This experimental study used the installation present by the figure 1, to start from different frequency of the drive motor the ram of the sonic generator. For same frequency are use three measures of the static pressure in the installation with the value.

2. THE SONIC INSTALATION WITH ONE BIG CONDENSERS AND THE FRICTION RESISTANCE

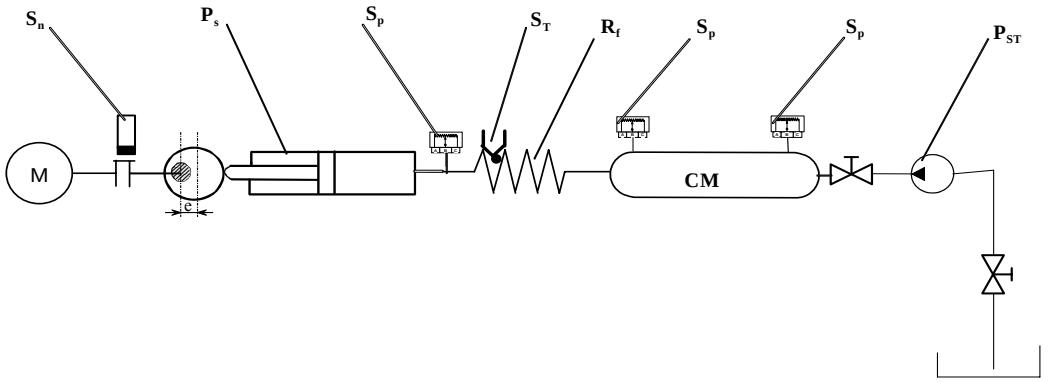

Figure 1. The sonic installation by big cylinder capacity and one friction resistance

In figure 1 we present the installations where the big condensers are connected in serial with the friction resistance. The installation is formed by sonic generators who are connecting by the friction resistance R_f. with a pipe, this resistance is connected also by a pipe to the capacity cylinder.

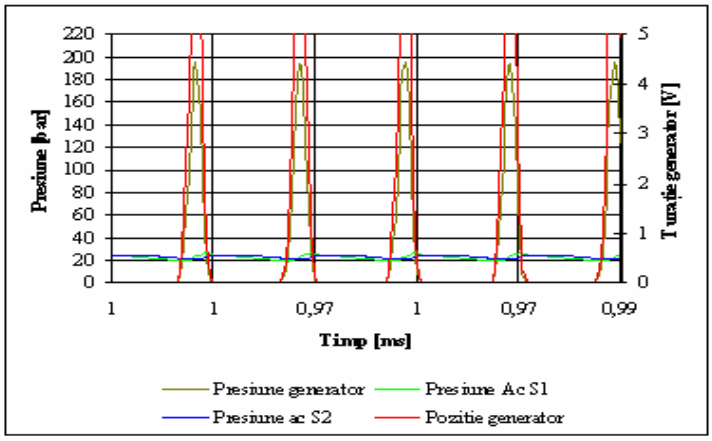

Figure 2. The evolution in time of the pressure for the installation

In the experimental graphics we are noted with:

ΔG – the variation of the generator pressure;

ΔS_1 – the variation of the pressure obtained by the first sensor of pressure place to the la left of the capacity cylinder;

ΔS_2 – the variation of the pressure obtained by the right sensor of pressure placed to the capacity cylinder;

T – temperature.

To evidence the effects of the friction we can study the effects of the sonic pressure in the system. For this we can have charge the system with static pressure. For same static pressure (0,25 bar, 0,5 bar) we obtained the diagrams for this charges.

After the work of the experimental dates obtained from three sensor placed in the system, is resulting the primary histograms represented in the figure 2, this show the evolution of the generator pressure and also the pressure to the extremity of the capacity cylinder. Also we can see the revolution of the generator. The evolution of the pressure curve notice the existence the phase's difference by the generator pressure and the pressure of the capacity cylinder.

In the figure 3 and 4 we present the diagrams for the 0,25E+05 Pa static pressure and n = 1667 rot/min, for the begin speed of the electrical motor. The temperature after one minute is up to 75ºC. The pressure unregistered by the pressure sensor situate to the cylinder, was unregistered in 30 seconds one equal pressure, after the sensor situated to the end of the friction resistance are unregistered the upper of the pressure and the difference of them carry to 50E+05 Pa. The difference

n = 1667 rot/min p_s = 0,25E+05 Pa

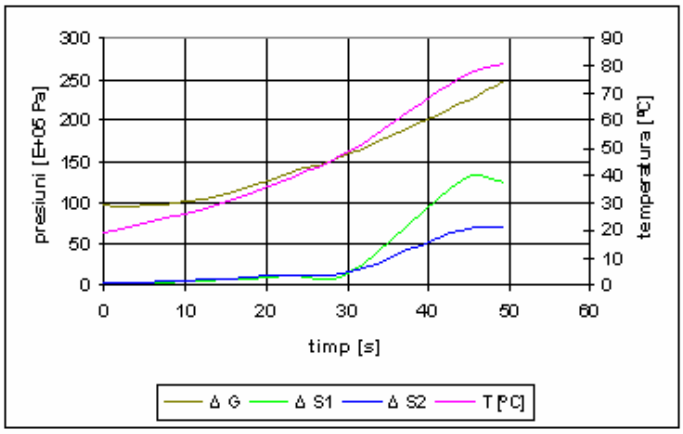

Figure 3. The variation of the pressure and temperature in the time function to the static pressure 0,25E+05 Pa

p_s = 0,25E+05 Pa

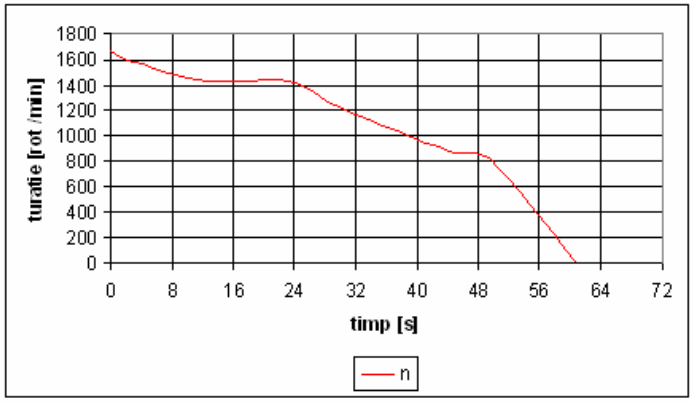

Figure 4. The variation of the speed in the time function for the static pressure 0,25E+05 Pa

between the sensor, show the down of the cylinder situate in continuation of the friction big pressure appeared in the installation the pressure (to the generator and the end of the resistance) become to 120 E+05 Pa. Owing the electrical motor was deaf short.

In the figure 5 and 6 we present the variation of the pressure and the temperature in the time function, and also the speed for the static pressure 0,5E+05 Pa. We observe the pressure by the pressure sensors situated to the cylinder are equal and upper in time to 50E+05 Pa, the pressure to the generator arrive to 190E+05 Pa, moment as deaf short the electrical motor. If at the begin speed was n = 1500 rot/min the heat phenomenon owe of the friction in the resistance spell to rapidly upper to the temperature to him surface arrived after 40 seconds to the 85ºC.

n = 1667 rot/min **p_s = 0,5E+05 Pa**

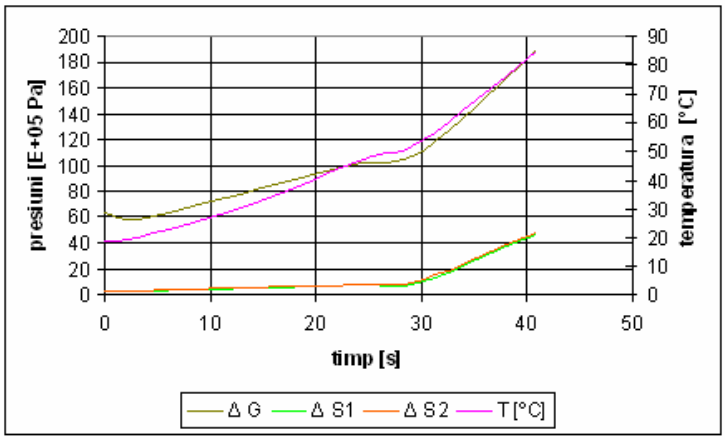

Figure 5. The variation of the pressure and temperature in the time function to the static pressure 0,5E+05 Pa

p_s = 0,5E+05 Pa

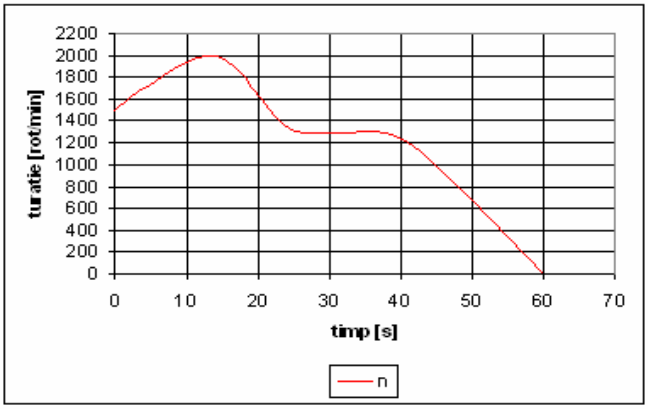

Figure 6. The variation of the speed in the time function for the static pressure 0,5E+05 Pa

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