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THE FRICTION EFFECTS IN THE SERIAL SONIC INSTALATION FORMED BY A 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 procesing of electrical signals (reduces energy) with sonical actions of great power and efficiency, which give the possibility of eliminating the bigest parts of a clasical hidraulical system (hidraulic 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 reduces volume, so very economic. The paper proposes to determined the thermic energy (thermic effect) by action a system with alternative debits (sonic).
Keywords: sonic pressure, sonic flow, sonic circuit, friction resistance.

1. GENERAL NOTIONS ABOUT OF THE SONICITY THEORY

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 produce 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 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 practical applications considered fluids as being practically incomprehensible.
For the transmission of the power through mechanic waves, it is necessary to realize through which vibrations from the transmitting line could be received and converted for use.
If we considered a mechanism of rod-crank which is rotating with a constant angle speed, piston (P) is moving alternative in pipe (c), figure 1, full with liquid. At each run of moving forward of piston is forming a high pressure zone, zones that are circulating along the tube, moving from piston (black zone); between two neighbouring zone of high pressure is a low pressure zone. So, in every point of pipe, the pressure will evolve harmonic.
The uniform distance (along the pipe) where the values are repeating, is wave length λ of vibratory movement from liquid

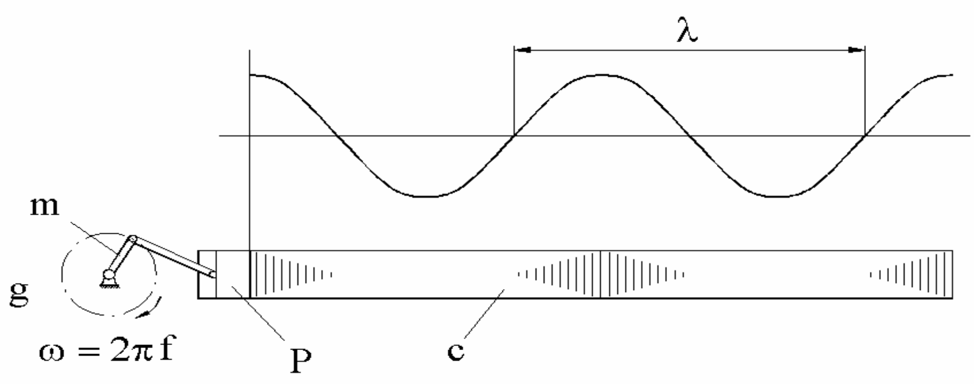

Figure 1.The mechanism rod crank for the sonic wave

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

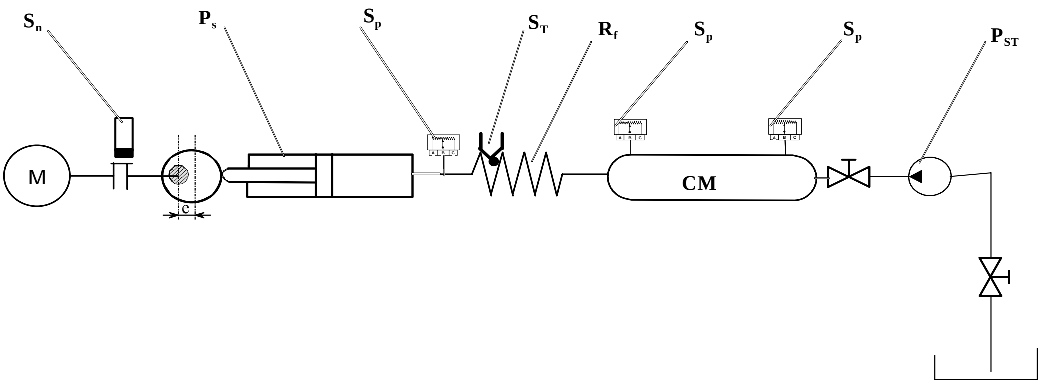

Figure 2. The sonic installation by big cylinder capacity and one friction resistance

In the figure 2 are present the installation were the big condenser 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.

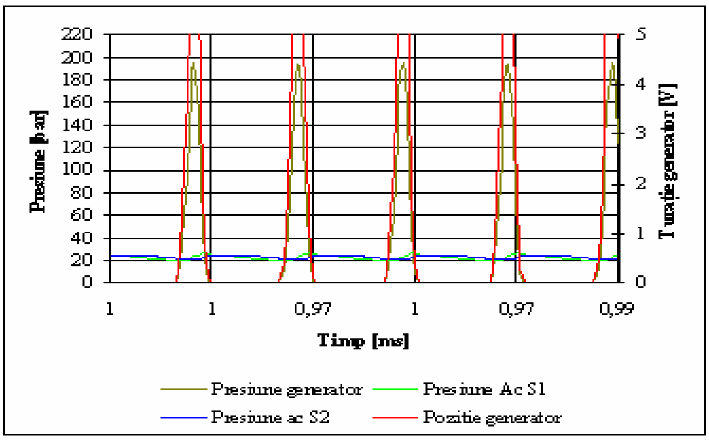

Figure 3. The evolution in time of the pressure for the installation

In the experimental graphics we are noted with:

ΔG – the variation of the generator pressure;

ΔS₁ – the variation of the pressure obtained by the first sensor of pressure place to the left of the capacity cylinder;

ΔS₂ – 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 bars) we obtained the diagrams for this charges.

After the work of the experimental dates obtained from the three sensor place in the system, are results the primary histograms represented in the figure 3, 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 to notice the existence of the phases difference by the generator pressure and the pressure of the capacity cylinder (figure 4).

n = 320 rot/min **p_s = 0 Pa**

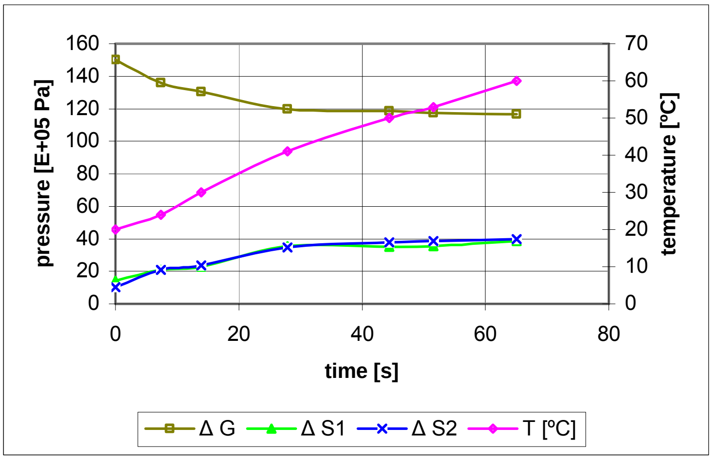

Figure 4. The variation of the static pressure and temperture to 0 Pa

ps = 0 Pa

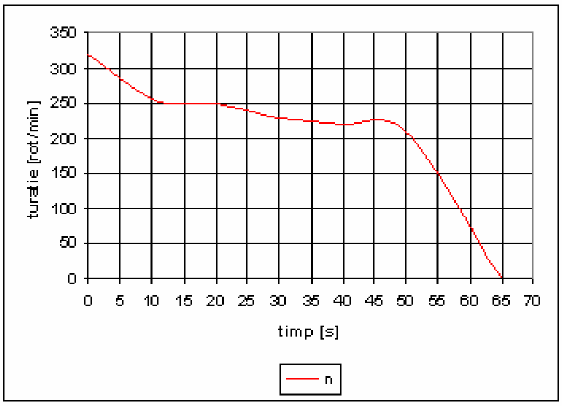

Figure 5. The variation of the speed in function by the static pressure 0 Pa

In figure 4 and 5 we present the diagrams for the 0 Pa static pressure and n = 320 rot/min, for the departure speed of the electrical motor.

We observed from the beginning that the generator pressure was 150 bars and are down to 115 bars. The pressure to the end of the cylinder are approximately equal (10 bar), establish to 40 bar. The temperature shows the 60ºC after 65 seconds to departure of the installation. After 65 seconds the temperature are establish. The down of the pressure per resistance be 75 bars.

3. CONCLUSION

All are working normal if don't create in the installation one super pressure who determine the stop of the electrical motor whom speed is down to 320 rot/min to 0.

The speed of the motor down, owing the oil dilatation with the temperature, demonstrated by the upper of the volume $\Delta V = V_0 \cdot \alpha \cdot \Delta T$ also the body oil down to the upper of the temperature who got the better pressure in the system.

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