SONIC EFFECTS OF A UNCONVENTIONAL HEAT INSTALLATIONS

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Abstract:*The present work aims, through the theme addressed, to make some contributions to a better knowledge of the problems related to the study of theoretical and experimental sonicity in heat transfer.*
Based on these considerations, it has built a stand allowing implementation of the theory of sonics actuator systems with harmonic flow rates to send sonic energy and remote to turn into heat by friction between the phenomenon of the column of fluid friction and resistance.The stand consists of hydraulic pump, capacitors, tubes and resistance of friction.In the present work the experimental version of the installation is the serial installation: small condenser monted after friction resistance

Keywords*: sonic pressure, sonic flow, sonic capacity, friction resistance, condenser..*

1.Introduction

The present work aims, through the theme addressed, to make some contributions to a better knowledge of the problems related to the study of theoretical and experimental sonicity in heat transfer.
Sonic enables the actuators make optimum facilities offered by ease of processing electrical signals (low energy) actuators make.sonic with high power and efficiency, which give the possibility to eliminate the biggest parts of a classic waterworks (reservoirs, hydraulic valves, differential pressure control, flow path, etc.), resulting in an actuator that combines the best opportunities offered by processing technique of low-power signals and sonic compact actuators make, high-efficiency, low-volume, so very economical.
The great inventor Gogu Constantinescu has spent an enormous energy to convince the world that liquids are compression connectors with a lot more than they accept, and this property is essential for the propagation of vibrations in liquids.
As has been said right from her appearance, the sonics is in correspondence with electricity, and sonic transmissions are similar to AC electrical transmissions.Considering the above analogy, compressing liquids is equivalent to proving the charge build-up in a capacitor.
Sonic transmission is achieved by vibration, and at the beginning of the 20th century, believed that the energy of vibration is a degrading form of energy that can not only turn into heat. It was unthinkable that in a system of vibration can get work with high efficiency.
Based on these considerations, it has built a stand allowing implementation of the theory of sonics actuator systems with harmonic flow rates to send sonic energy and remote to turn into heat by friction between the phenomenon of the column of fluid friction and resistance.
The stand consists of hydraulic pump, capacitors, tubes and resistance of friction. To find the version with maximum efficiency experiments were made in several versions of the stand:

1. stand consisting of: pump, resistance and a capacitor connected in series;
2. stand consisting of: pump, stamina and two capacitors fitted in parallel;
3. stand consisting of: pump friction resistance and two capacitors fitted in the series;
4. stand consisting of: pump friction resistance and capacitive with two cylinders mounted in the extension.

2. Experimental research

Experimental research focused on getting the calorie effect of heat transmission through the vibrations (sonic waves in fluids). Such research has been conducted on the stand, starting from the different frequencies of the propulsion engine piston sonic generator. For each frequency were conducted three static pressure measurements in the plant having the values(0; 0,25;0,5; 0,75; 1; 1,25; 1,5) bar.

In the present work the experimental version of the Installation in the series:Small condenser monted after friction resistance.

The stand on which the trials were made is the one shown in Figure 1. Sonic generator from leaving a pipe which connects withthe resistance of friction "R_f" which is connected to the small condenser whose volume is V = 1462,411 10^3 mm^3.

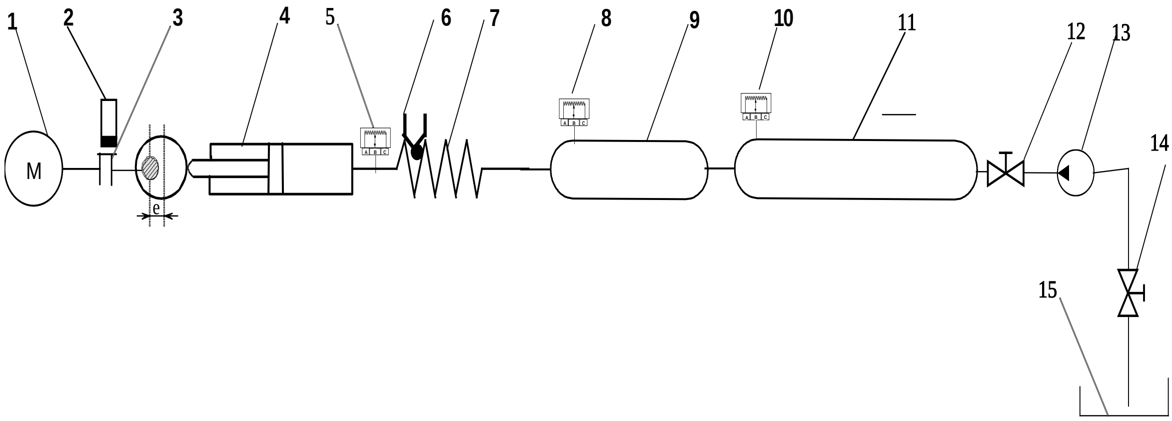

Fig. 1 Scheme of experimental stand

1. electric motor; 2- proximity sensor; 3- elastic coupling;

4- Sonic pump; 5, 8, 10- pressure sensors; 6- temperature sensor; 7- resistance of friction; 9- small capacitor; 11- large condenser; 12, 14- tap, 13- pump; 15- oil tank.

After processing files with experimental data obtained from the three sensors fitted in the system is the result of primary form of histogram shown in figure 2. This illustrates the pressure generator and developments at the two capacitors. Also you can see the speed of the generator (via view-position curve generator). Pressure curve evolution reveals a phase shift between the generator and pressure the pressure in the capacitors.

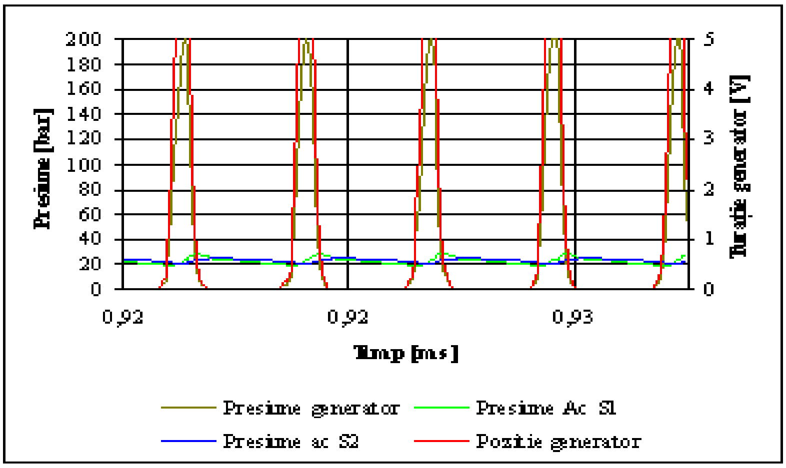

Fig.2. The evolution in time to mount pressure withsmall capacitor in series

Research has been conducted on the arranged as in Figure 1.
Figure 3 and 4 have represented diagrams of pressure and temperature variation in function of time and speed for static pressure of 0 Pa. pressures on those two cylinders not capacitive changed instead to pressure generator remains constant around smaller 40E+05 Pa.

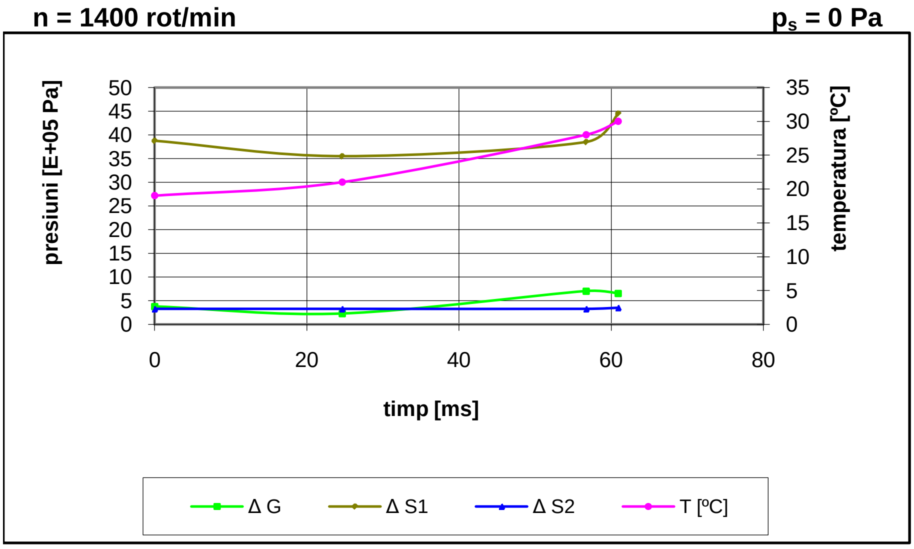

Fig.3 Chart of the variation of pressure and temperature depending on the time of static pressure of 0 Pa

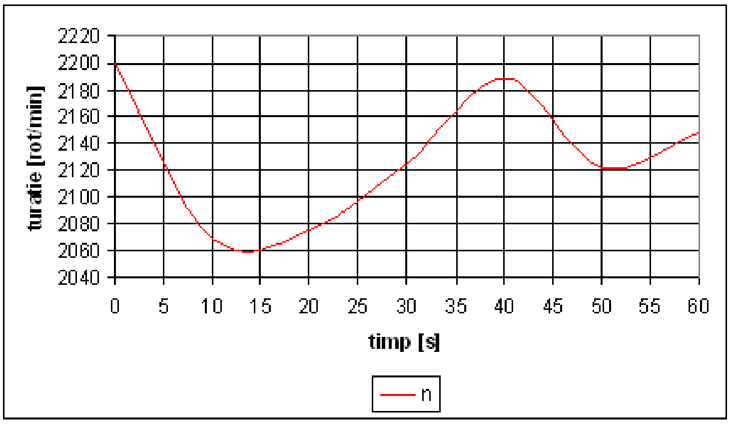

Fig.4 Diagram speed variation depending on time for static pressure 0 Pa

In the graphs of resultsnote:

- ΔG- sonic's pressure variation at sensor pump 5;
- ΔS1-pressure variation obtained from the pressure sensor 8;
- ΔS2-pressure variation obtained from the pressure sensor 10;
- T-temperature.

Although the speed was very high temperature of 2200 rpm failed to exceed 30° C, there may be air in the plant whereas after a period of time it was stopped by the electric motor.
In Figure 5 and Figure 6 he represented diagrams of pressure and temperature variation in function of time and speed for static pressure of 0,5E+05 Pa. In this situation it becomes apparent that pressures on pressure sensors are on cylinders are approximately equal and constant having a pressure of about 50E + 05 Pa. Pressure generator is labile, and after about 50 got a jump up to 250E+05 Pa, at which point the engine shutdown occurs. The temperature does not exceed 48°C until turning off the electric motor.

n = 800 rot/min **p_s = 0,5E+05 Pa**

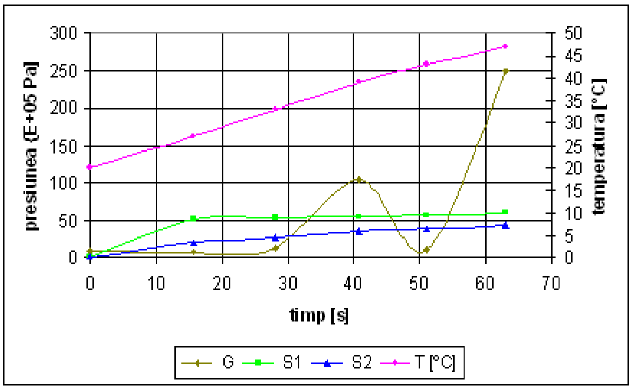

Fig. 5.Diagram of variation of pressure and temperature depending on the time of static pressure of 0,5E+05 Pa

p_s = 0,5E+05 Pa

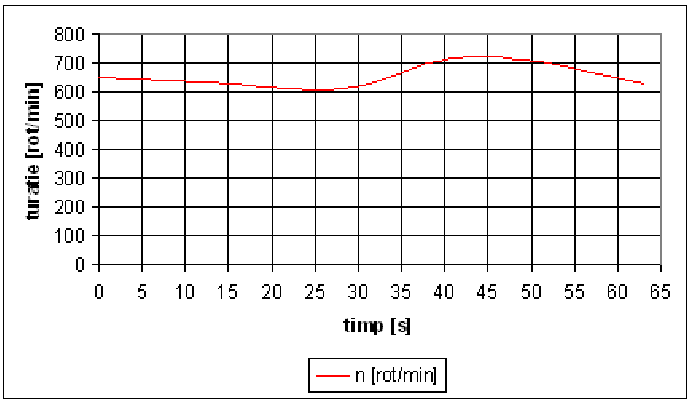

Fig. 6.Diagram speed depending on variationfor static pressure 0,5E+05 Pa

n = 800 rot/min **p_s = 2 E+05 Pa**

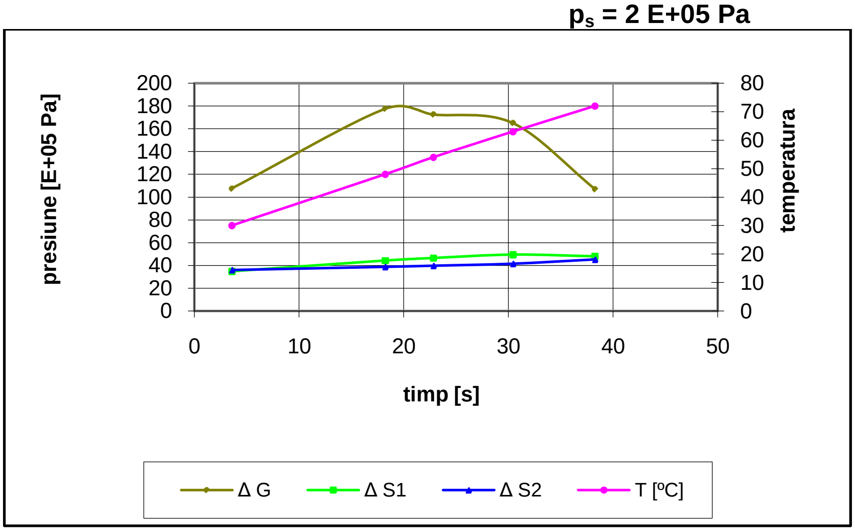

Fig.7.Diagram of variation of pressure and temperature depending on the time of static pressure of 2E+05 Pa

p_s = 2E+05 Pa

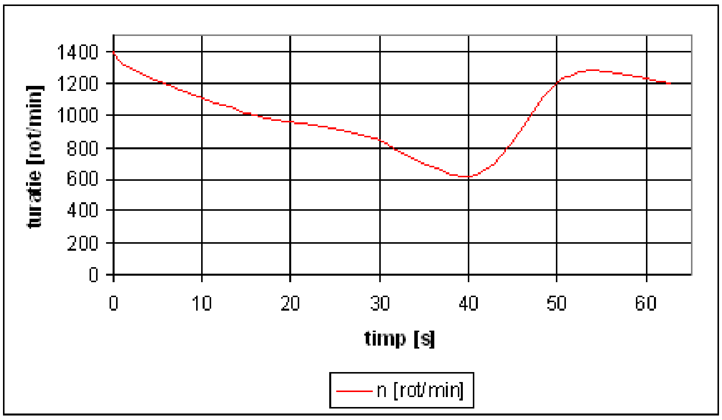

Fig. 8 Diagram speed depending on variationfor static pressure 2E+05 Pa

p_s = 2E+05 Pa

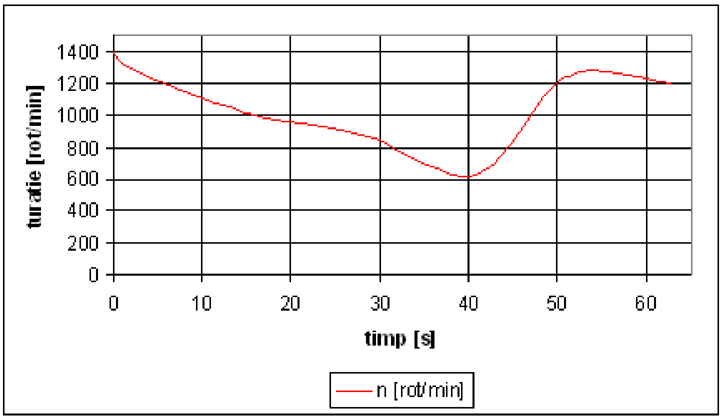

Fig. 8 Diagram speed depending on variationfor static pressure 2E+05 Pa

Figure 7 and 8 he represented diagram of pressure and temperature variation in function of time, as well as the stages for static pressure of 2E + 05 PA. The speed was 1400 RPM. the pressures the two cylinders are approximately constant and equal to the smaller 40E+05 Pawhile the pressure generator increases continuously up to 150E+05Pa, after which there is a drop in pressure taking place and stop the engine electric. The maximum temperature reached is 70 °C.

3. Conclusions

From the analysis of the above charts can be drawn the following conclusions:
-the largest influence on the increased pressure and temperature in the plant a revolution, which has the higherpower the higher the faster the pressure and temperature;
-static pressure in the plant to a lesser extent influences the evolution of temperature in friction resistance;
-the pressure in the cylinder increases much faster than in the case of linking in large cylinder series;
-because the electric motor turns off after a short period of operation (about 1 min) is not recommended for the standconsists of a resistance of friction and a cylinder.

Experimental results achieved with other pressures and revs were not significant strengthening the conviction not to recommend us connections in this form.

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