

THE EXPERIMENTAL STAND OF ENGINES WITH GASOLINE INJECTION

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Abstract:

With help to present parameters in this working are realize on the stand engine: the characteristic from speed at all load, the characteristic from speed at partial load, the combustible consumption's at totally task, the combustible consumption's at partially task In the writing "The characteristic's for revolution at partial's of engine load type 106-10 with injection for gasoline ", the experimental test of settle proposal was determine the performance dynamics and combustible consumption. The equipment for to try is more feet that is existing now. Was using equipment for test of Engines with Spark lightning with help injection of petrol that is present in number one imagines.

Key words: gasoline injection, effective power, totally task, partially task, angle of lighting.

1. INTRODUCTION

The general objective is the development of the infrastructure by the way of acquisition equipment and complementary calculation systems, including the dedicated soft, instruction services etc.), which allow the researchers to work under conditions which assure performance, having the same devices and equipment as that existing in the European laboratories which have similar profiles. The real objective is development of the research infrastructure for internal burning engines, motor engines, tractors, and agricultural machinery. The specific objective is the growth of the usage rate of the existing research infrastructure, the development of informing and scientific documentation infrastructure and carrying out services towards third persons using the purchased equipments. Among the objectives specific for the research objectives we can mention: refining the internal combustion engines in order to reduce fuel consumption and gases evacuated by the engines of the automobiles and tractors; research regarding experimenting non-conventional fuels, especially bio-diesel for automobiles and tractors; research regarding conversion systems of renewable energies (geothermal thermal energy, solar energy, wind energy etc.); research regarding new types of engines with a mono-regime functioning; research regarding the usage of biogas at the internal combustion engines in agriculture; research regarding the efficiency of the tilling of the soil for agricultural and horticultural in a classical and ecological agriculture cultures; studies and research methods to control and reduce the phonic and chemical pollution at engines with internal combustion. The derived objectives lead to the development of research infrastructure. There will be made equipment and device purchasing, as well as performing works like (appropriating interior space, cleaning, re-dividing of the multifunctional laboratory for Agricultural Mechanization from the University from Oradea having the total usable surfaces $24 \times 16 = 384 \text{ m}^2$ according to the figure above). By means of the purchased devices, we can sketch the indicated diagrams for the engines starting with their project and applicative research, and those operating, in this way being possible to determine all technical-economical and operating parameters of the tractors. We will try, check, and adjust the engine parts from motors, tractors, and agricultural machinery. We intend to buy equipment

for testing engines made of: trying stalls equipped with instruments and devices for fuel supply and cooling water, pipes for gas evacuation, instruments, and devices for making these measurements. In order to determine the dynamic and fuel consumption performances we will purchase a stall equipped with an electric brake with eddy currents R&D AVL - Austria with all peripheral equipments. The laboratories instruments for determining the polluting products, stalls with rolls having brake with eddy currents and a set of detachable with insertion SCHENCH 364/260, gas analyzer AVL Austria, which works on the non-dispersive absorption principle in specter of infrared radiations, is used for the analysis of engine evacuated gases. We will buy stalls, devices, and testers used for trying the engines, tractors and agricultural machineries presented in the list of equipments necessary to carry on the project. We will purchase devices, office equipment and furniture, testing and consulting services, technical assistance including assembling, functioning, maintenance, repairing and instructing.

General Objective: The general objective of the project is to develop research capacities, the opening of the research-development-innovation system towards the international scientific environment, and connecting it to the national socio-economic environment. The development of research development innovation is made by the way of acquisition of research development innovation equipment and contiguous goods (complementary calculation systems, including the dedicated soft, instruction services etc.), which allow the researchers to work under conditions which assure performance, having the same devices and equipment as that existing in the European laboratories which have similar profiles. The real objective is development of the research infrastructure for internal burning engines, automobiles, tractors and agricultural machinery.

Specific objectives The development of the research infrastructure in the prior research domains established through the National Strategy research development innovation; the growth of the usage rate of the existing research infrastructure; the development of informing and scientific documentation infrastructure; reevaluation of the potential and of research development innovation resources in the region; sustaining the science-society dialogue; participation of the research development innovation entities to international research programs; participation and representing Romania at international scientific and technical organizations. Among the specific objectives for the research objectives we can mention: refining the internal combustion engines in order to reduce fuel consumption and gases evacuated by the engines of the automobiles and tractors; research regarding experimenting non-conventional fuels, especially bio-diesel for automobiles and tractors; research regarding conversion systems of renewable energies (geothermal thermal energy, solar energy, wind energy etc.); research regarding new types of engines with a mono-regime functioning; research regarding the usage of biogas at the internal combustion engines in agriculture; research regarding the efficiency of the tilling of the soil for agricultural and horticultural in a classical and ecological agriculture cultures; studies and research methods to control and reduce the phonic and chemical pollution at engines with internal combustion. The results will be measured through indicators which reflect the impact of the investment in the research development innovation system:

Derived objectives: the development of research infrastructure: modernizing, consolidating, extension, and conservation of the existing infrastructure and existing research development devices in the universities, laboratories, high performance equipments, great size databases. The devices from the multifunctional laboratory for agricultural mechanization are essential, as long as we want agriculture in our country to be internationally competitive, we need to have the necessary devices to form new generations of researchers in the agricultural mechanization domain, who, by a close co-operation with researchers from agricultural research centers to develop relevant research projects on national and

international level in agriculture. By means of the purchased devices, we can sketch the indicated diagrams for the engines starting with their project and applicative research, and those operating, in this way being possible to determine all technical-economical and operating parameters of the tractor. We will try, check and adjust the engine parts from motors, tractors and agricultural machinery, namely the greasing and cooling system, the engine supply pump, the ignition system, the starting system, the electric equipment of tractors and agricultural machinery, the hydraulic system, the trying and grinding of these machineries, the power balance of the tractors, to determine the traction force. We will buy test benches, devices, and testers used for trying the engines, tractors and agricultural machineries presented in the list of equipments necessary to carry on the project.

We will purchase devices, office equipment, and furniture, testing and consulting services, technical assistance including assembling, functioning, maintenance, repairing and instructing.

2.THE TESTING PRESENTATION

At the engines stall have been brought in order to try a Mono-Motronic [Delanette,1989], injection system engine type 106-20 equipped with carburetor 28/30 DCI. The injection's and lighting map drawings used at the engine with fuel injection expert meted by the author constitute some networks of characteristics with are put in the memory under the numerical form into an electronic module. They do not alter net much on the whole duration of the engine's work-ink.

The electronic variation of the advance at the lighting has two important advantages the relative information to the revolution speed is directly taken from the shaft engine thank to in inductive sound with a highly precision of measure and the using of a map drawing allows to obtain adjustment of the advances angle at the lighting. The testing have carried on retiring to the followings the engine's running in; the determination of the dynamic and of consumption's .

At the engines stall have been brought in order to try a Mono-Motronic injection system engine type 106-10 equipped with carburetor 28/30 DCI. The injection's and lighting map drawings used at the engine with fuel injection expert meted by the author constitute some networks of characteristics with are put in the memory under the numerical form into an electronic module. They do not alter net much on the whole duration of the engine's work-ink. The electronic variation of the advance at the lighting has two important advantages the relative information to the revolution speed is directly taken from the shaft engine thank to in inductive sound with a highly precision of measure and the using of a map drawing allows to obtain adjustment of the advances angle at the lighting. [Bataga, 1996] The testing have carried on retiring to the followings the engine's running in; the determination of the dynamic and of consumption's performances according to SR ISO 1585/1998 and the carburetor variant; the determination of the STAS 6635/87 and of the combustible consumption's performance according to; in the fuel injection's variant; the comparison of the obtained results in the two equipment variant presented in the figure1. [Blaga,2000];[Blaga,2005].

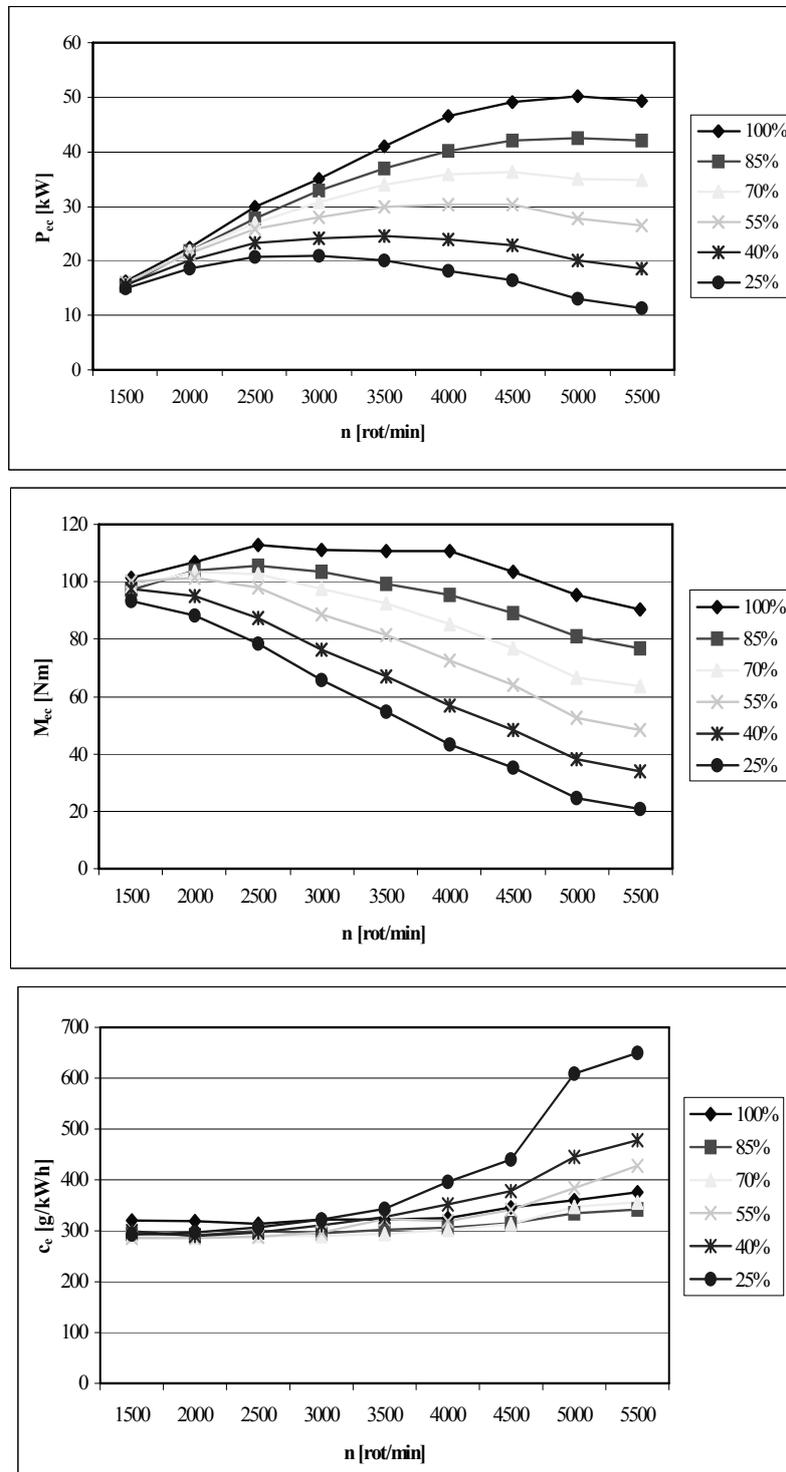


Fig.1. The rotation characteristic's at partially task. Engine's type 106-10 with engine injection

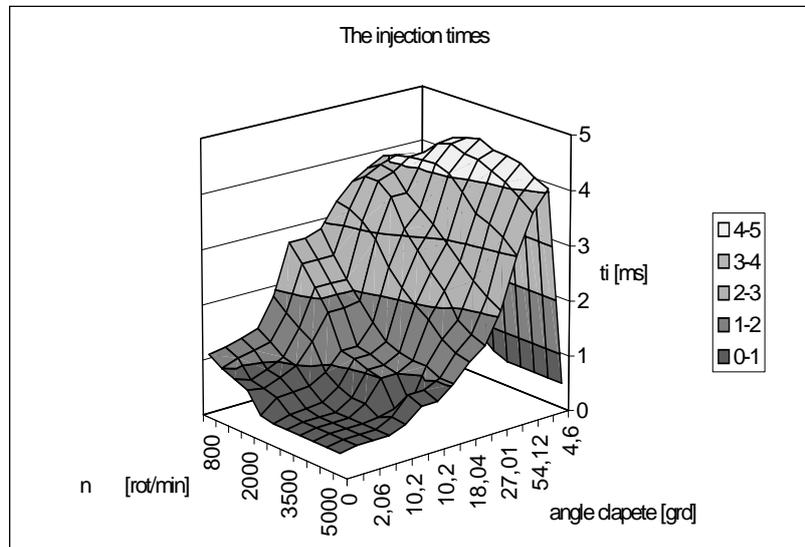


Fig. 2.The characteristic for injection's times

3. CONCLUSION

For the equipped engine's with the model supposed by the author, have been raised up on the engine stall, the main cartograms for the injection's times, at totally and partially task [Grünwald,1980] and the enrichment's coefficient at the totally task which are presented in the figure no 5 .[Blaga,2000]

4. REFERENCES

1. Bătagă, N., *Driving with inward alight*. The Didactic Publishing house and Pedagogical, Bucharest 1996.
2. Bătagă, N., *Driving with inward alight*. The Didactic Publishing house and Pedagogical, Bucharest. 973-9471-20-X. 2000
3. Blaga, V., *The modeling injection from gasoline at engines with spark lightning through sparking*. The University Editor from Oradea, 2000
4. Blaga, V., *Engine with gasoline injection*, The University Edition Oradea,2005.
5. Braun, M., *Differential equations and their applications*, Springer, New York.1975
6. Chioreanu, N. & S. Chioreanu, *Heat engine for nonconventional motor vehicles*, Ed. Univ. of Oradea.973-759—065-1, 2006.
- 7.Grünwald, B., *The Theory, calculation and construction engine's for road motor vehicle*. The Didactic Publishing house and Pedagogical Bucharest 1980.
8. Delanette, M., *The Engine with injection*. The Technical Editor for Automobile and Industry. June, 1989.
9. Negrea, V. D., & Sandu Veneția, *The combating of medium pollutant in motor vehicle*. The Technical Edition, Bucharest, 2000.
10. O'Neill, P.V. *Advanced Engineering Mathematics*, Wadsworth Eds.1991