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ENERGY ANALYSIS OF OXYHYDROGEN PRODUCTION

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In order to optimize the use of oxyhydrogen mixtures in internal combustion engines, various indices of the electrolytic cell conditions have been tested with regard to its physical parameters. Density of the current passing through the electrolyte is perceived as key indicator of effectiveness and output capacity. Experiments were staged in a variety of physical settings: under different pressure, temperature, distance between the electrodes, varying electrode square area and strength of the electrolyte solution.

The researches resulted in following main findings:

1. The maximum effectiveness of an electrolyte cell is achieved at 3,5-7 A/m2 current density.

2. Volume and energy distribution of hydrogen (liquid hydrogen) in combustion chamber attains about 3,7% of chamber volume, the same rate for petroleum fuel is about 1%, while for oxyhydrogen it equals 22,5% and oxyhydrogen compression nears critical value. The fact shows that this fuel can't directly replace petroleum fuel, but is suitable as an oxidizing agent only under certain conditions in reciprocating internal combustion engines with crank gear.

3. Actually oxyhydrogen can't be considered as a full substitution for conventional fuel because of high energy-output ratio of electrolyte cell manufacturing.

4. Rise in output capacity of electrolyte cell consequently diminishes its effectiveness. Therefore, engineering of electrolyte cells requires optimization of their dimensions which should conform to the criterion of maximal space of electrodes in order to achieve the required current density.

5. The engineered electrolyte cell allows for operation under 70 bar pressure. The testing proved that the output capacity increases following increase in pressure. This finding is a certain guideline towards optimization of energy-output ratio of oxyhydrogen production.

The testing and the study on oxyhydrogen production by electrolysis have revealed that under certain conditions transformation of electric energy as regards energy density of the gaz could attain 90%. This assumption creates outlook for researches on conservation and further use of the released energy in innovative engines.

Key words: **oxyhydrogen, internal combustion engine, electrolyte cell, non-carbon fuel, energy efficiency, energy conversion unit, energy conservation.**

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