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Reduction of wear in vehicle pistons with copper oxide effect and extension of motor life

Our vehicles equipped with internal combustion engines facilitate a significant part of our lives and are used in every area from transportation to industry, from trade to health. However, increasing the efficiency of these engines will contribute both economically and to the environment positively. The frequent maintenance periods of the internal combustion engines increase the operating costs and shorten the service life. The heat caused by friction causes the gap between the metal atoms of the piston and the oxygen molecules that fill the cavities prevent the closure of cracks and disrupt the integrity of the metal. This distortion leads to fracture cracking and this leads to abrasion. Wear is a major problem in the engine and the revision costs of the engine increase due to wear. In order to prevent erosion during the literature review of our project, we concluded that we should first prevent oxygen atoms from entering the piston. Many oils and additives are now used to prevent the introduction of oxygen molecules between metal atoms. Increasing the efficiency of these additives and finding new additives, increasing the efficiency of internal combustion engines or wherever the friction effect is seen means lowering the cost. Thanks to the copper oxide solution, our new lubricating liquid covers the pistons or the metal exposed to the friction and prevents the filling of the gaps during expansion by filling with oxygen atoms, thus preventing the onset of abrasion. The results of the surface roughness tests we conducted before and after the experiments support our idea and show that our experience was successful. Our lubricating fluid, which is more efficient than other oils, can be used in all metals and does not damage metals in the long term and its cost, is lower than other oils and additives.

Biography

Ilyas Seckin is the 11th grade IBDP student of Eyüboğlu College. In 2017 and 2018, he was accepted to the regional final at the TÜBİTAK High School Project competition with his projects in Physics and became the third in 2018. He has two articles published in international scientific journals, has participated in the International Conference on Science, Engineering and Technology in Chicago by oral presentation. He got the Excellent Paper Award. He was the Captain of the FRC team, has interested in Mechatronics, Astrophysics, Aviation and Artificial Intelligence.

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