Journal of Defense Studies and Resource Management
ISSN: 2324-9315
2020
Vol.8 No.2

The Use of Eggshell Waste Ceramics Coating in Thermal Yield Of Aviation Engines

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Abstract

Aeronautical engines are designed with mechanical characteristics that can offer automatic cooling and, because of their construction complexity, it became very expensive. Before that, the present work proposes to find means for cheapen the process of construction of engines, internally coating with ceramic, since, as several proven studies, have high coefficient of thermal resistance, being able to reach extreme temperatures. Aiming to contribute to a worldwide trend of sustainability, that appreciates the use of chemical substances, mainly as rejection results, applying existing techniques, this study submitted to ceramic development, obeying technological techniques and using eggshell (ES). This material contains - among other compounds - significant amounts of calcium oxide and molten materials such as calcium, magnesium, potassium and sodium, with a melting temperature close to 2,572 ° C. Thus, could create 36 specimens with different ES, Phyllite and Feldspar (main components present in ceramics) percentages, and perform tests and analysis, which proved the potentiality of their use. An important feature of Ceramics presence of thermal limits, which provide an incensement in mechanical resistance when heated at high temperatures. Therefore, they are an excellent thermal insulator and have a high melting point. On the other hand, we have the traditional aeronautical engines, which can reach 2000 ° C and require great concern about this factor. Therefore, a ceramic can be used for reduction of investment purposes in the engines construction sector and obtain applicable tax values, as well as in accordance with technical standards and sustainable development of the environment.

Biography:

Student of the Mechanical Technician course, integrated modality, at the Federal Institute of Science and Technology Education of Bahia (IFBA) - Campus Salvador. He is part of the organizing committee of the Week of Mechanics and conducts research in the area of ceramics and materials. In addition, he taught in the Basic Notions of Preparation and Operation of the Gear Generator Renânia and Electric Welding and MIG / MAG Welding.

Speaker Publications:

1. Marcos César; ROSÁRIO, RHN; Beatriz Tomita; AL-QAHTANI, DMAA. Course Basics of Preparation and Operation of Gear Generator Renânia. 2019. (Short Course Taught / Extension).
2. Workshop "Student Entrepreneurship at IFBA". 2017. (Congress).

2nd International Conference on Aerospace, Defense and Mechanical Engineering; Webinar- August 17-18, 2020.

Abstract Citation:

Renzo Henrique das Neves Rosario, The Use of Eggshell Waste CeramicsCoatingin Thermal Yield of Aviation Engines, Aerospace 2020, 2nd International Conference on Aerospace, Defense and Mechanical Engineering; Webinar- August17-18,2020 (https://aerospace.enggconferences.com/abstract/2020/the-use-of-eggshell-waste-ceramicscoatingin-thermal-yield-of-aviation-engines)