

Selecting a Material for an Aircraft Diesel Engine Block

Authors : Ksenia Siadkowska, Tytus Tulwin, Rafał Sochaczewski

Abstract : Selecting appropriate materials is presently a complex task as material databases cover tens of thousands of different types of materials. Product designing proceeds in numerous stages and in most of them there are open questions with not only one correct solution but better and worse ones. This paper overviews the Diesel engine body construction materials mentioned in the literature and discusses a certain practical method to select materials for a cylinder head and a Diesel engine block as a prototype. The engine body, depending on its purpose, is most frequently iron or aluminum. If it is important to optimize parts to achieve low weight, aluminum alloys are usually applied, especially in the automotive and aviation industries. In the latter case, weight is even more important so new types of magnesium alloys which are even lighter than aluminum ones are developed and used. However, magnesium alloys are, for example, more flammable and not enough strong so, for safety reasons, this type of material is not used solely in engine bodies. Acknowledgement: This work has been realized in the cooperation with The Construction Office of WSK "PZL-KALISZ" S.A." and is part of Grant Agreement No. POIR.01.02.00-00-0002/15 financed by the Polish National Centre for Research and Development.

Keywords : aluminum alloy, cylinder head, Diesel engine, materials selection

Conference Title : ICAMAME 2018 : International Conference on Aerospace, Mechanical, Automotive and Materials Engineering

Conference Location : Kyoto, Japan

Conference Dates : April 26-27, 2018