Patent Search

Invention Title	A NOVEL ENCAPSULATION FEEDING TECHNIQUE TO PRODUCE QUALITY COMPOSITES
Publication Number	29/2021
Publication Date	16/07/2021
Publication Type	INA
Application Number	202141030279
Application Filing Date	06/07/2021
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	MECHANICAL ENGINEERING
Classification (IPC)	F16J0009260000, B22D0021000000, C22C0037100000, C22C0032000000, F16D0065120000

Inventor

Name	Address	Country
Dr. NATRAYAN L	DEPARTMENT OF MECHANICAL ENGINEERING, SAVEETHA SCHOOL OF ENGINEERING, SAVEETHA NAGAR, THANDALAM, CHENNAI, TAMIL NADU, INDIA - 602105.	India
Dr. SENTHIL KUMAR M	SCHOOL MECHANICAL ENGINEERING, VIT-CHENNAI CAMPUS, RAJAN NAGAR, CHENNAI, TAMILNADU, INDIA, 600127	India
Dr. PRASHANTH K P	DEPARTMENT OF AUTOMOBILE ENGINEERING, ACHARYA INSTITUTE OF TECHNOLOGY, RADHAKRISHNAN RD, SOLADEVANAHALLI, KARNATAKA, INDIA, 560107	India
Mr. VINOTH KUMAR SELVARAJ	88, B2/5, ALAGAR NAGAR, NALATTINPUTHUR, KOVILPATTI, TAMILNADU, INDIA, 628503	India

Applicant

Name	Address	Country
Dr. NATRAYAN L	DEPARTMENT OF MECHANICAL ENGINEERING, SAVEETHA SCHOOL OF ENGINEERING, SAVEETHA NAGAR, THANDALAM, CHENNAI, TAMIL NADU, INDIA - 602105.	India

Abstract:

Aluminum matrix composites (AMC) known for their superior mechanical properties are used in automotive applications. Currently, cast iron (CI) piston ring otter exc resistance at high temperatures. The limitation of the CI piston ring is the development of air pockets that leads to premature failure of the engine cylinder. To overcc limitation, aluminium metal matrix composite (AMMC) was used as piston ring that offers more mechanical and tribological characteristics Fabrication by novel encaj feeding technique were used improve the premature failure in this research.. The 6xxx series classified with magnesium as a major element with aluminium offers be properties. Among the Al-Mg/Si alloys, AA606I has a good strength and wear rate. The composite material has better feasibility to control the engine tribological para research work aims at the development of a new aluminium hybrid composite material (AA606I/ alumina oxide/ silicon carbide / graphite) by novel encapsulate feedi using squeeze casting method with enhanced tribological and mechanical characteristics for the piston ring application.

Complete Specification

FIELD OF INVESTIGATION

The current invention relates to synthesize the new hybrid metal matrix composite using a novel encapsulates feeding technique through squeeze casting method. Aluminium alloy 6061 ■ reinforced with aluminium oxide, silicon carbide and graphite were considered with enhanced mechanical and tribological characte for the piston ring materials with aim of improving engine efficiency, emission and economy.

DESCRIPTION OF RELATED ARTS

In today's scenario, automotive manufacturers are seeking for lightweight materials that offer engineering structures with better strength. Aluminium matrix comp due to their extraordinary properties, a developed lightweight material have been used in cylinders block, piston ring applications. The combustion heat taken up b piston and piston rings is transmitted to the coolant. Failure of the piston ring can affect the performance of the engine seriously. This leads to mechanical energy l emits significant amount of particulate emissions. Cast iron piston ring offer excellent wear-resistance at high temperatures. The limitation of the cast iron piston ri development of air pockets that lead to pre matured failure of engine cylinder. To overcome this limitation, Aluminium matrix composites developed using a novel encapsulate feeding technique was used to prevent the premature failure in this research. Selection of right material for an engineering application depends on pr such as strength, wear, density, lightweight, melting point, cost, etc. Though, aluminium and mild steel showed better response compared to other materials. Steel density is three times of Al, with low CTE and thermal conductivity makes it an unlikely materials for piston ring. Al stands out as a better choice due to its good ther conductivity. Moreover, CTE was found to be similar to Al piston and it satisfies the requirement of low weight. Al and its alloys show low hardness and degradation mechanical and tribological properties at elevated temperatures, which limits its application in engineering

View Application Status