Abstract

Journal of Mechanical Engineering Advancements - Volume 1 (Issue 3) January, 2025

Pages: 30-37

Evolution of Minimum Quantity Lubrication (MQL) as an Environmental Alternative: A Review

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Category: Manufacturing Engineering

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Abstract:

The rise of sustainability concerns in manufacturing has prompted the search for environmentally benign alternatives to conventional flood cooling techniques. Minimum Quantity Lubrication (MQL) has emerged as a promising solution, providing an optimal balance between lubrication and cooling with significantly reduced environmental impact. This review explores the historical development of MQL, its integration into modern machining processes, and its advantages and limitations. A comprehensive discussion is provided on advancements in MQL technologies and their environmental and economic implications.

Keywords: Minimum Quantity Lubrication, Cryogenics, Sustainability, Machining Process

Cite this article:

Arnab Das, Evolution of Minimum Quantity Lubrication (MQL) as an Environmental Alternative: A Review, Journal of Mechanical Engineering Advancements. Vol 1 (Issue 3: September-December, 2024), pp 30-37.

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