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Will It Be Possible to Put into Practice the Mitigation of Ventilation Air Methane Emissions? Review on the State-of-the-Art and Emerging Materials and Technologies

Publication date:	23.09.2021
Publication title:	Will It Be Possible to Put into Practice the Mitigation of Ventilation Air Methane Emissions? Review on the State-of-the-Art and Emerging Materials and Technologies
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Journal information:	Catalysts

The work refers to the important problem of methane emissions in relation to the ventilation air methane (VAM) emitted to the atmosphere. VAM is fuel that remains unused in most mines around the world due to the low content of the combustible component in the mixture (0.1–1%). The aim of this article is to present the real problems posed by released VAM in its utilization such as variability of flow, methane concentration, or possible presence of gaseous and non-gaseous pollutants. The paper presents the existing technologies that are ready to be implemented or have a reliable potential to be implemented in the industry and those whose development will have strong influence on the effective reduction in VAM emissions. The methods discussed include enrichment, thermal, and catalytic as well as photocatalytic oxidation. The catalysts dedicated to VAM oxidation were reviewed. The literature studies show that currently developed technologies enable more and more efficient oxidation of VAM. The most technologically advanced implemented solutions are based on the thermal oxidation method in TFRR. Catalytic methods are still at the laboratory research phase, but have been intensively developed and have the potential to be implemented at process scale in the future

Metryczka

Published by:	Marek Tańczyk
Published at:	08.05.2026 15:20
Number of views:	5