

# Institute of Chemical Engineering

Adres artykułu: <https://iich.gliwice.pl/en/article/theoretical-analysis-of-the-enrichment-of-methane-in-ventilation-air-by-pressure-swing-adsorption-and-membrane-separation>

## Theoretical analysis of the enrichment of methane in ventilation air by pressure swing adsorption and membrane separation

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**Abstrakt:** In this study the enrichment of methane in ventilation air by pressure swing adsorption (PSA) and by membrane separation was investigated theoretically. In the case of the PSA process, which uses Takeda G2X7/12 activated carbon, the impact of various process parameters on the concentration of CH<sub>4</sub> in the enriched gas and methane recovery was determined. It was found that the PSA process can provide a gaseous stream containing ~1 vol. % of CH<sub>4</sub> with a high methane recovery (~90%). Such a stream may be used in lean-fuel turbines. In the case of the membrane process the UBE CO-C05 module was used and the relationship between the concentration of methane and its recovery, the pressure of feed gas and the permeation number was determined. It was found that in such a process the enriched stream containing ~0.5 vol. % of methane can be produced, which should ensure the recovery of heat when fed to a thermal reverse-flow reactor.

### Attachments:

[Zeszyt 22 \(2018\)](#) pdf, 4.49 MB

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## Metryczka

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