# Article information:

Conversion of municipals waste into syngas and methanol via steam gasification using CaO as sorbent: An Aspen Plus modelling - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S001623612301253X>

# Article summary:

1. Municipal solid waste (MSW) can be converted into syngas and methanol through steam gasification using CaO as a sorbent.

2. An integrated simulation process model for gasification and methanol production was developed using Aspen Plus®.

3. Temperature, steam/feedstock ratio, and CaO/feedstock ratio all have an impact on syngas composition and downstream product methanol.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article titled "Conversion of municipals waste into syngas and methanol via steam gasification using CaO as sorbent: An Aspen Plus modelling" presents a simulation study on the conversion of plastic waste, food waste, and their blend into syngas and methanol through steam gasification. The study aims to investigate the impact of process parameters such as temperature, steam/feedstock ratio, and CaO/feedstock ratio on syngas composition and downstream product methanol.

The article provides a comprehensive overview of the potential benefits of converting municipal solid waste (MSW) into energy and value-added products through gasification. It highlights the growing rate of urbanization in Saudi Arabia, which generates a significant amount of MSW that needs to be disposed of properly. The article also discusses the importance of sustainable energy sources and circular economy policies in combating climate change.

The study uses Aspen Plus® simulation tool to develop an integrated process model for steam gasification, syngas treatment, methanol production, and purification for plastic waste, food waste, and their blend. The results show that H2 and methanol yield increase with an increase in temperature in all cases. The addition of CaO is critical to capturing CO2 to get augmented syngas composition for methanol production.

However, the article has some potential biases that need to be considered. Firstly, it focuses only on the positive aspects of converting MSW into energy without discussing any possible negative impacts or risks associated with this process. Secondly, it does not provide any evidence or data to support its claims about the potential benefits of renewable methanol production from plastic waste or food waste.

Moreover, the article lacks exploration of counterarguments or alternative solutions to handle MSW other than gasification. It also does not present both sides equally by only discussing the benefits without acknowledging any limitations or challenges associated with this process.

In conclusion, while the article provides valuable insights into the potential of converting MSW into energy and value-added products through gasification, it needs to consider possible biases and limitations in its reporting. Further research is needed to explore the full range of benefits and risks associated with this process and to develop more sustainable solutions for handling MSW.

# Topics for further research:

* Negative impacts of municipal solid waste gasification
* Risks associated with converting plastic waste into methanol
* Alternative solutions for handling municipal solid waste
* Limitations of steam gasification for producing syngas and methanol
* Circular economy policies and their impact on waste management
* Sustainable energy sources for combating climate change

# Report location:

<https://www.fullpicture.app/item/2a9880629233424c5636e1da168c92d5>