

A revolution: converting waste to sustainable energy

Wildfire Energy showcases benefits of unique MIHG technology

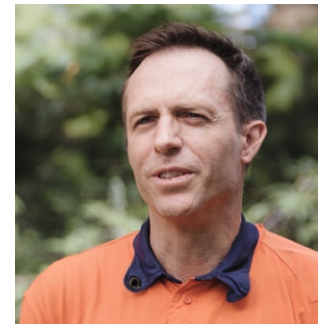
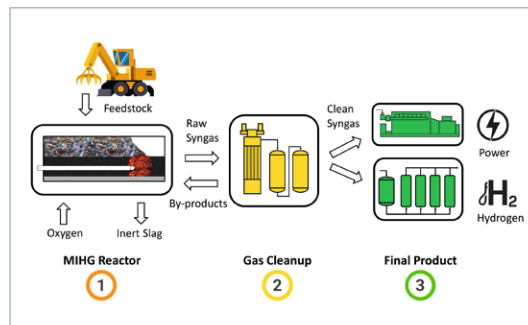


Wildfire Energy is an innovative Australian company developing a revolutionary gasification technology for biomass and waste to energy applications. Their MIHG process produces renewable energy products such as electricity, hydrogen, syngas, and biofuels/chemicals and reduces the quantity of waste sent to landfill.

With their approach, Wildfire Energy aims for a favorable hydrogen price of USD 2/kg, thus creating the conditions for widespread use of the MIHG process.

“The instruments play a pivotal role in our evolution from pilot plant to future expansion. The Endress+Hauser instruments have proven to be very accurate and reliable which enables us to closely monitor our process and control the quality of the syngas and hydrogen produced.”

Grant Bollaert
General Manager Engineering



With the help of reliable process measurement devices and support from Endress+Hauser, the new Wildfire Energy pilot plant is successfully showcasing the viability of hydrogen and syngas production from biomass and residual waste.

The results:

- A proven path toward the reduction of landfill and emission-free syngas and hydrogen production
- Accurate and reliable measurement even in very small pressure ranges
- Reliable results and operation allow for plant upscaling

Next level Waste-to-X solution

While the world grapples with climate change and global warming, the increasing population contributes significantly to an ever-growing amount of residual waste. Wildfire Energy's vision is to eliminate landfill by turning residual waste into renewable energy and hydrogen with its MIHG solution. A simple process that converts waste into electricity, renewable syngas, and hydrogen, with negative net carbon emissions.

Revolutionary technology for more resource efficiency

In the face of increasing demand for economical hydrogen production associated with lower greenhouse gas emissions, the Australian start-up, whose process is based on the familiar gasification process that takes place at over 800 °C, introduced a plant design that differs fundamentally from conventional gasifier technologies. During the Moving Injection Horizontal Gasification (MIHG) process, oxygen is injected horizontally under the waste layer, which enables particularly efficient conversion of waste into high-quality syngas.

Higher overall efficiency, scalable plant technology

The MIHG process has several advantages: Firstly, heterogeneous waste can be treated without the need for costly pre-processing (e.g., sorting and shredding of waste fractions). Secondly, the process enables high waste-to-energy yields: for example, about 42 kg of hydrogen can be produced per ton of feedstock (mixed waste with a calorific value of 12 MJ/kg). Alternatively, the

CO and H₂ fractions contained in the syngas can also be used to produce fuels, methanol, or ethanol.

Thanks to a modular design, the MIHG process is also expected to open the possibility of small, flexible plants - an important factor in making the process competitive with conventional waste incineration, which today is mostly carried out in large-scale plants far from urban centers. This allows short travel distances from the generation to the recycling of the waste and a corresponding CO₂ reduction during transport.

The challenges:

- Range of different service conditions: from low pressure ranges in the MIHG reactor to high pressure
- High temperature requirements
- Choosing instruments allowing for high level of accuracy and precision as well as flexibility for future expansion and scalability
- Technical compatibility of the instrument with the process

Endress+Hauser helped with:

- Understanding the pilot project specific measurement points and critical monitoring
- Suitability of the instruments - meeting not only challenging process conditions, but also project requirements
- Excellent response and customer service from Endress+Hauser
- One-stop shop for all the instruments
- Availability and lead times on the instruments



Our solution:

Accurate measurement and continuous monitoring of critical process variables like gas flow, temperature, pressure, and level are essential factors for optimum process operation and efficiency. In the development of a pilot plant, Wildfire Energy relied on Endress+Hauser's expertise to monitor the performance of the MIHG reactor especially at low pressure.

- Pressure transmitter Cerabar PMC51B
- Vortex flowmeter Prowirl D 200
- Coriolis flowmeter Promass E 200
- Temperature transmitter iTHERM ModuLine TM111

While the Endress+Hauser devices demonstrate highest accuracy and reliability, the local support from Endress+Hauser Australia was highly appreciated and played a crucial role in the successful commissioning of the pilot plant.

Wildfire Energy has introduced a revolutionary yet viable approach to turning residual waste into renewable energy resources, therefore contributing to industrial decarbonization, and enhancing waste management across urban, regional, and remote communities, particularly in areas where landfills are the prevailing choice. Endress+Hauser is proud to be part of this journey toward a more sustainable production of both energy and hydrogen as well as the transition to a circular economy of materials and products.

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