



## Circular Economy Webinar

### Session 17 Summary: Low Temperature Gasification of Waste: Ultimate Solution for Energy/Waste/Climate

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[Hanki Industrial Co.](#) was established in 1992 and has 31 years of experience in the field of environment and mechanical equipment. Originally specializing in sandwich treatment and insulation, the company has developed a new technology called "Miracle Cube."

### Key Takeaways

1. **Miracle Cube Technology features three pyrolysis furnaces and one pilot furnace that operates alternately.** It offers advantages over stoker-type insulators, as it classifies input waste automatically, operates unmanned, and eliminates the need for refractory repair due to low-temperature operation.
2. **Miracle Cube operates at a low temperature of 250 to 300 degrees, producing less dust and toxic gases.** It eliminates the need for a large gas cooling facility and air pollution prevention facility. The technology ensures the disposal of waste with a moisture content of 20 to 25 percent.
3. **The pyrolysis reactor used in Miracle Cube does not require fire protection measures like fire-resistant bricks, reducing costs and maintenance.** The process turns waste into fixed carbon at a low temperature (250 degrees), eliminating the need for frequent replacement of fire bricks. Additionally, the resulting ash is different from that of the stoker type.
4. **Miracle Cube maintains a constant amount of gas generation, allowing for stable energy recovery.** The closed system and low oxygen input contribute to the prevention of combustion-related issues like dioxin production.
5. **Miracle Cube operates for 330 days per year, surpassing the operational days of stoker types.** The maintenance cost and cleanup process after burning are minimal due to the low production of fly ash. This efficiency contributes to cost savings and a reduced environmental impact.
6. **The innovative design of Miracle Cube involves three or four reactors operating in tandem,** with the initial heating from one reactor being recycled to dry waste in the second reactor. This



design allows the system to handle waste with a high moisture content effectively, enhancing its flexibility in waste disposal.

7. **The Pyrolysis system more robust and versatile in handling different types of waste.** It can effectively handle medical waste, industrial waste, and domestic waste in separate silos without the need for segregation before the process. The flexibility in waste handling is a significant advantage, allowing for a wide range of applications.

[Watch the Recording here](#)