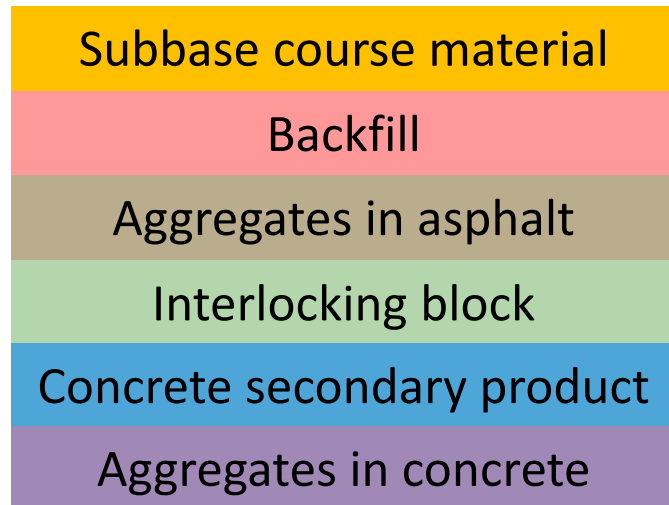


Effective use of slag from sewage sludge

Purpose of sludge utilization

The growth of sewerage service and the adoption of nutrients removal increase the amount of sewage sludge. Since it is difficult to secure landfill sites for sludge disposal and recycle is required as a social concern, the effective use of sewage sludge is expected. JS investigates slag from sewage sludge to reduce the amount of sewage sludge and increase the use of sewage sludge materials.

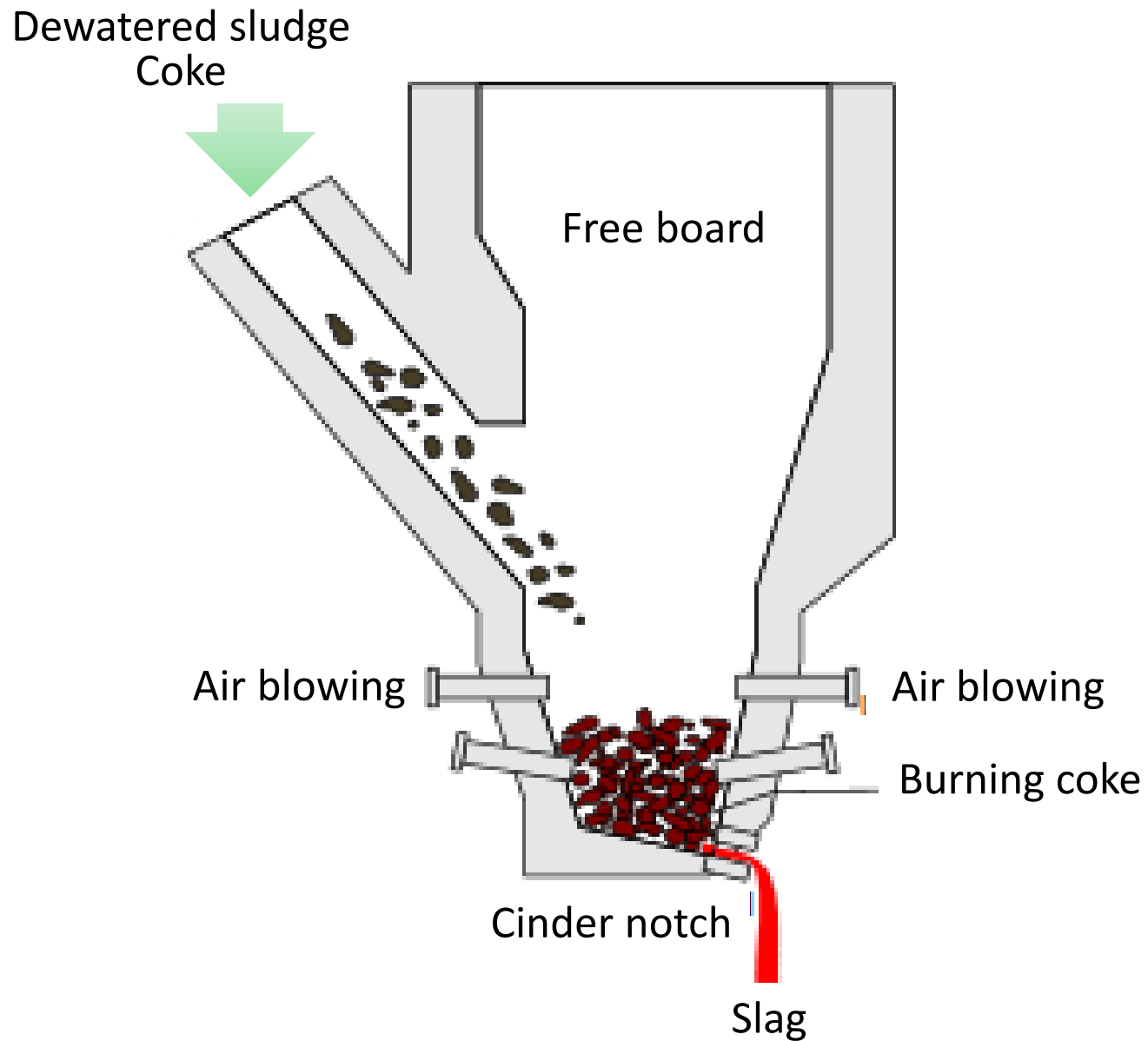
Sludge application



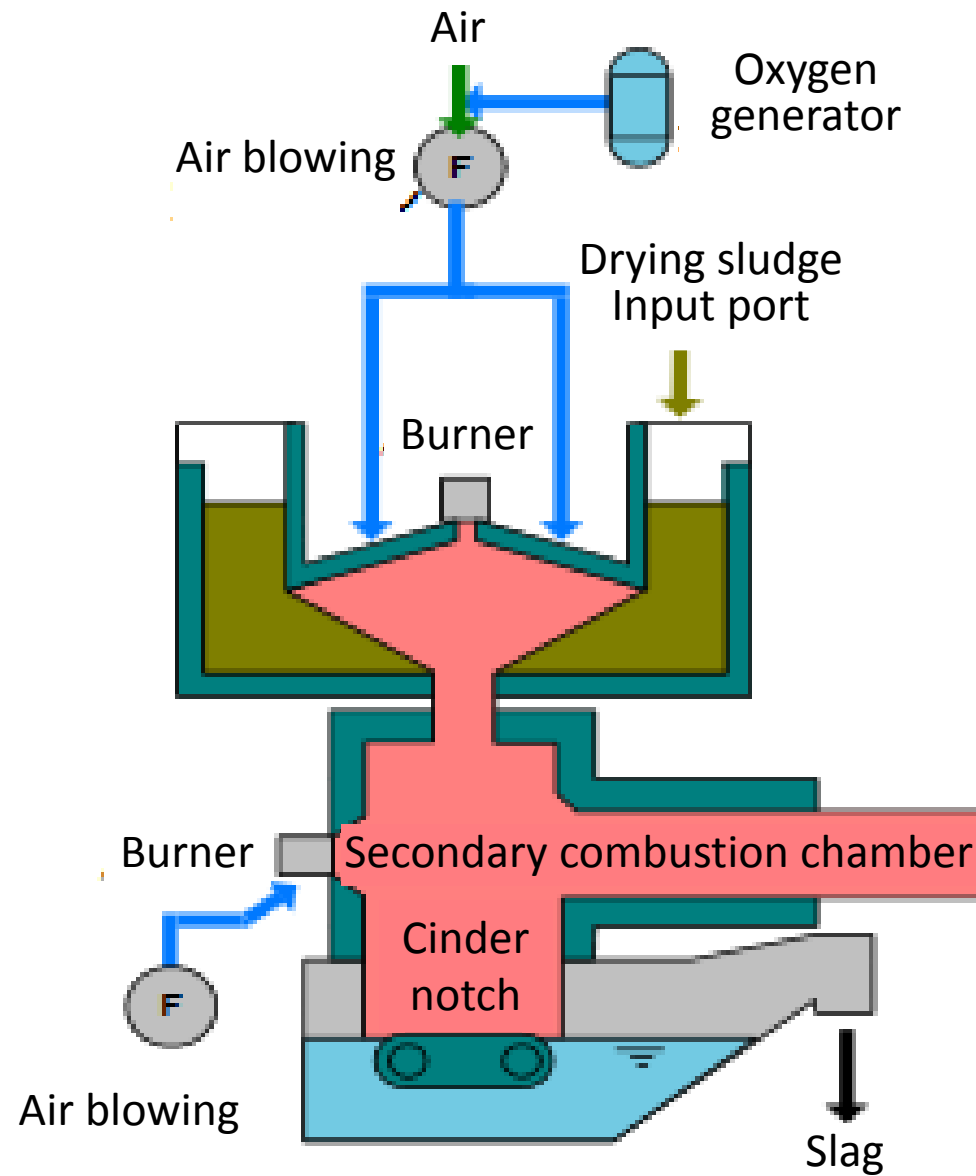
JIS Standards

In 2006, JIS developed standards of slag from sewage sludge for concrete aggregates (JISA5031) and road construction (JISA5032).

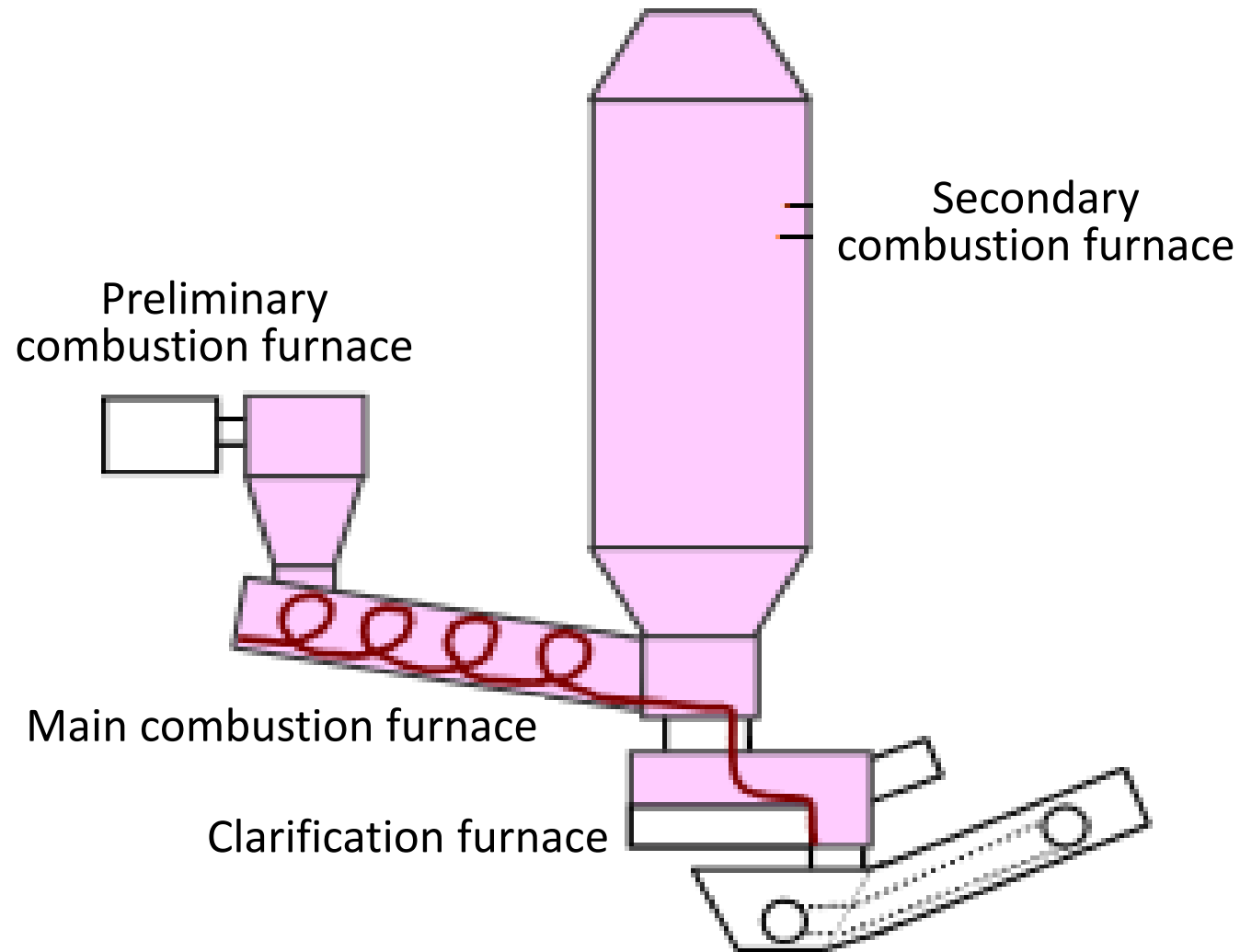
Types of melting furnace: Coke bed



Types of melting furnace: Surface



Types of melting furnace: Vortex



Types of slag

When sewage sludge melted in high temperature of approx. 1400°C, it becomes molten slag. The molten slag that solidifies by cooling is called slag from sewage sludge.

Slag is classified according to the different physical characteristics by the methods of cooling and solidification.

Rapid cooled slag



Air-cooled slag



Classification of slag

Types of slag		Cooling method	Characteristic
Rapid cooled slag	Direct water cooling	Contact or immerse in water	Glassy, low strength, fine sand or sandy condition
	Indirect water cooling	Mediate cooling media such as water and a heat exchanger	Glassy, higher strength than direct water cooling slag , blocking
Air-cooled slag	Direct air cooling	Leave in the air	Mainly glassy, usually higher strength than rapid cooling slag, crashed stone condition
	Slow cooled slag	Heat control with a thermostat or control of heat dissipation	Partly crystalline, high strength, rocky condition or crashed stone condition
Reheating (crystalized) slag		Reheat cooled slag	Crystalline, high strength