

Power Generation System Using Step Grate Stoker Furnace

Features of technology

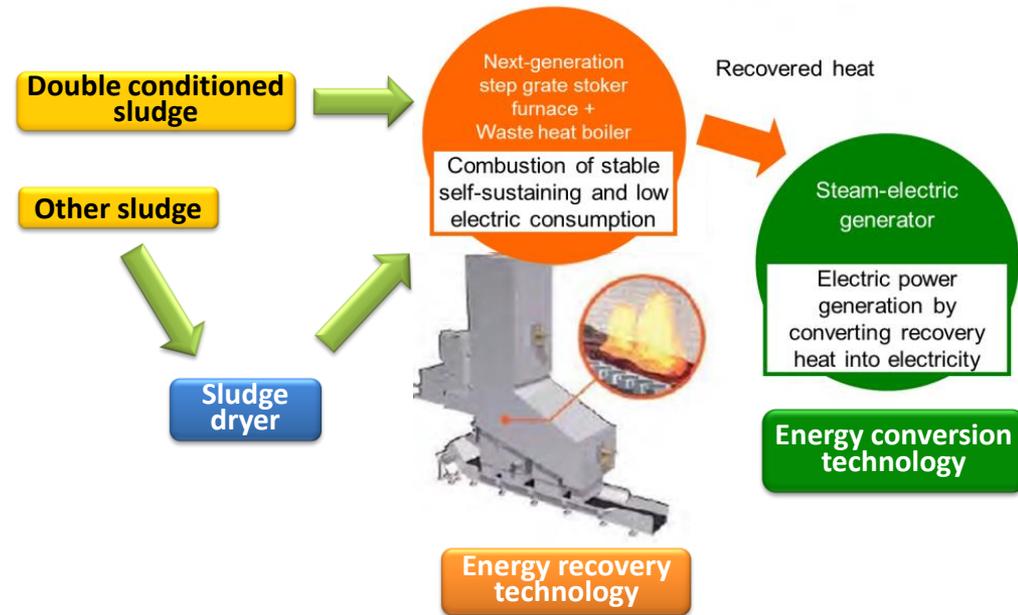
- ✓ The combination of *Low water content technology*, *Step grate stoker furnace* and *waste heat boiler* and *Steam-electric generator*
- ✓ Incineration facilities of above a certain size can generate more electricity than they consume **without supplemental fuel: energy self-sufficient system**

Target of application

Energy saving, Energy generation, LCC reduction, Reduction of greenhouse gas emission, New construction, expansion, or retrofit of sludge incineration facilities

Features of Step grate stoker furnace comparing to bubbling fluidized bed

- ✓ Require no fluidized blower → Low electric power consumption
- ✓ Long sludge retention time (SRT) in furnace → Adaptable to the change of sludge properties and enable stable combustion
- ✓ Maintain a high temperature of inner furnace → Reduce much N₂O emissions
- ✓ Reduce fly ash emissions → Few fly ash problems

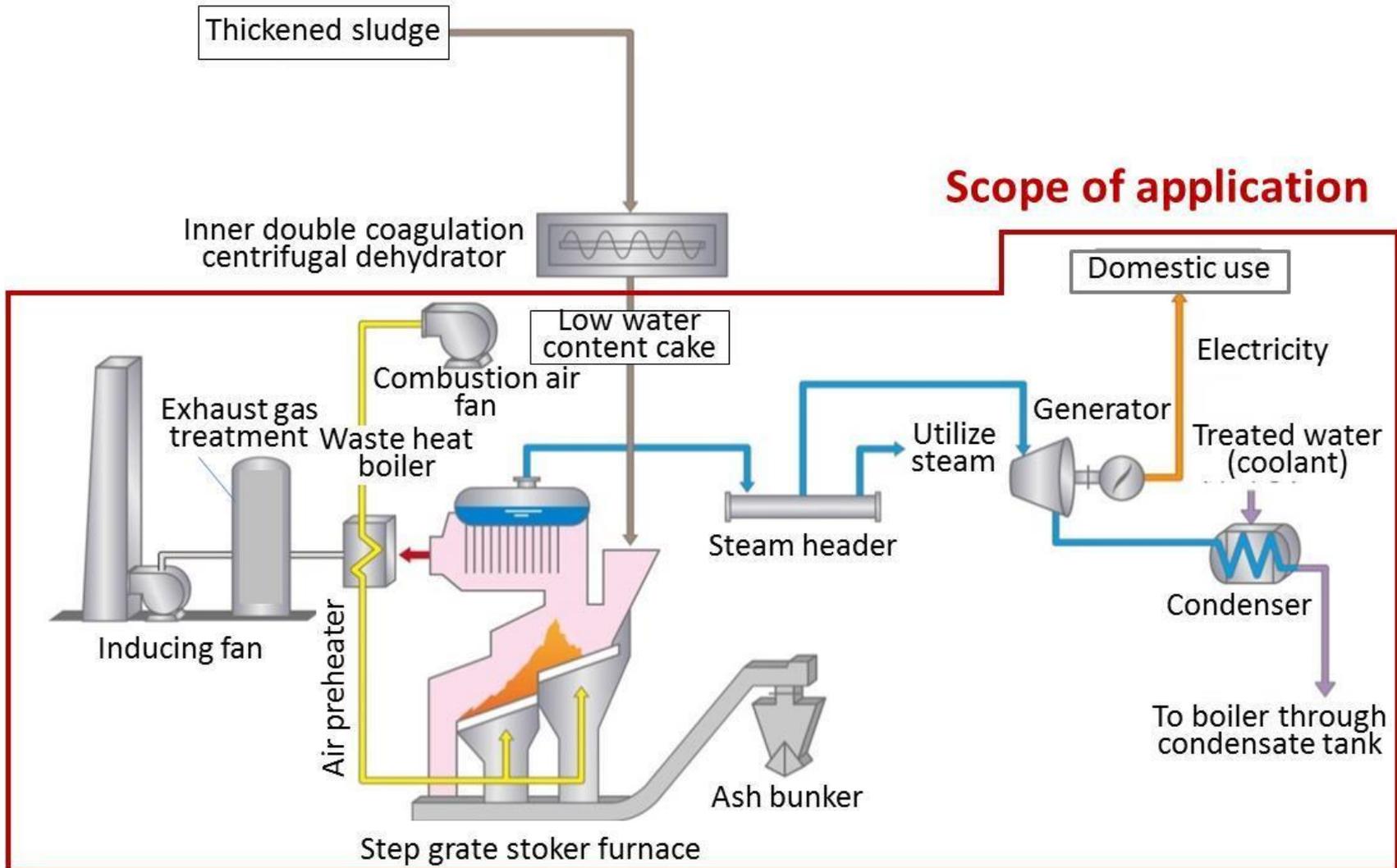


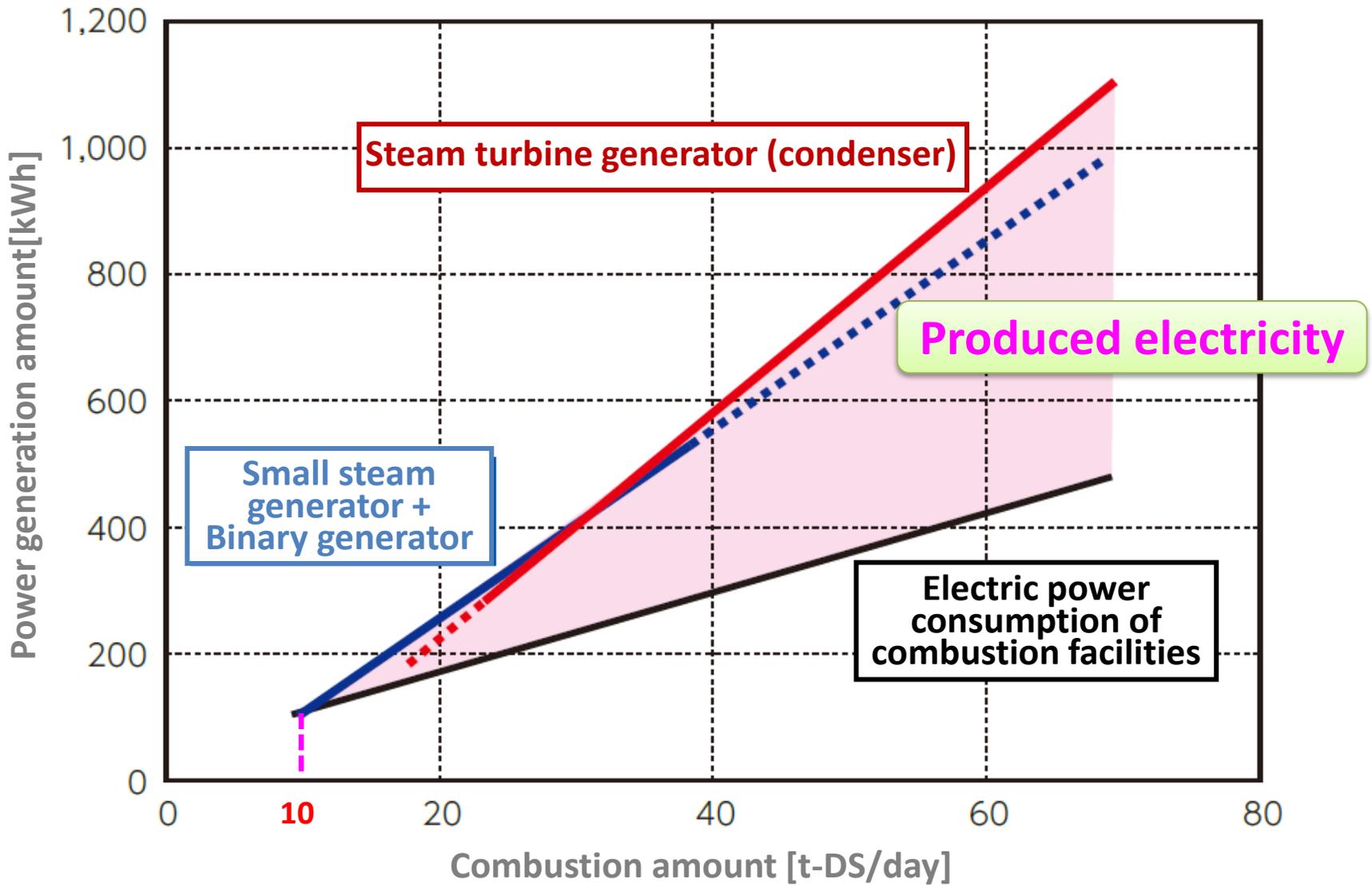
Conditions of application

	Direct combustion system (Type B)	Drying combustion system (Type D)
Target sludge	Mixed raw sludge	Mixed raw sludge
Type of dehydrator	Inner double coagulation centrifugal dehydrator	Any dehydrator
Water content rate	68-72%	75-80%
Combustible content	80-85%	80-85%
Scale of electricity generation possible furnace	35t-wet/day and over	35t-wet/day and over
Scale of electricity self-sufficient possible furnace	35t-wet/day and over	100t-wet/day and over
Configuration	<p>Low water content dehydrated sludge</p> <p>↓</p> <p>Step grate stoker furnace and waste heat boiler</p> <p>↓</p> <p>Steam generator (recovery of electricity)</p>	<p>Dewatered sludge</p> <p>↓</p> <p>Indirect steam heating sludge dryer</p> <p>↓</p> <p>Step grate stoker furnace and waste heat boiler</p> <p>↓</p> <p>Steam generator (recovery of electricity)</p>

Direct combustion system (Type B)

- ✓ Adopt inner double coagulation centrifugal dehydrator as low water content technology
- ✓ Combust dewatered sludge directly in a furnace and convert recovered excess energy into electricity



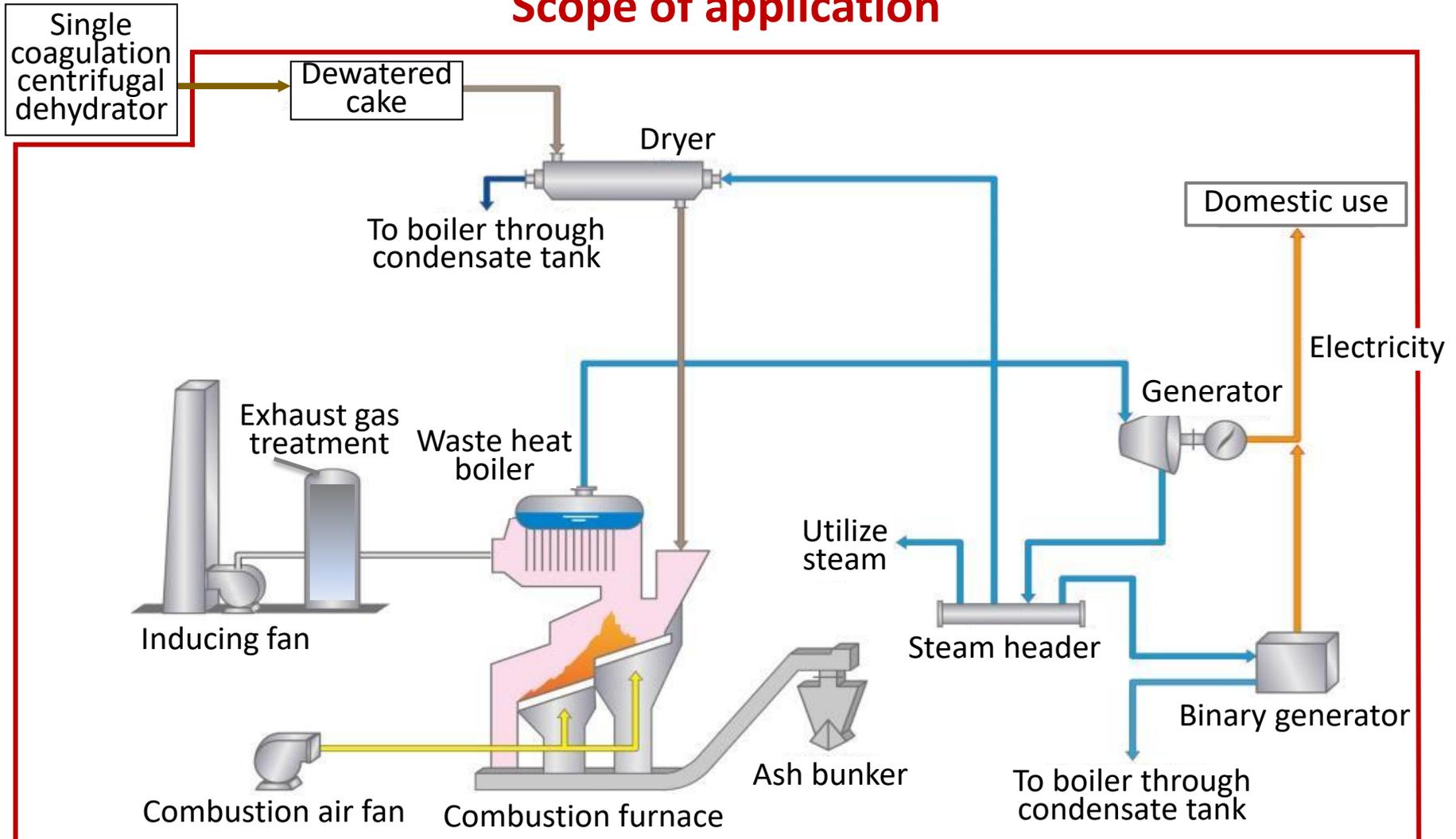


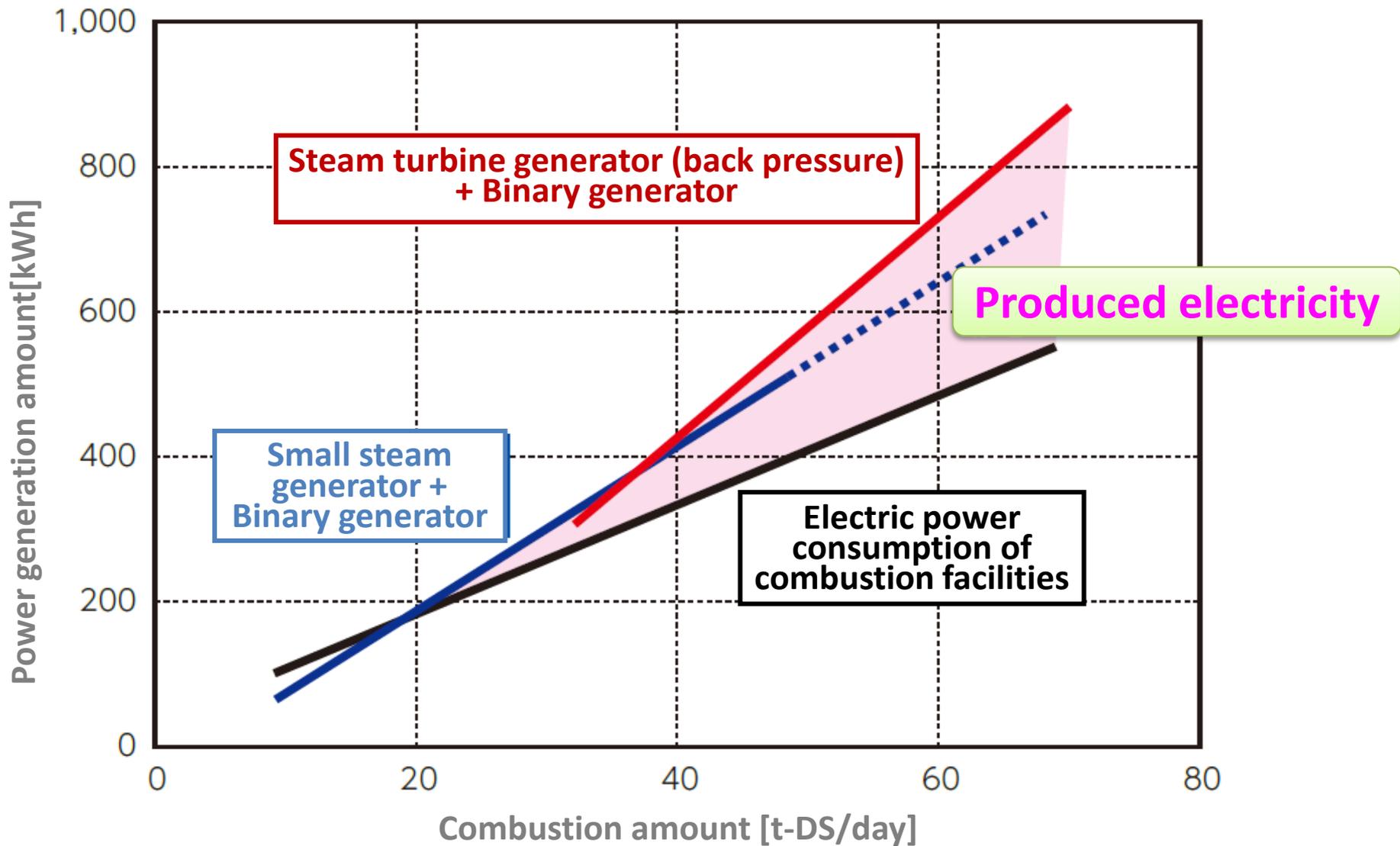
Facilities of approx. 35t-wet/day (10t-DS/day) and over create more electricity than they consume.

Drying combustion system (Type D)

- ✓ Utilize the conventional dehydrator
- ✓ Combust dewatered sludge through an indirect steam dryer
- ✓ Convert recovered excess energy into electricity
- ✓ Utilize the part of waste heat for dryer

Scope of application





Facilities of approx. 100t-wet/day (20t-DS/day) and over create more electricity than they consume.