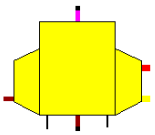
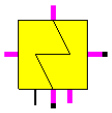
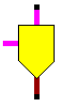
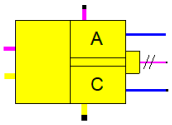
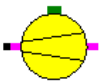
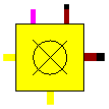
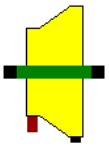
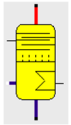
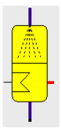
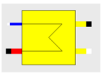
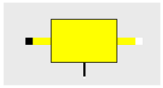
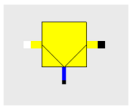
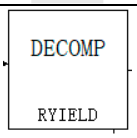
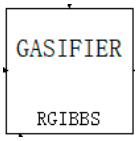
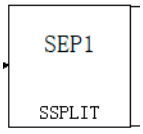
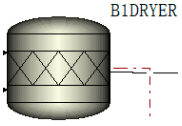
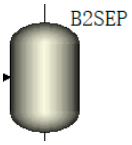
Supplementary materials

Table S1. Details of the main components in EBSILON Professional and ASPEN PLUS.

Component	Module	Style	Description
Gasification	*Gasifier*		MSW gasifier with shift reaction calculation at freezing temperature of 850°C
	Heat exchanger		gas-gas heat exchanger
	Splitter		filter and FGD
	Air preheater		gas-gas heat exchanger using hot flue gases
SOFC and GT	*Fuel cell*		SOFC
	Compressor		gas compressor with the 80 % isentropic efficiency
	Combustion chamber		burner
	Gas expander		gas turbine
	Generator		power generator
AHP and Dryer	*Rectifier*		steam generator for heating lithium bromide solution
	Absorber		absorber
	Heat exchanger with phase transition		evaporator

	Condenser		condenser
	Pump		pump driven by the electromotor
	Heat injection		heating the working medium by the absorber
	Drain of gas steams		condensate separation
	Tank		dry air and wet MSW mixer in dryer
ORC	*Steam turbine*		expander
	Generator		power generator
Gasificaiton in ASPEN PLUS	*RYield*		yield reactor for the decomposition of volatile matter
	RGibbs		Gibbs reactor to simulate the gasification reaction
	SSplit		gas and solid separator
Drying process in ASPEN PLUS	*RStoic*		dryer
	Flash2		wet air and solid separator

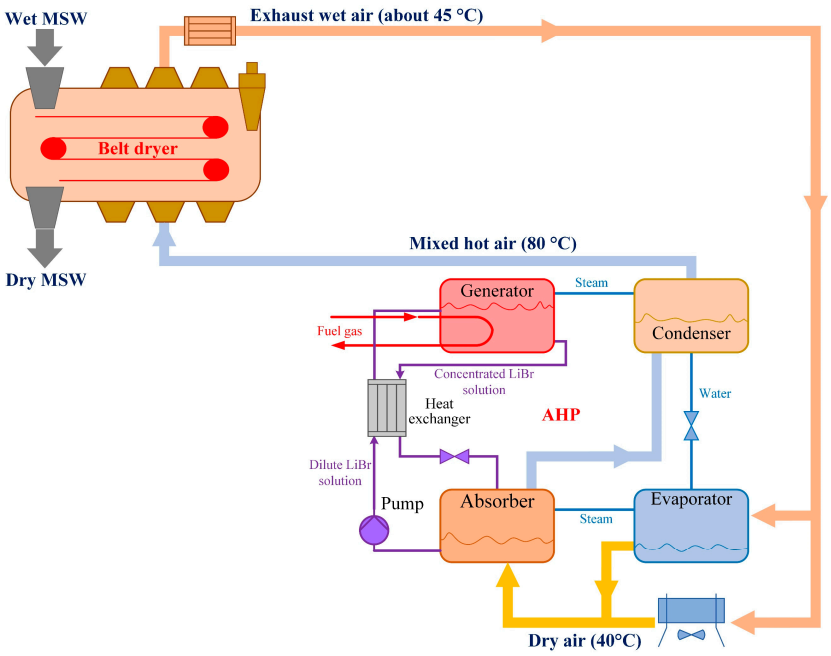


Figure S1. Diagram of the drying system coupling with AHP.

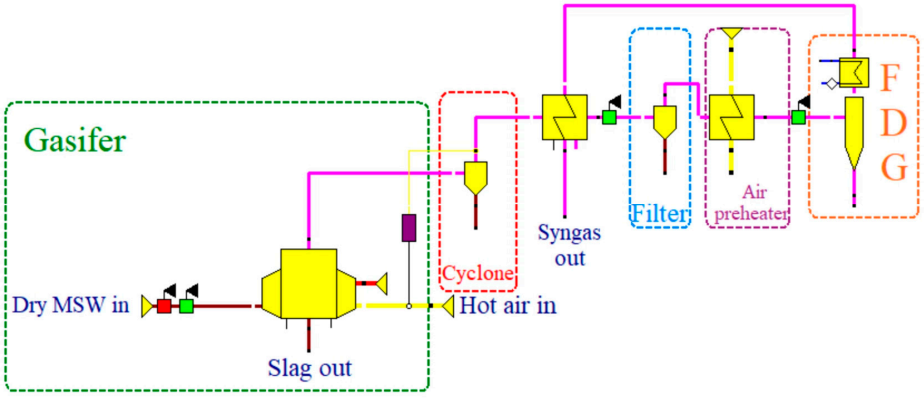


Figure S2. Simulation model for the MSW gasifier with clarification.

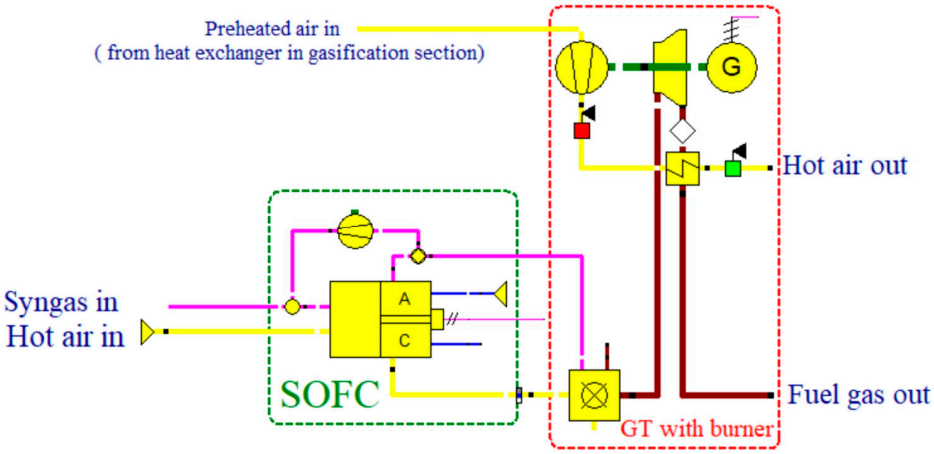


Figure S3. Simulation model for the SOFC and GT.

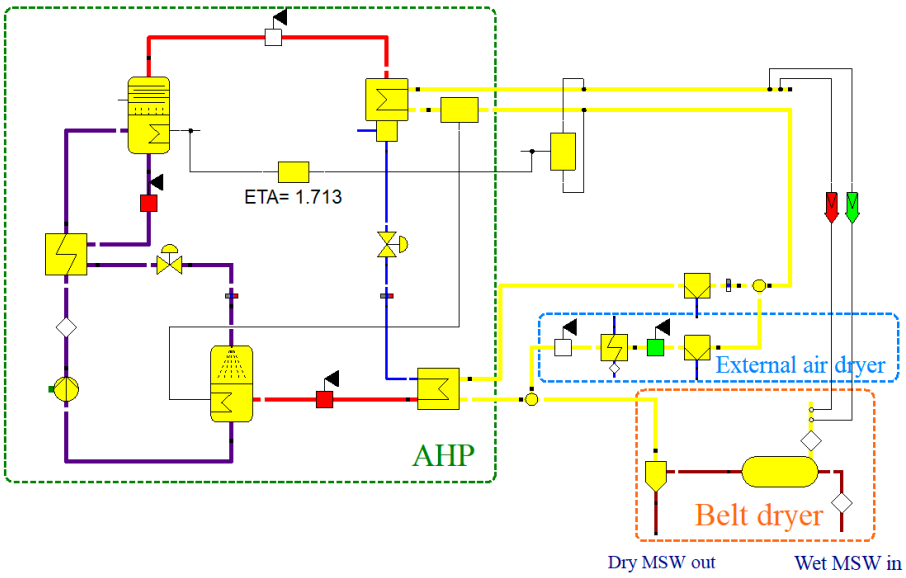


Figure S4. Simulation model for the MSW dryer with AHP.

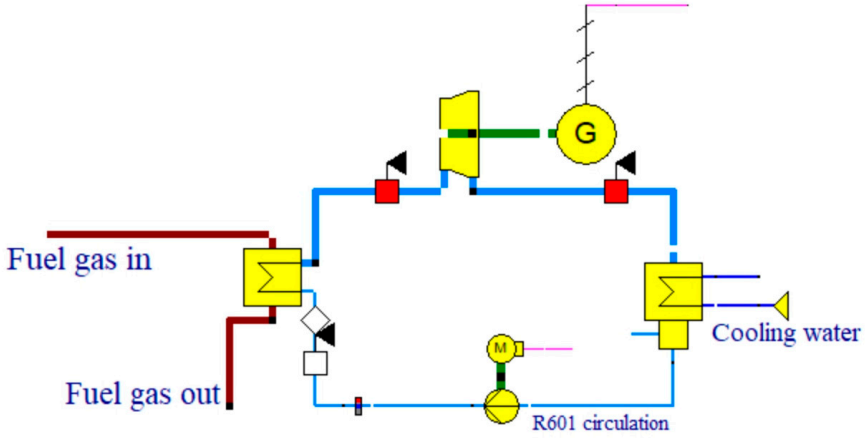


Figure S5. Simulation model for the ORC.