

RTO SYSTEM

Regenerative Thermal Oxidizer

Global Leader in Green Business

- People & Technology keeping our planet sustainable...

2020

PROFILE

Overview on KC Cottrell

Establishment **November, 27th, 1973**

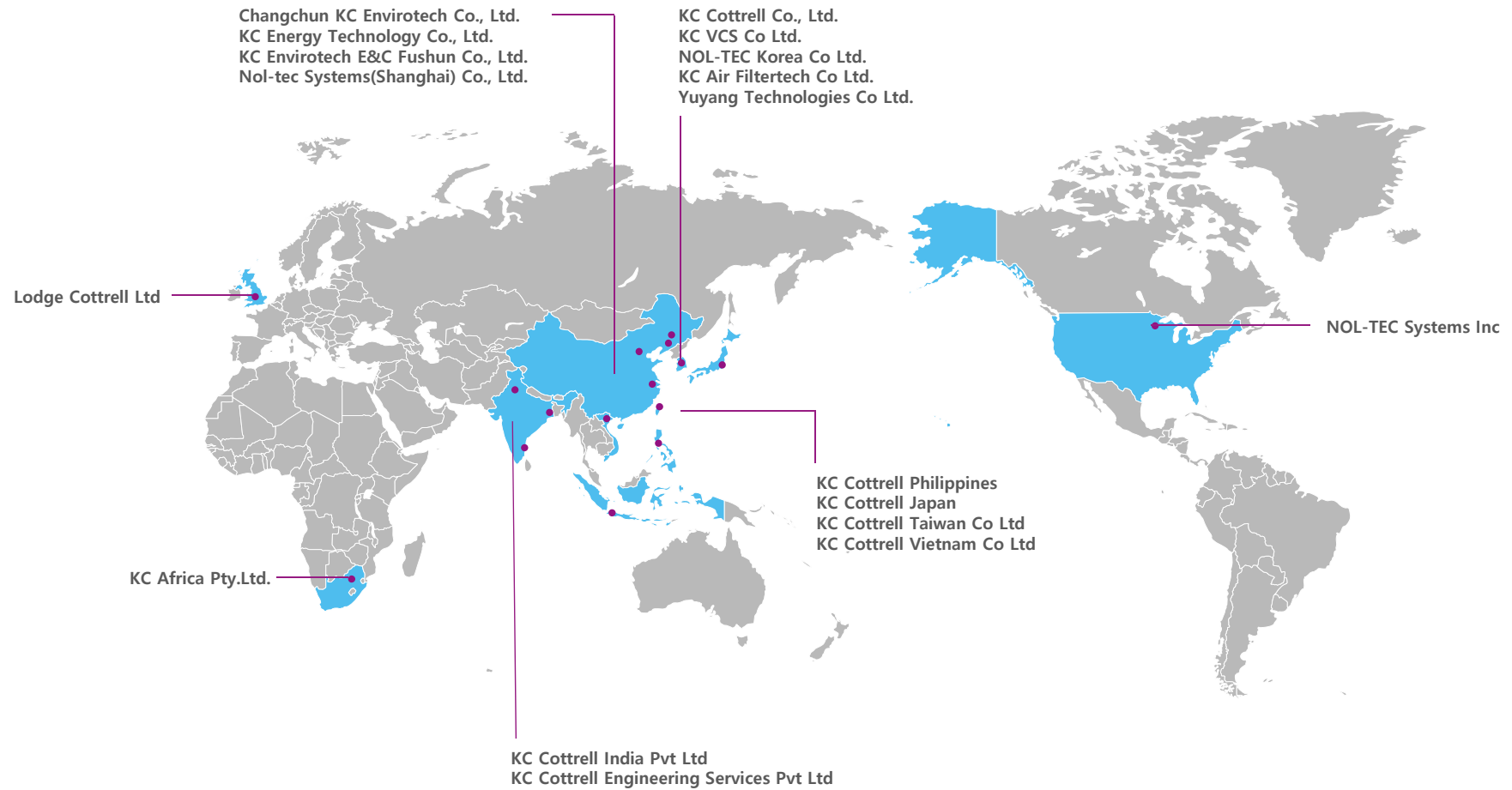
Business **EPC/O&M in Environment & Energy**

CEO **Seo, Dong Young**

Sales ('19) **KRW 300 Billion / USD 250 Million**

Working force **250**

KC Cottrell Global Network



Key Business Areas

Air Quality Control Systems

> Particulate Removal System

- Dry Electrostatic Precipitator
- Wet Electrostatic Precipitator
- Bag Filter
- Ash Handling System
- Tunnel ESP
- Hybrid Module Type Precipitator

> Gas Treatment System

- Wet Flue Gas Desulfurization
- Semi Dry/GSA
- SCR/SNCR
- VOCs Control System
- Exhaust Gas Cleaning System
(For Marine)



Retrofit & Maintenance

- Air Quality Control System Retrofit
- Technical Service
- Feasibility Study



Manufacturing Services

- Dampers
- Steel Work



New & Renewable Energy

- Solar Power System
- Biomass & Waste to Energy



Valve Rotary RTO System

KC Cottrell 

Main Market



Technologies for VOC

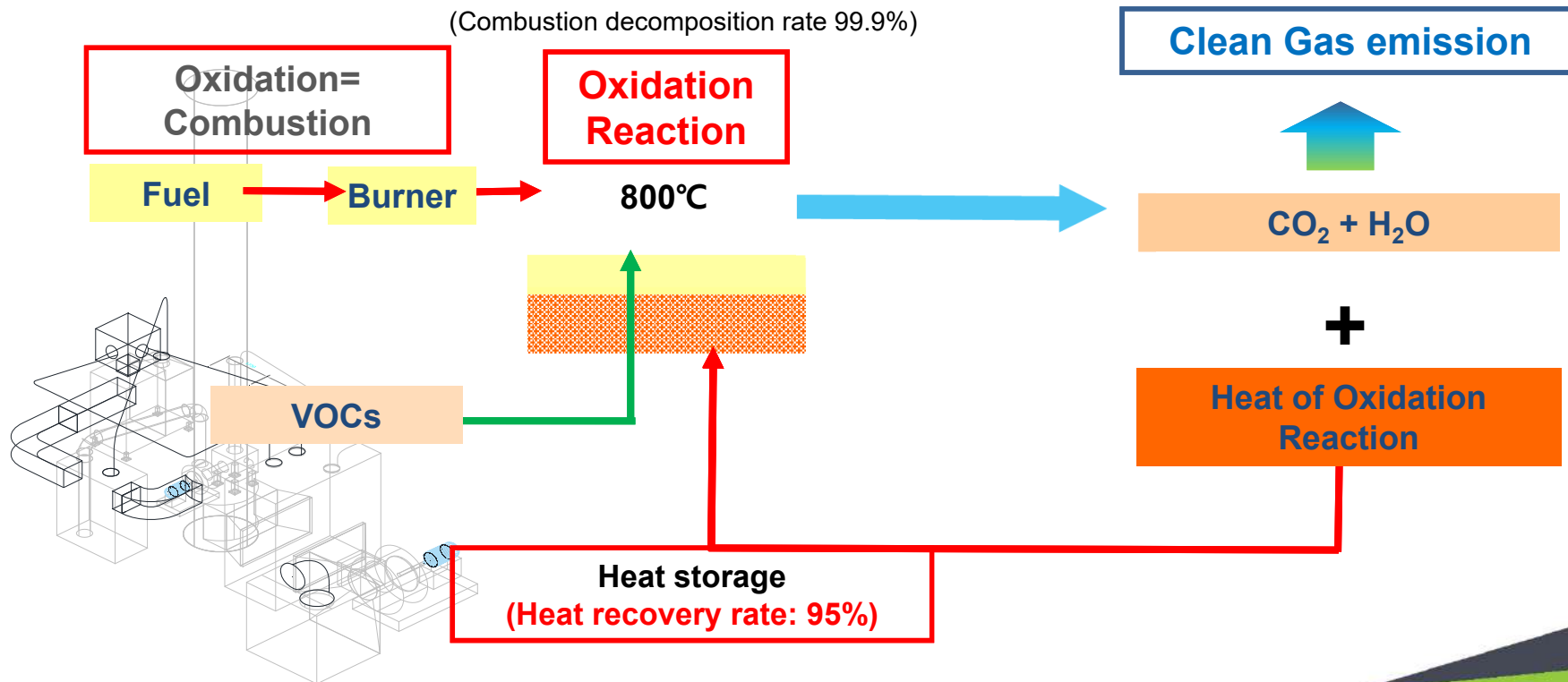
Technology	Concentration [ppm]	Processing Efficiency [%]	Advantage	Weakness
Combustion	100~20000 (Odor More than 10,000 times)	95~99.5	<ul style="list-style-type: none"> * 95% or more energy recovery when using heat storage material * Total solution for all odors and VOCs. 	* Fuel must be used when there is not enough condensed VOC
Catalyst combustion	100~2000 (A low smell)	90~95	* Reaction in lower temperature than thermal oxidizer.	<ul style="list-style-type: none"> * Additional post processing facility for halogen compounds required * Pb, As, P, Cl, S and poisoning by particulate matter
Condensation method	> 5000	50~90	<ul style="list-style-type: none"> * Operational costs can return by collecting substance. * Acting as a concentrator, it can be applied in RTO system as an option. 	<ul style="list-style-type: none"> * Not possible for substances over 37°C * Can form scale on condenser
Adsorption	20~500 (A low smell)	80~85	*Mainly low-density benzene, toluene, styrene Suitable for removing various organic solvent components	<ul style="list-style-type: none"> * Relative humidity under 50% * Low Performance and Fire Concerns by ketone, aldehyde, ester, MEK
Adsorption (Scrubbing)	5~500 (A low smell)	60~70	<ul style="list-style-type: none"> * Mainly low-density VOC * Material return 	* Waste water

The principles of RTO

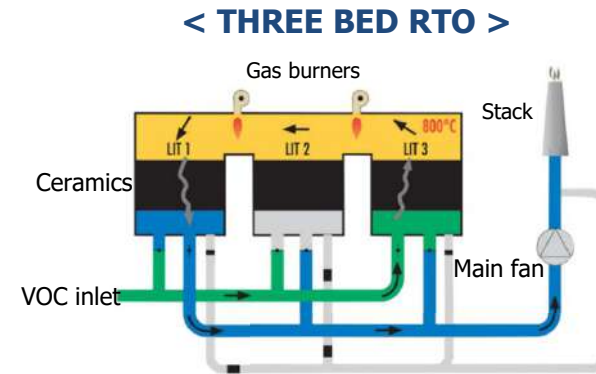
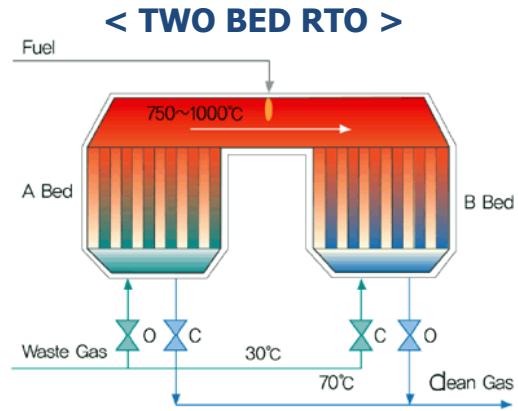


✓ **RTO = Regenerative Thermal Oxidizer**

✓ **RTO** is a facility that treats pollutants by oxidizing and decomposing VOCs into H₂O and CO₂ at 700-800°C



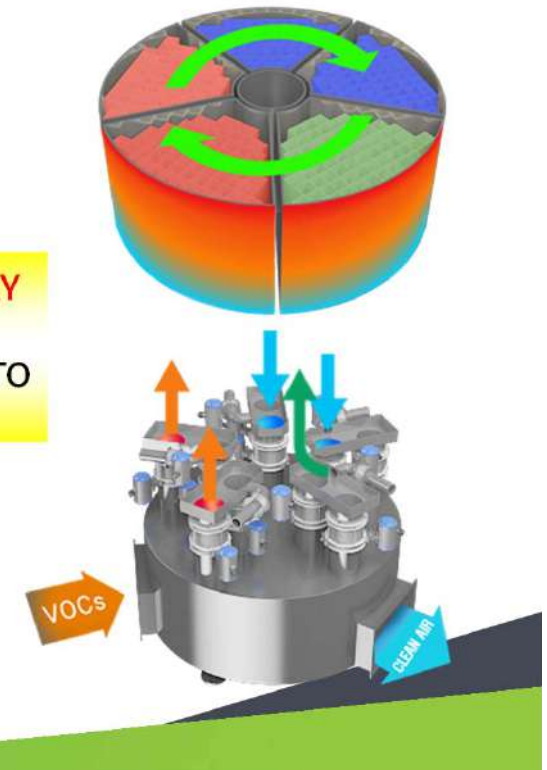
RTO Technology Development Process



< DISK TYPE RTO >

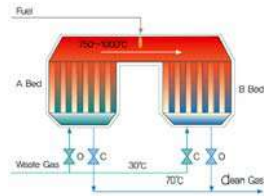


**ADVANCED ROTARY
VALVE ROTARY RTO**

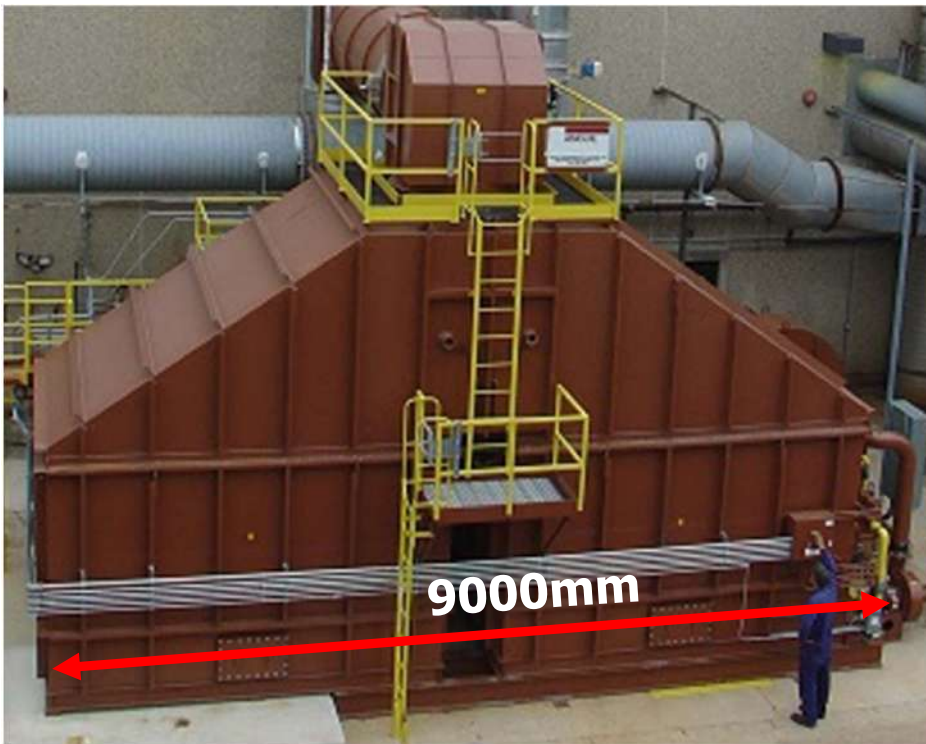
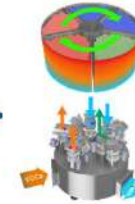


Size Comparison

< TWO BED RTO >




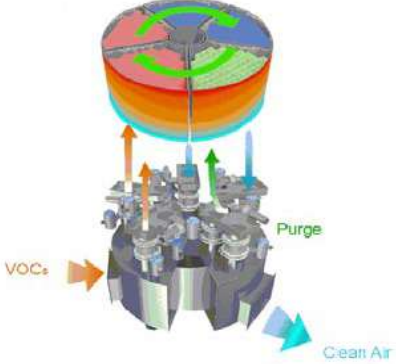
< VALVE RTO >

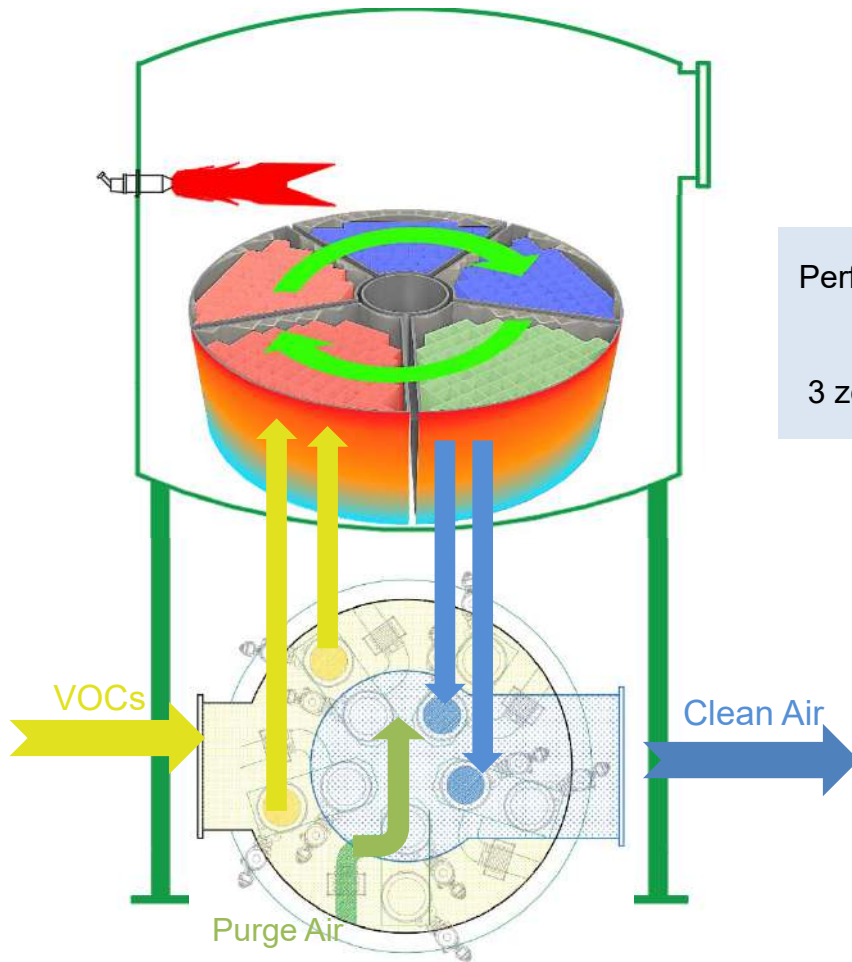


< 700CMM >



< 1100CMM >

CLASSIFICATION	DISK TYPE	VALVE TYPE
<p>FIGURE</p>		
<p>STRENGTH</p>	<ul style="list-style-type: none"> . Separable rotary for maintenance 	<ul style="list-style-type: none"> . No leakage . Semi-permanent valve
<p>WEAKNESS</p>	<ul style="list-style-type: none"> . Leakage with worn sealing part . Repairable by manufacturer only . Short period of maintenance 	<ul style="list-style-type: none"> . Relatively complex electric equipment
<p>EFFICIENCY</p>	<p>95~98%</p>	<p>99~99.5%</p>



Performing pre-heating, heat-recovering and Purging with rotary rotation.

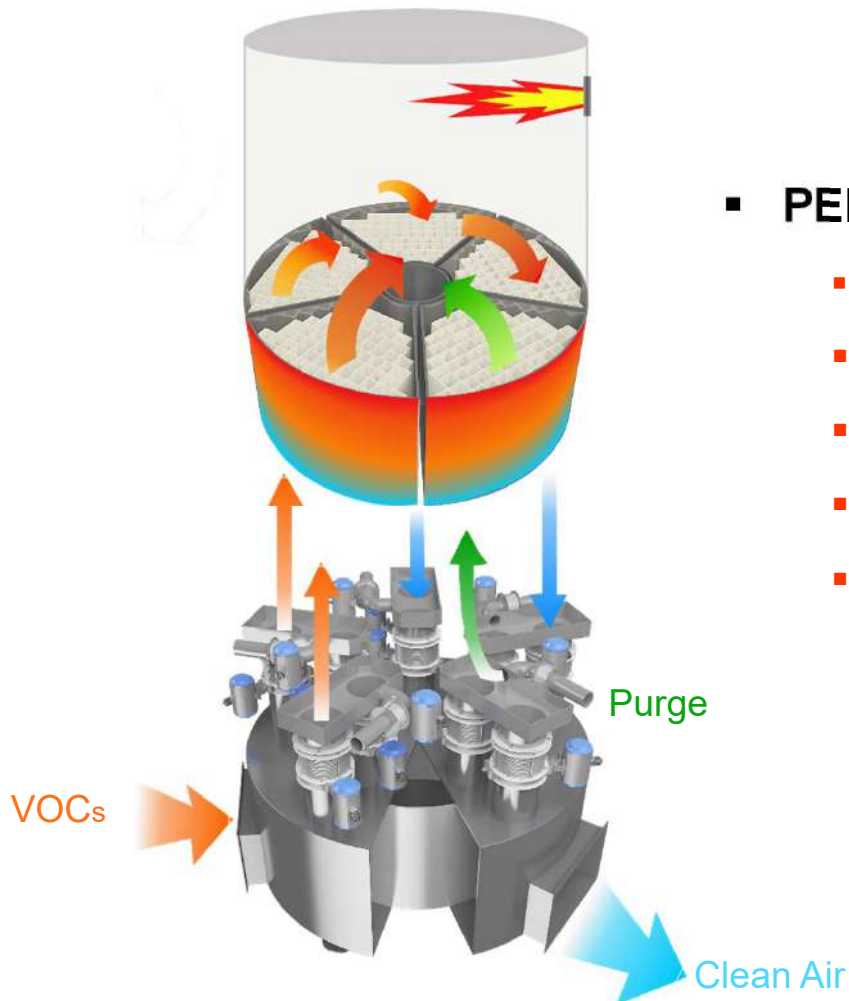
3 zones to prevent from mixing raw gas and treated gas

Butterfly Valve



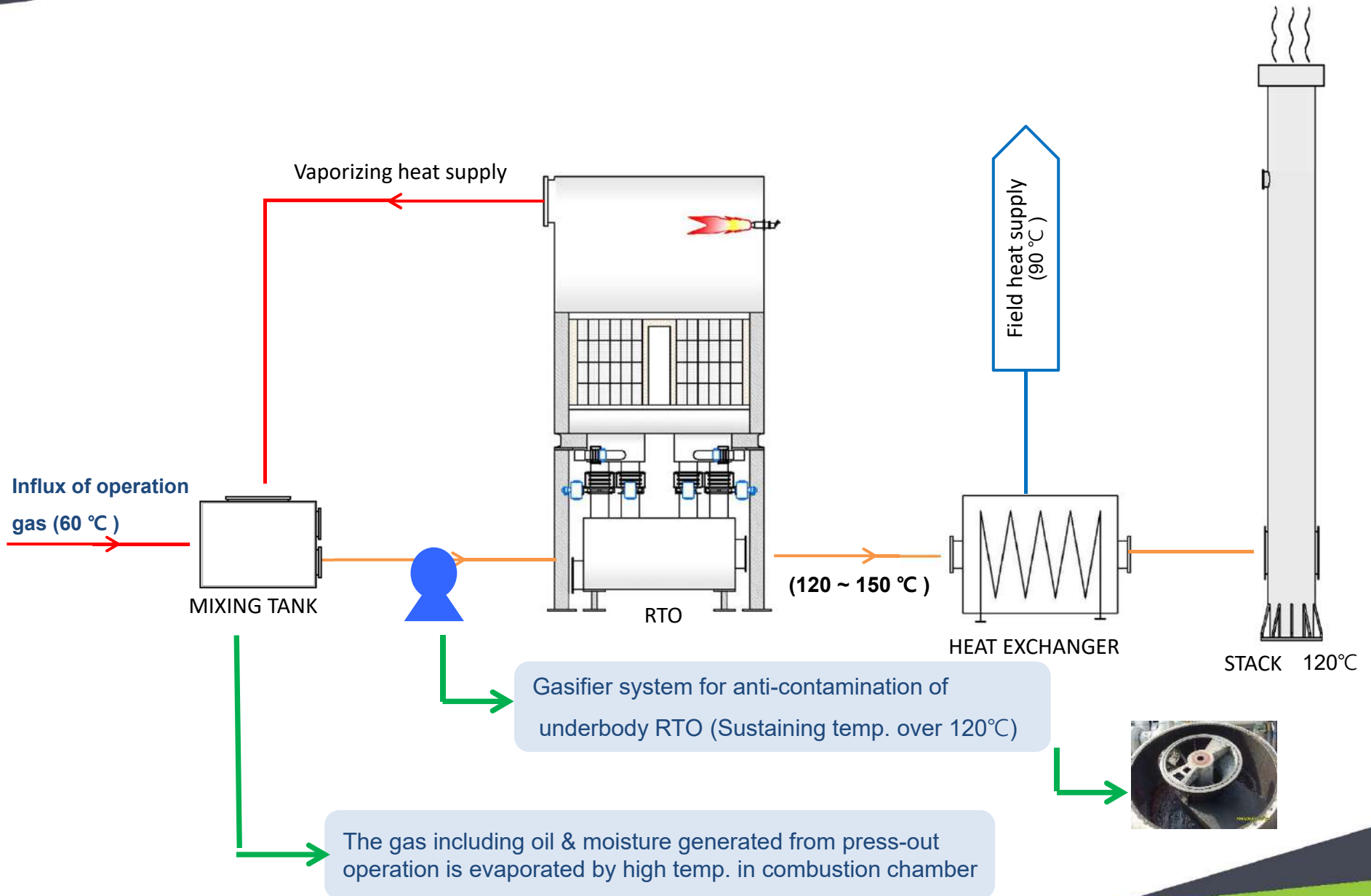
Valve sequentially opens and closes
Repeatedly functions as a rotary.

Combustion Chamber Temp. (800°C~)



▪ **PERFECT – Advantage of R.T.O**

- Excellent VOC removal efficiency(99~99.5%).
- Sustainable processing efficiency rate
- Easy rotary self-maintenance
- Operating even with some of valve malfunction
- Controllable rotary size for various flow quantity



REFERENCES

- China Shanghai NICHYU RTO 3,600 + Concentrator 48,000 m³/hr – Printing



REFERENCES

- Taiwan WAPO Concentrator 120,000 + RTO 30,000 m³/hr – Formosa Plastic



REFERENCES

- J-essel Co. RTO 18,000 + Concentrator 90,000 m³/hr – Chemical(cosmetics)



R.T.O

Pre-filter

Concentrator

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