



GST Introduction



2023
GST

Agenda

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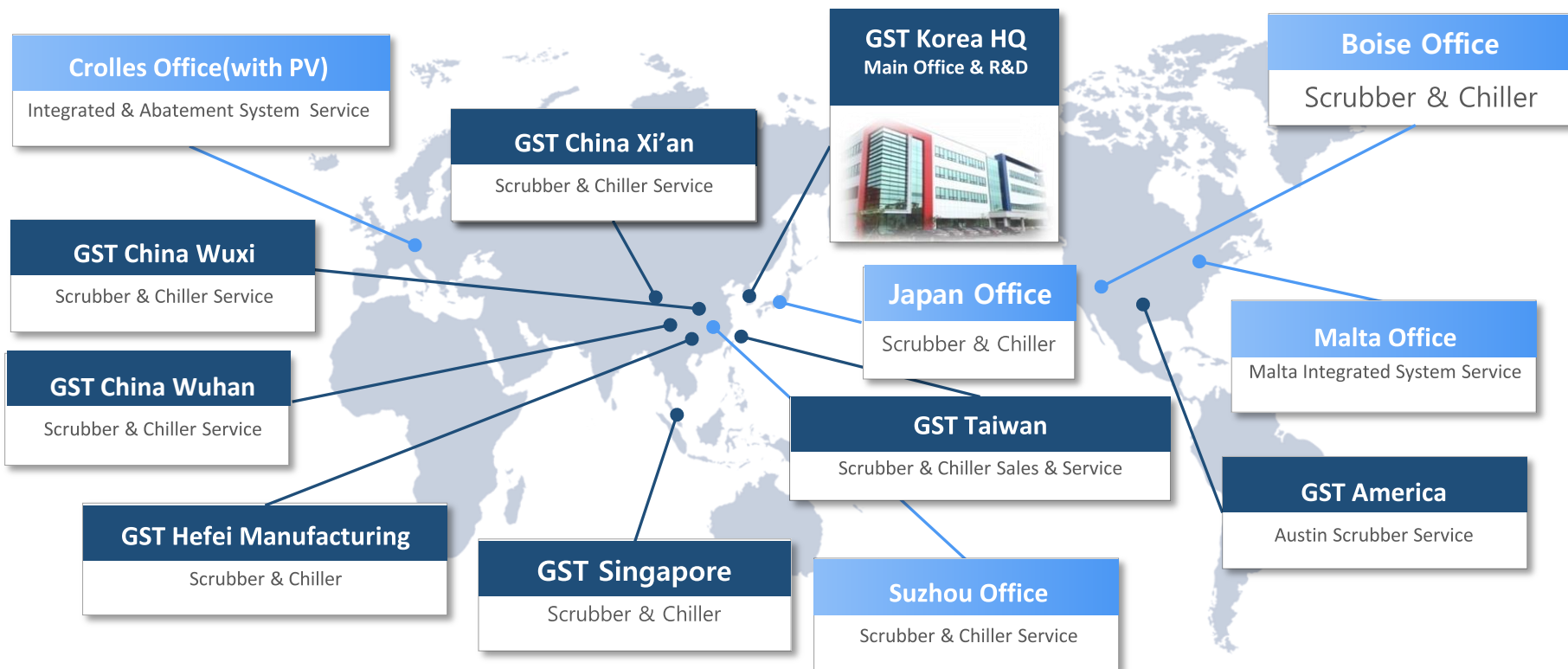
1. Overview

Company name	Global Standard Technology
Established date	2001-10-01
Revenue	263 Million USD (FY22)
Employee	700 people
Main Product	Scrubber, Chiller, Integrated System
HQ/Manufacturing	#15-13, Dongtan Sandan 6-gil, Hwaseong-si Gyeonggi-do, Korea. TEL: +82-31-371-2200
WEB Site	www.gst-in.com

2. History

- **2001** 10 Global Standard Technology foundation
- **2003** 07 ISO 9001(2003.7) / 14001(2007.6) / 27001(2010.8)
- **2004** 10 Established R&D Center
- **2006** **06 IPO (KOSDAQ)**
07 GST America
- **2007** **11 5Million Dollar Export Award**
- **2010** 03 2nd Plant in Jincheon
- **2011** 11 KOSHA18001 Certificates
- **2011** **11 10Million Dollar Export Award**
- **2012** 02 Employment Excellence Award from Minister of Labor
- **2013** 07 GST China
- **2014** **12 20Million Dollar Export Award**
- **2015** 01 Global Hidden Champion Award from Samsung Electronics Company .
- **2016** 01 OHSAS 18001 Certificates
06 GST Taiwan, World Class 300 Global Hidden Champion Award from Korea Government
- **2017** 07 China Manufacturing (HeFei)
- **2018** 02 Employment Excellence Award from Minister of Labor
- **2019** 02 GST Wuhan
- **2020** **04 GST Singapore(SGST)**
- **2021** **06 100Million Dollar Export Award**
- **2022** **01 Reaching cumulative sales over 10,000units of scrubber**
08 Begin constructing 3rd Plant in Pyeongtaek

3. Main Location

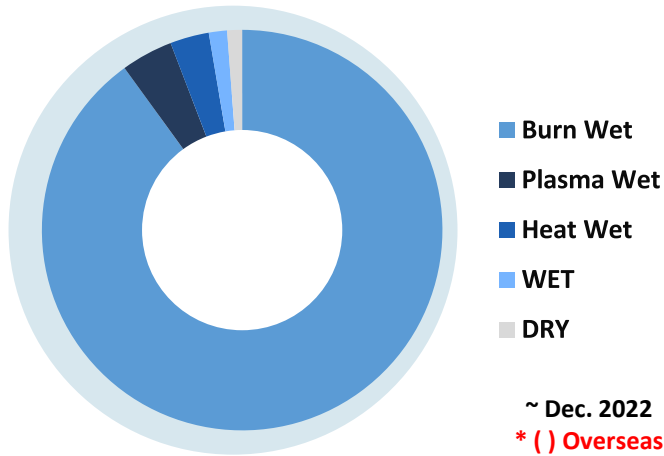


Area	Sales & Service Representative	Location
North America	BAZM	CA Silicon valley
	ALKOR	New York, Malta
Japan	AWP (Air Water Planning)	Osaka, Japan
	Possible	Miyazaki, Japan
	TMH	Oita, Japan

Area	Sales & Service Representative	Location
Singapore	SEUL	Singapore
Taiwan	Genestech	Hsinchu
China	Gentech	Shanghai
	Retech	Shanghai
Europe	Pfeiffer Vacuum	Crolles
	Veonis	Germany

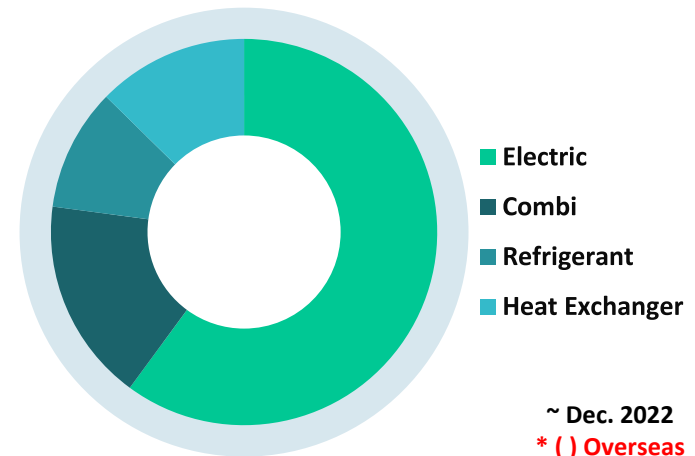
3-1. Install base

Scrubber Installed Base



Scrubber	Installed base	Process
Burn Wet	>9,570	CVD, Diff, Etch
Heat Wet	>270	CVD, Diff
Plasma Wet	>500	CVD, Diff, Etch
WET	>210	Clean
DRY	>140	IMP
VOCAS	>570	Photo
Total	>11,280(>4,500)	-

Chiller Installed Base



Chiller	Installed base
Electric	>6,570
Refrigerant	>960
Combi	>670
Heat Exchanger	>1,010
Others	>330
Total	>9,560(>800)

4. GST Group



- **PCM Refrigeration**



- **Robotic Service for Human**
 - Eldercare
 - Education
 - Information



- **Heating Jacket**

5. Customer

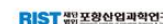
Semiconductor



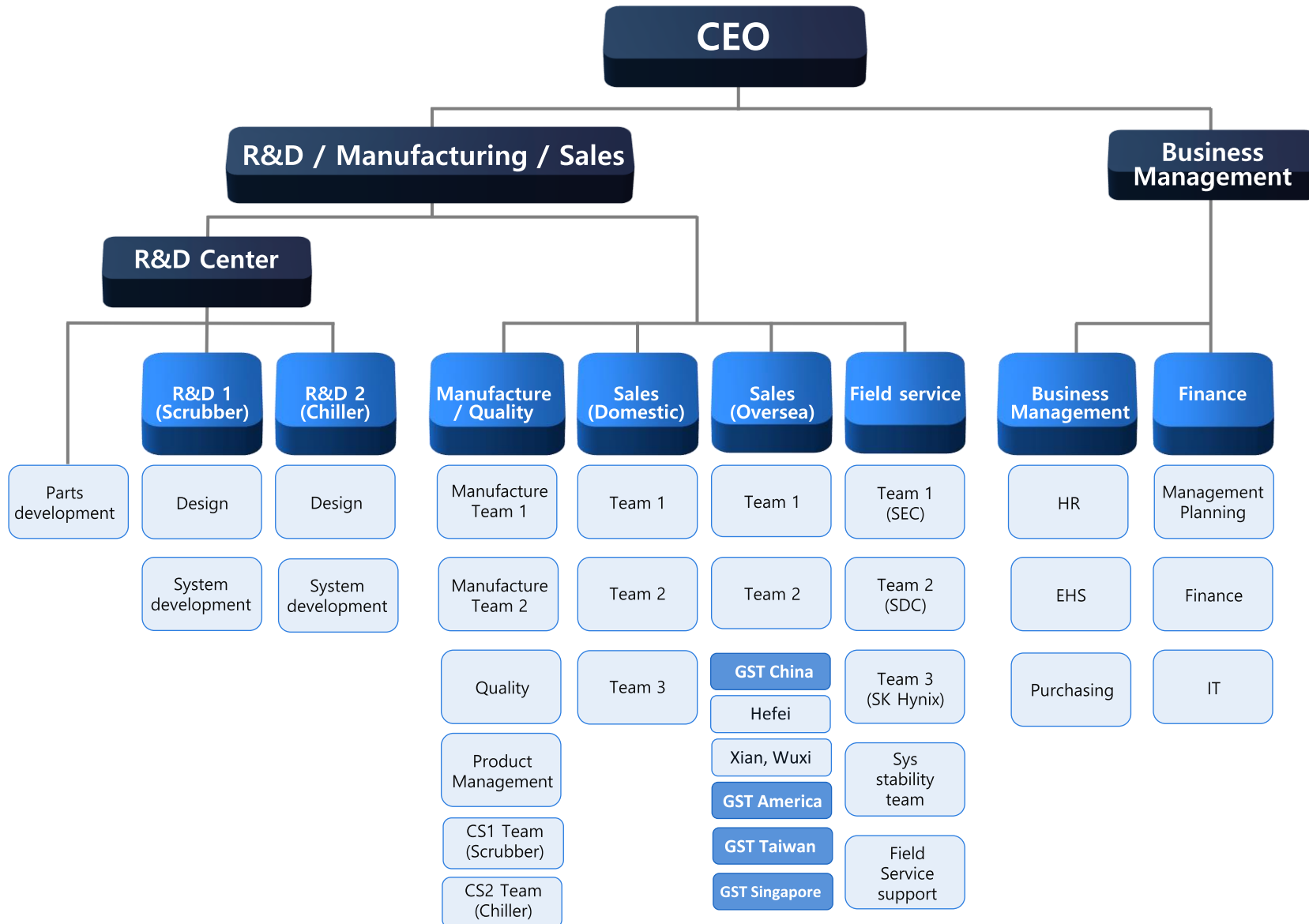
Display



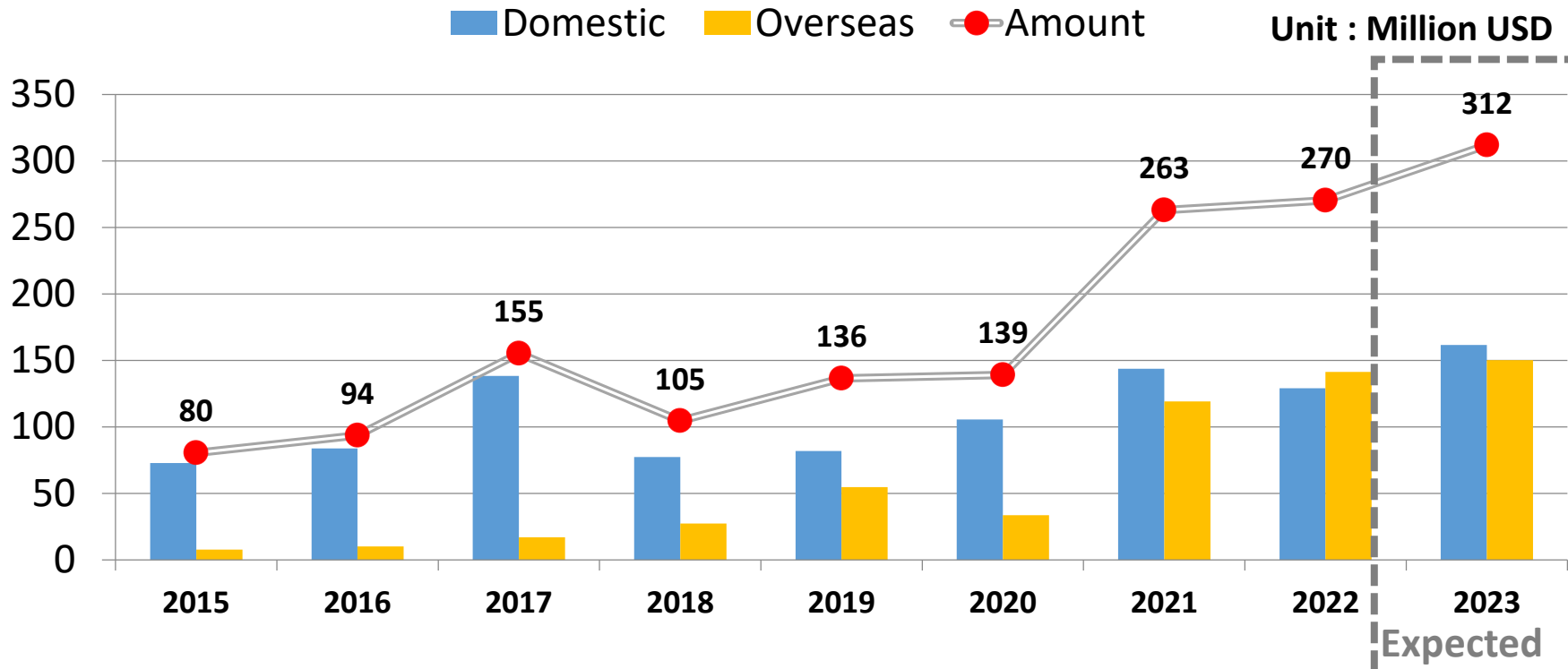
Laboratory



6. GST Organization



7. Revenue Record









157% Increased For last 5 Years








8. GST Product Portfolio

Abatement System

Burn Wet	Plasma Wet	Integrated	WET	WET	DRY
GAIA-I	GAIA-P20	iVAS	AQUA	SWS-I	SDS
All Process	All Process	All Process	WET Treatment	WET Treatment	Implant
Capacity 1,000slm	Capacity 1,000slm	Capacity 1,000slm	Capacity 100CMM	Capacity 1,000slm	Capacity 150LPM
					
<ul style="list-style-type: none"> • High efficiency • Low utility • Energy saving • Long PM cycle • Anticorrosion Material • Low powder issue 	<ul style="list-style-type: none"> • Energy saving • Easy PM • Long PM cycle • Anticorrosion Material • Low powder issue 	<ul style="list-style-type: none"> • Low hook up cost • Simple management EHS and operation • Best flexibility for various configuration 	<ul style="list-style-type: none"> • Very low operating costs • Long PM cycle • Low powder issue • Anticorrosion material 	<ul style="list-style-type: none"> • Very low operating costs • Long PM cycle • Low powder issue • Anticorrosion material 	<ul style="list-style-type: none"> • Zero downtime with bypass can • Long PM cycle • Low powder issue • Anticorrosion material

8. GST Product Portfolio

Chiller

Thermal Electric (Direct)	Thermal Electric (Proximity)	Combi (Refrigerant + H/E)	Heat Exchanger	Refrigerant
EES / EHD-series	EES-series	RSHD-series	HS-series	RS- series
LAM, AMAT, TEL	LAM, MATTSON	WONIK, ICD	ULVAC	TOKKI, AP Systems
	 <p>POU</p>			
<ul style="list-style-type: none"> • Top & Bottom control • Reduce electric power consumption • Immediate temp control • Reduction coolant usage • Return coolant in PM time • High quality TEM, High capacity • Minimize foot print • 500W X 500D X 775H (mm) 	<ul style="list-style-type: none"> • Reduce electric power consumption • Immediate temp control • Coolant usage reduction • Return coolant in PM time • High quality TEM, High capacity • Minimize foot print • 600W X 650D X 570H (mm) 	<ul style="list-style-type: none"> • Top & Bottom control • Minimize foot print • High/Low temp control (Wide range temp control) • 900W X 1200D X 1750H (mm) 	<ul style="list-style-type: none"> • Reduce electric power consumption • 550W X 950D X 1250H (mm) 	<ul style="list-style-type: none"> • Extreme process temp control • Reduce electric power consumption by inverter • 1000W X 1900D X 1900H (mm)

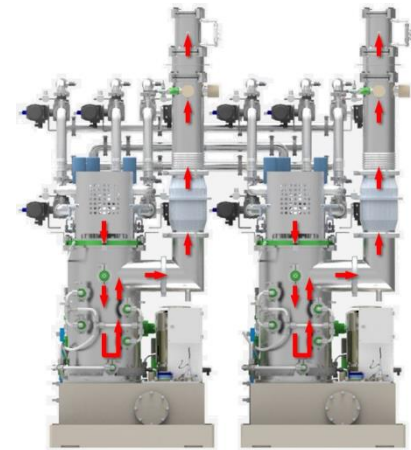
8-1. Abatement Efficiency

Gas	Reaction	Efficiency
CF ₄	$CF_4 + 2CH_4 + 8O_2 \rightarrow 4HF + 3CO_2 + 2H_2O$	≥ 90%
SF ₆	$2SF_6 + 5CH_4 + 6O_2 \rightarrow 12HF + 2H_2S + 5CO_2 + 2H_2O$	≥ 95%
NF ₃	$2NF_3 + 2.5CH_4 + 3.5O_2 \rightarrow N_2 + 6HF + 2.5CO_2 + 2H_2O$	≥ 95%
SiH ₄	$SiH_4 + CH_4 + 4O_2 \rightarrow SiO_2 + CO_2 + 4H_2O$	≥ 99%
TEOS	$(C_2H_5O)_4Si + CH_4 + 14O_2 \rightarrow SiO_2 + 9CO_2 + 12H_2O$	≥ 99%
F ₂	$2F_2 + 2CH_4 + 3O_2 \rightarrow 4HF + 2CO_2 + 2H_2O$	≥ 99%
C ₂ HF ₅	$C_2HF_5 + 1.5CH_4 + 4O_2 \rightarrow 3.5CO_2 + 5HF + H_2O$	≥ 99%
Cl ₂	$2Cl_2 + 2CH_4 + 3O_2 \rightarrow 4HCl + 2CO_2 + 2H_2O$	≥ 99%
BCl ₃	$2BCl_3 + 2CH_4 + 4O_2 \rightarrow B_2O_3 + 6HCl + H_2O + 2CO_2$	≥ 99%
N ₂ O	$2N_2O + CH_4 + O_2 \rightarrow 2N_2 + CO_2 + 2H_2O$	≥ 90%
HF	Water Soluble	≥ 99%
HCl	Water Soluble	≥ 99%
NH ₃	Water Soluble	≥ 99%
SiCl ₄	Water Soluble	≥ 99%
ClF ₃	Water Soluble	≥ 99%

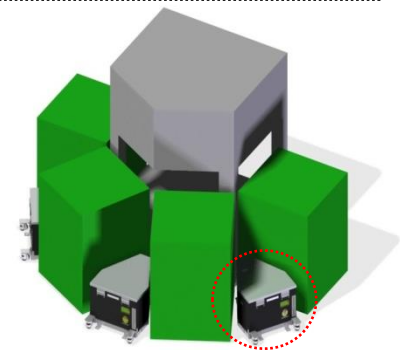
※ GST's guaranteed efficiency may vary depending on customer requirements.

9. GST Advantage

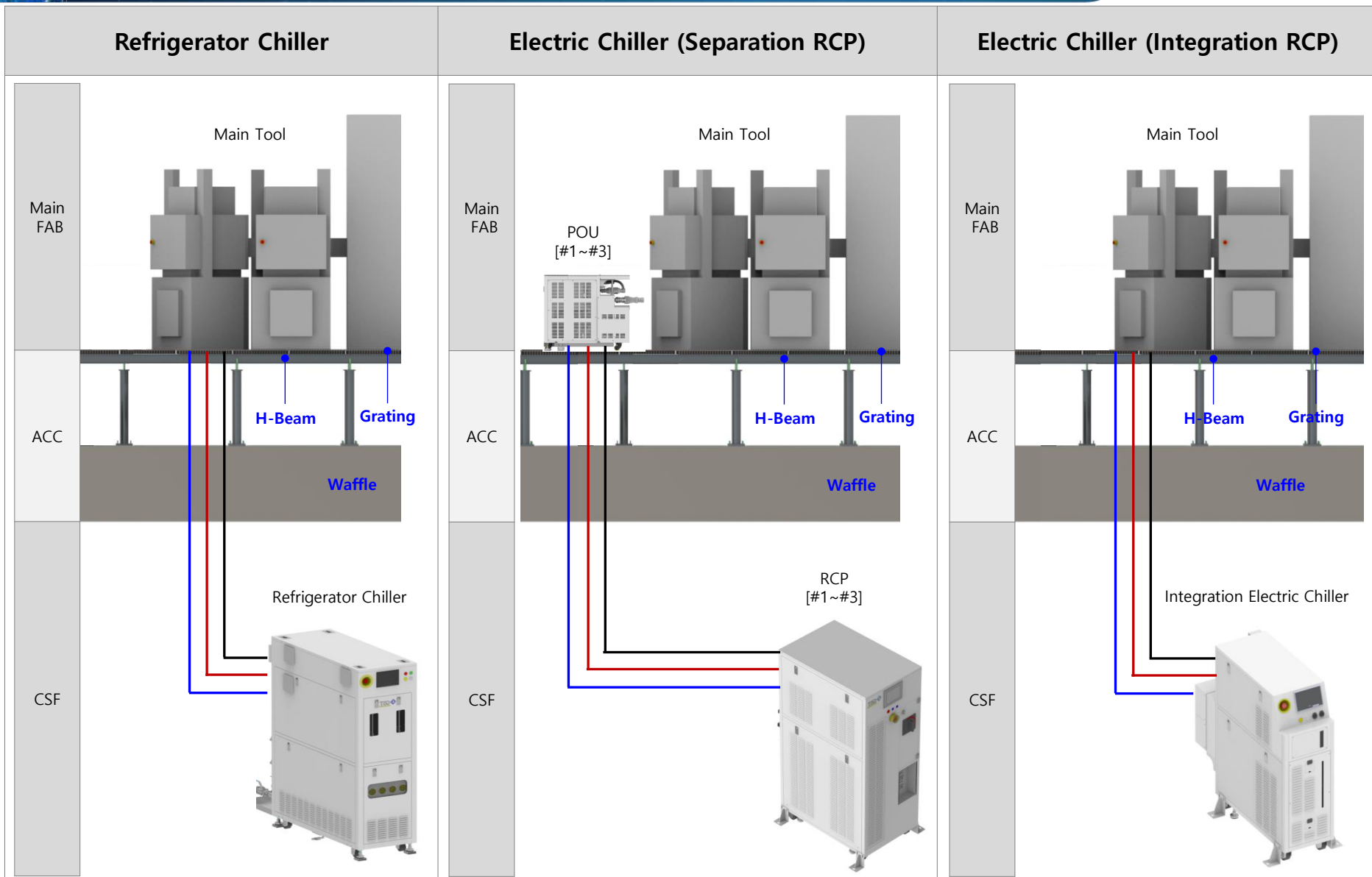
- Various Abatement Type
 - Burn-wet, Plasma-wet, Wet, Dry, Integrated type(with pump)
 - Dual & Twin Operation system with zero down time of main tool
 - Max 6 inlet configuration with Dual
 - Long PM period with various option plan for all applications (H/J, Hot N2, Heat Pipe, Band Heater, Scraper and etc.)
- Chiller with wide temperature range
 - Various temp application Refrigerant and Electric chiller with -80°C to $+250^{\circ}\text{C}$
 - On Tool type for electric chiller
 - Multiple temperature control
- Customizing and Flexibility Design for dimension and foot print
- Continuous Improvement Parts
- Full support for customer service on site
 - Quick response and management of consignment part plan
- Low Price and Operation Cost



On Tool configuration



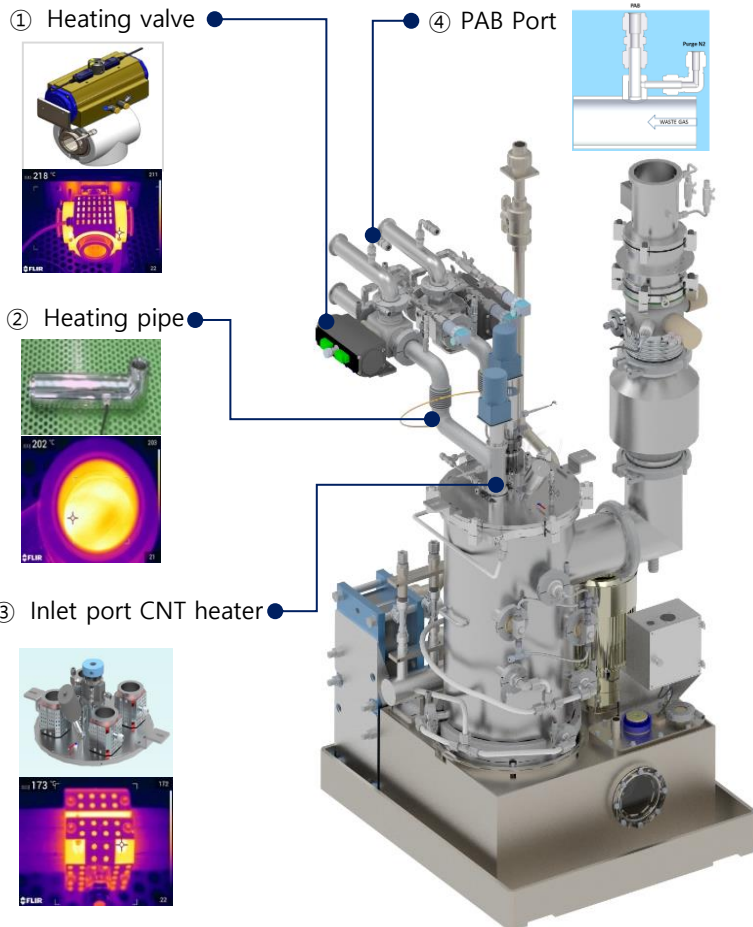
10. Chiller Features



11. Abatement Features

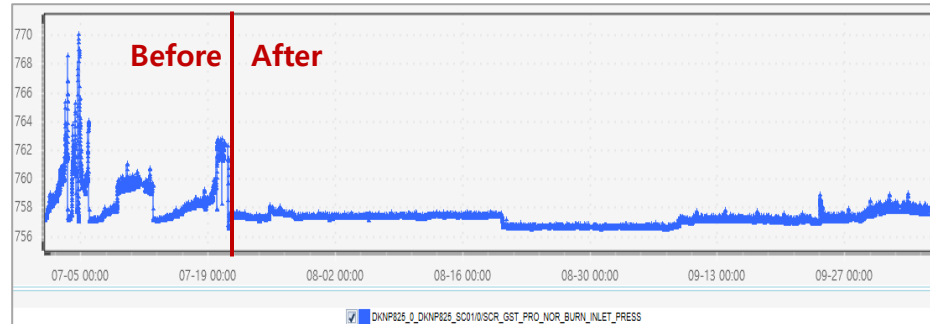
Productivity

✓ Powder Clogging Area

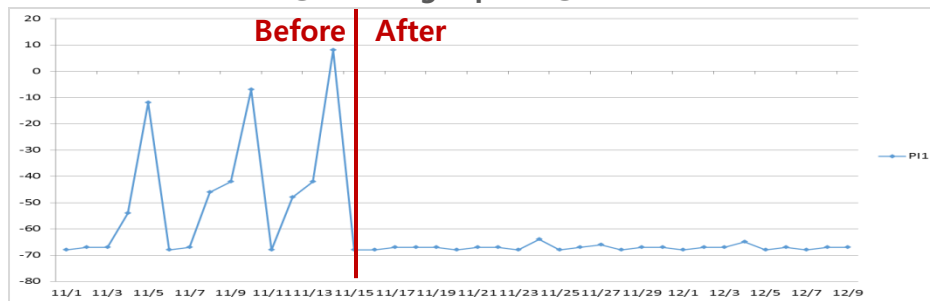


※ CNT : Carbon Nano Tube

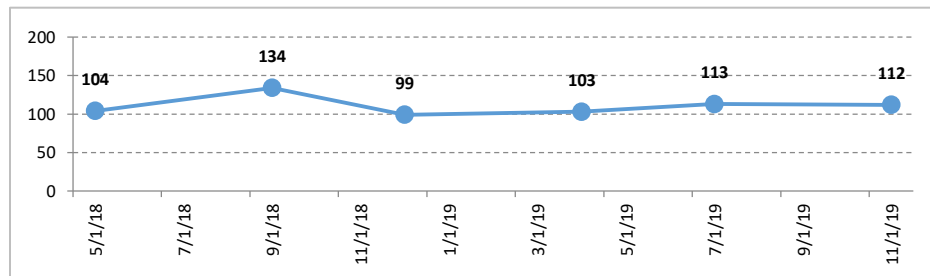
『 Diff SiN MTBP : 27days → **115days in progress**
 ① Heating V/V + ③ Inlet CNT heater 』



『 Metal TiN MTBP : 5days → **60days in progress**
 ② Heating Pipe + ④ PAB Port 』

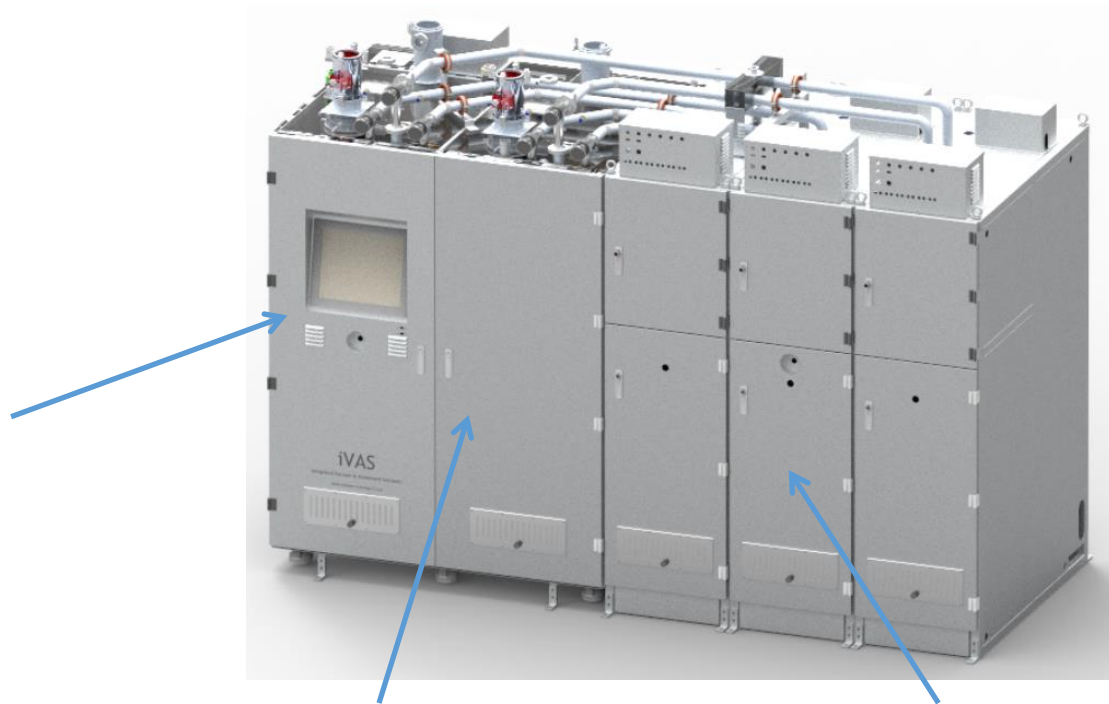


『 Metal BW MTBP : 30days → **110days**
 GAIA-I Model change 』



12. iVAS (Integrated Vacuum & Abatement)

- **Control Module**
 - Touch-screen GUI
 - Ease of use
 - Single point utility
 - Ease of installation



- **Other Enhancements**
 - Triple seal center ring
 - Superior protection
 - Tension lock KF clamp
 - Vibration resistance
 - Hot N2 injection
 - Scrapper for Powder removing

- **Scrubber Module**
 - GST Dragon series
 - Dual stage combustion
 - High DRE & Low NOx
 - Redundant abatement
 - Virtually zero downtime
 - Auto back-up switch

- **Vacuum Module**
 - Vacuum pump
 - Accessories
 - Auto protection gate valve
 - H-leg maintenance
 - Heater jacket



Thank you !

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