



HPT S.r.l.

“High Tech is all we do”

H High
P Purity
T Technology

● HPT History



- **History:** HPT has been a provider for over 30 years of technical and commercial solutions to the semiconductor and other high-tech industries
- **Group:** Part of the CMAT Group (Consorzio Meridionale Alta Tecnologia), it enjoys relationship with other group companies that can provide engineering and R&D support as needed.
- **Location:** Based in the Greater Milan area it employs 15 people, to serve the European market.
- **Verticals:** Main verticals served include the Semiconductor Industry, Industrial Gas Manufacturers, Green/Renewable energy providers, battery manufacturers
- **Products:** Offering ranges from UHP gas distribution components like valves, fittings etc, to gas analyzers and analytical systems, gas detectors, Toxic gas abatement systems, and FM approved corrosive fumes ducts

Our Company Culture



Vision

Acting as the lifeblood of business, we aim to be the engine of progress for innovative companies



Mission

We manage complex systems with speed and scale, growing everyday in the global fast-paced manufacturing industry



Values

- People Health and Safety
- Excellence and Reliability
- Flexibility + Speed = Agility
- High-end Creativity
- Integrity
- Winning together

● Industry Partners



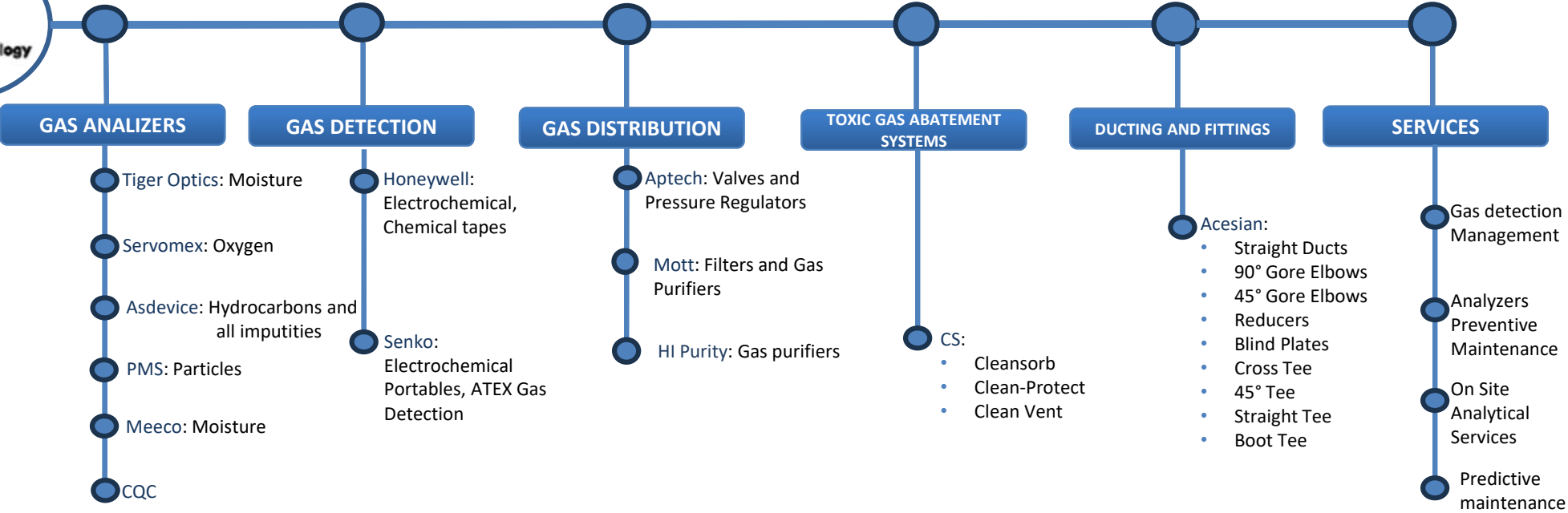
STMicroelectronics

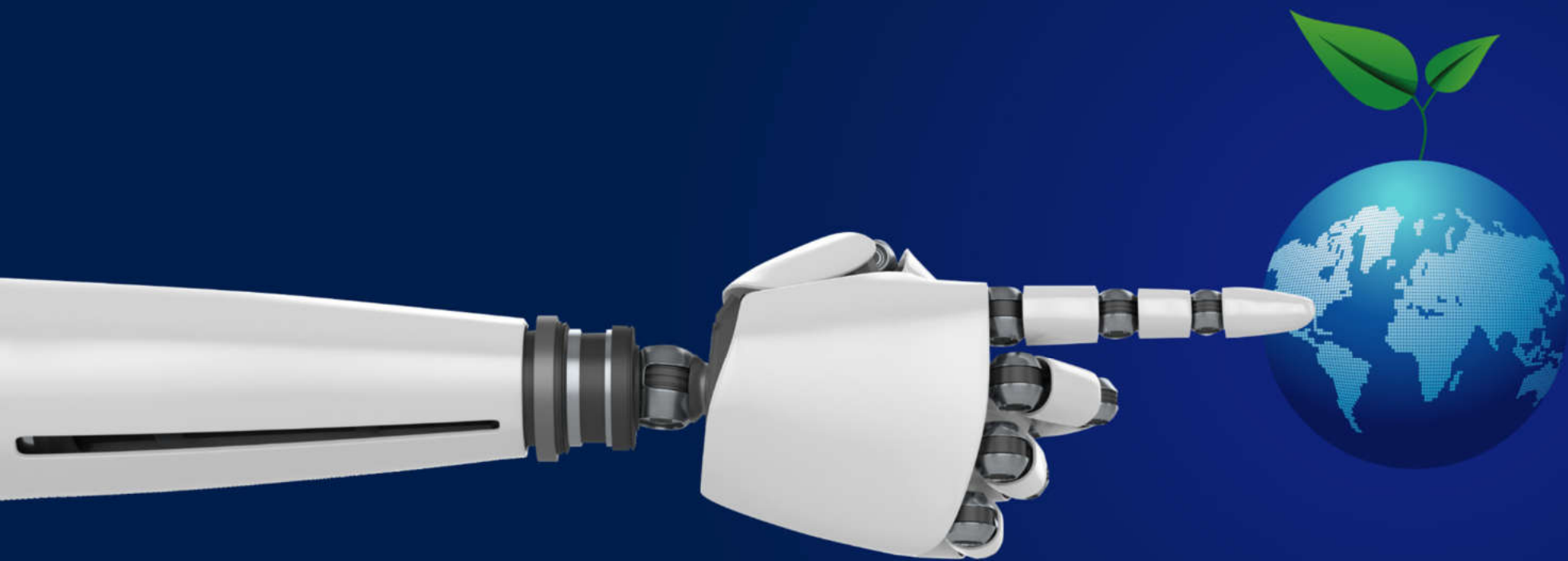
- Enel
- Infineon
- Lfoundry
- Fincimec
- CNR
- Exyte
- Air Liquide
- Texas Instrument
- Micron

- Applied Materials
- Technoprobe
- Sapio
- Linde
- Vishay
- Indexa



Our Portfolio and Value Proposition





Gas Analysers CQC

HI-TECH



● Gas Analyzers and CQC

- Stand Alone
- In an analytical rack (CQC)
- Moisture, Oxygen, Hydrocarbon analyzers
- Continuous gas analyzers (CGA)
- Gas Chromatographs
- Particle counters
- Quality control at the inlet-outlet of Gas Purifiers



Tiger Optics Halo KA3+: Moisture sub ppb



Servomex: ppm-ppb Oxygen Analyzer



Meeco: Moisture ppm-low ppb



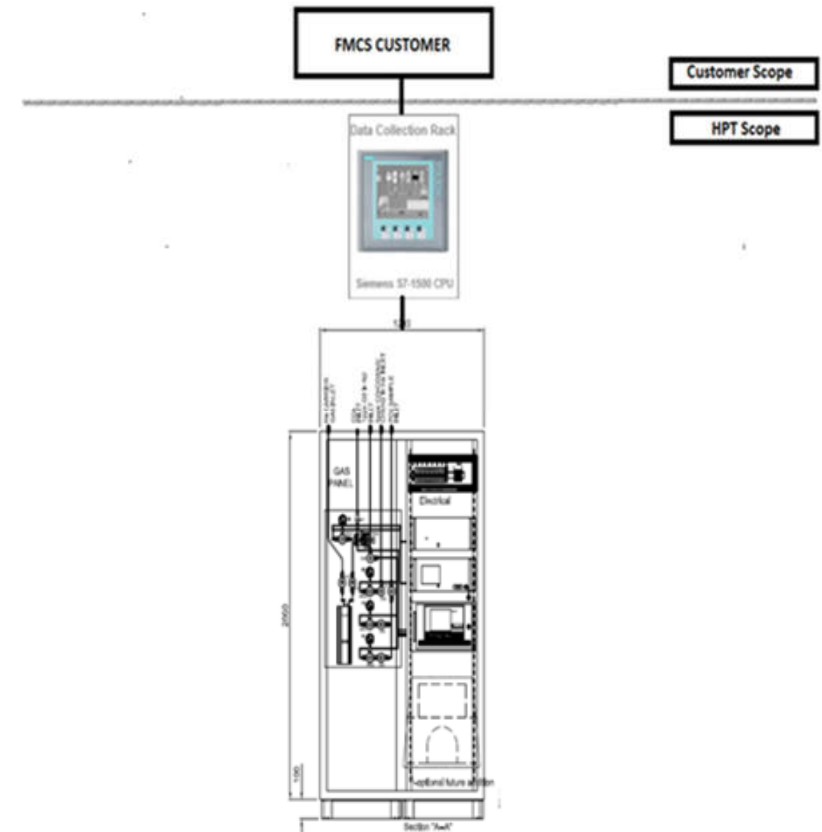
AS Devices: Hydrocarbon Analyzer

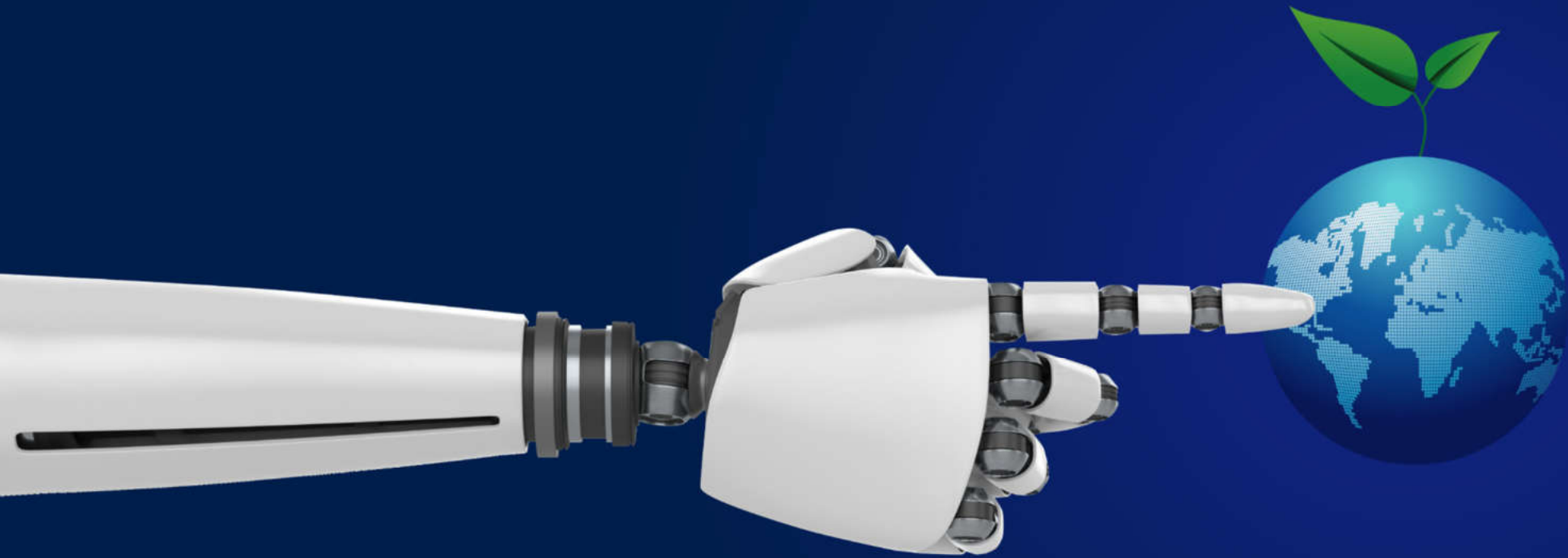


PMS: Particles Counter



- Independent system integrator. Choice of the best analyzers for the application
- Class 100 clean room assembly, orbital welding, minimization of dead volumes.
- Selection of state-of-the-art components for all wetted surfaces
 - 316 SSL <10 micrometer
- Construction according to SEMI Standard F-20.
- Scada and connection to Customer FMCS
- FMCS installation, maintenance and support at all ST Micro sites by fully trained personnel





Gas Detection

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● Gas Detection

- Fixed and Portable gas detection
- Electrochemical, Chemical tape and FTIR technologies
- Complete TGMS (Toxic Gas Monitoring Systems)



Honeywell Electrochemical



Senko Electrochemical



Honeywell: Chemical tapes



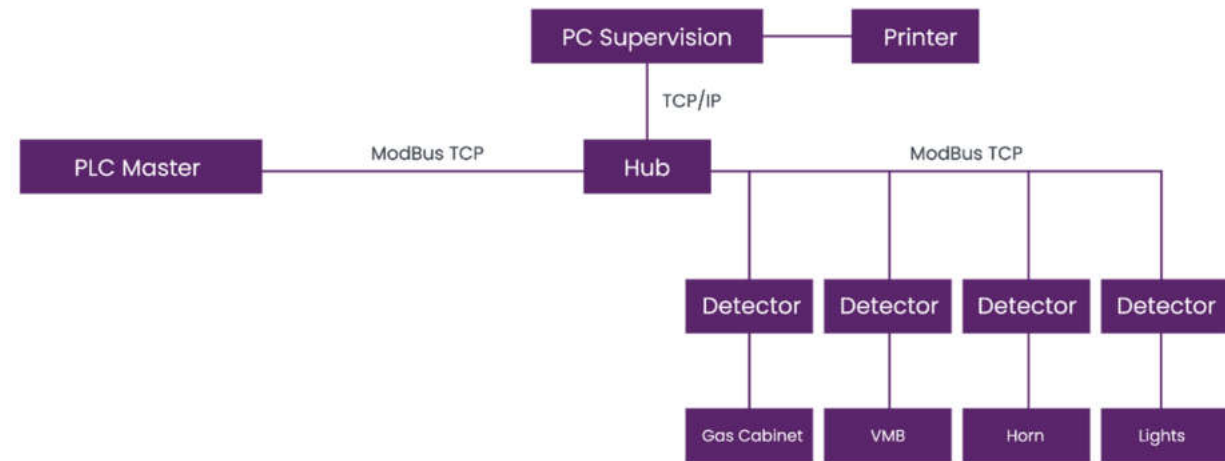
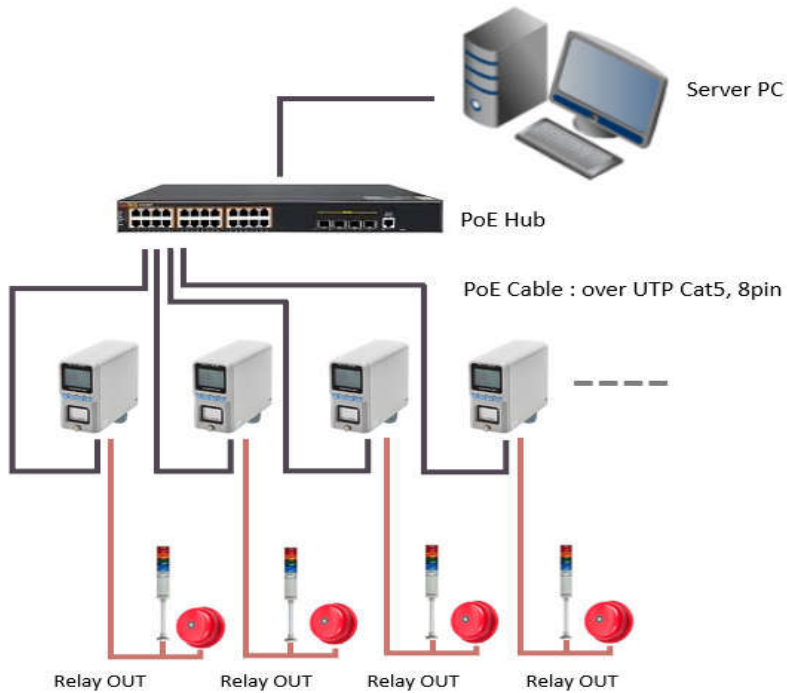
Senko: atex fixed diffusion



Senko: portable multi/mono gas

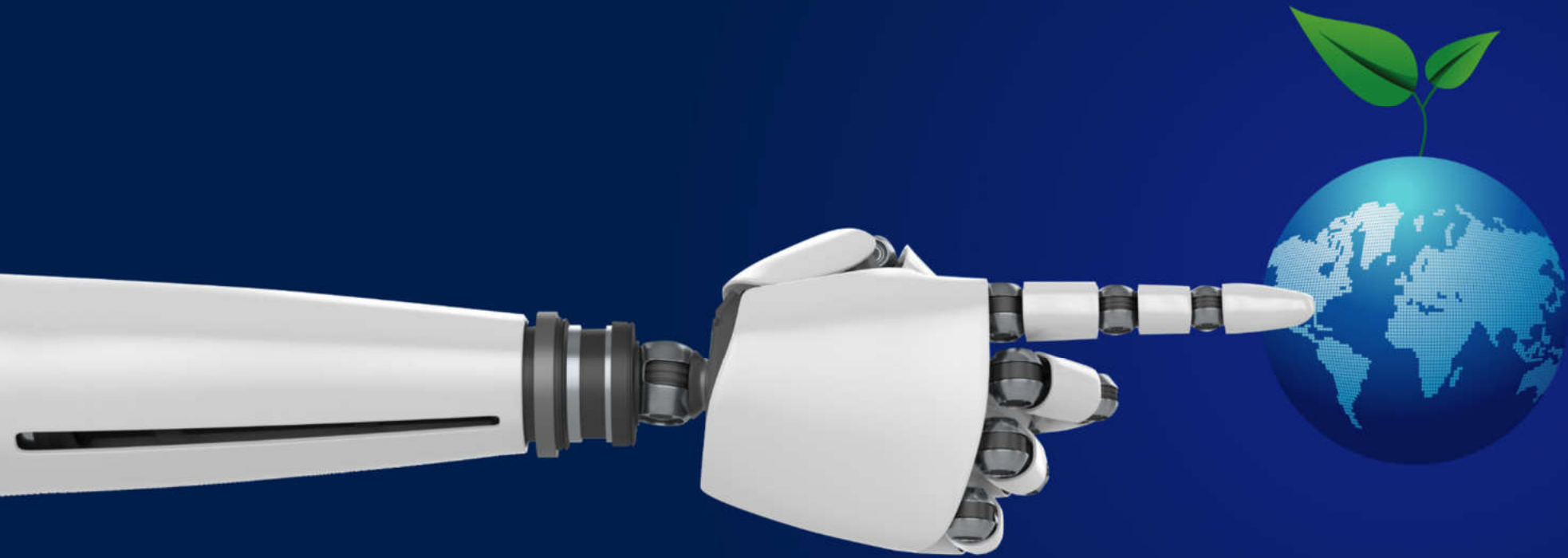
Gas Detection TGMS

Totally open architecture



12

No 'proprietary' software needed to change points. PoE



UHP Gas Distribution Systems

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● UHP Gas Distribution Systems

- Pressure Regulators
- Valves
- Piping and fittings
- POU and bulk UHP gas filters
- Gas Purifiers



Ap-Tech Pressure regulators & Valves



Mott: UHP Gas filter



Mott: Gas Purifiers

APTECH MANUAL AND PNEUMATIC VALVES:

- Replaceable seat
- Stainless steel 316L VAR secondary remelt or Ni-Cr-Mo alloy construction
- Operating pressures from 125 psig (9 bar) to 3,000 psig (207 bar)
- Flow capacity 0.23 to 0.29 Cv
- Multi-port options available



Valves Pressure regulators and Piping

APTECH PRESSURE REGULATOR:

- Single stage
- SS 316L VAR secondary remelt or super alloy construction
- Cleaned, assembled and packaged for high purity semiconductor applications
- Vacuum to 3,500 psig (241 bar) inlet HR option to 4,500 psig (310 bar)
- Flow rates—standard to 30 slpm (1 scfm)



Filters and Purifiers

MICRO BULK GAS PURIFIERS:

Offer moderate flow rates, serving high purity and permanently installed gas delivery systems.

These solutions are designed to meet the specific requirements of any gas delivery system by allowing for customization of critical features.



Applications:

- High production rate weld gas/purge gas
- Glove box purge gas
- Annealing cover gas
- UHP Applications
- Additive manufacturing

GAS FILTERS:

UHP Gas Filters provide 9-log filtration of particle down to $0.0015\mu\text{m}$ resulting in particle-free gas.

These filters are compatible with most high purity electronics grade process gasses.



FIBER BULK FILTERS:

Provide filtration of particles down to $0.0015\mu\text{m}$ resulting in particle-free gas. In addition, the flow versus differential pressure performance of these filters is equal or superior to the performance of the competitive polymer products.

Metal filter is used downstream of purification systems, cryogenic systems and air separation plants to ensure gas quality and provide protection against catastrophic particle disturbance.



HI PURITY-GAS PURIFIERS



IGP Purifier series

- Purification method : Physical (Molecular Sieve) + Chemical Adsorption (Ni cat.)
- Sample gas : N₂, Ar, He, H₂, O₂, CO₂, CDA, Kr, Ne, Xe, NH₃
- impurity : H₂O, H₂, CO₂, O₂, CO, NMHC, Bases, Organics, Acids, Refractory Compounds, Metals
- Flow rate (Max.) : 5~2000 slpm



R/N/HGGP Purifier series

- Purification method : Chemical Adsorption (Getter)
- Sample gas : N₂, Ar, He, H₂
- impurity : H₂O, H₂, CO₂, O₂, CO, CH₄, N₂
- Flow rate(Max.) : 1~5 slpm
- Flow rate option : 50/100/150 slpm



GP Purifier series

- Purification method : Physical (Molecular Sieve) + Catalyst (PdO) or Chemical Adsorption (Ni Cat, Getter)
- Sample gas : N₂, Ar, He, H₂, O₂, CO₂, CDA, Kr, Ne, Xe, NH₃
- impurity : H₂O, H₂, CO₂, O₂, CO, CH₄, Bases, Organics, Acids, Refractory Compounds
- Flow rate(Max.) : Getter type(up to 300 Nm³/hr)

From point of use in line ambient gas purifiers to large bulk gases catalytic and getter purifiers

Purifiers line up

IGP SERIES *In-Line Purifier (ambient)*

Process Gas	Model	Impurities Removed								Lifetime	Flowrates
		O ₂	H ₂ O	CO	CO ₂	H ₂	CH ₄	N ₂			
Rare Gas	IGP-R	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb				Limited Lifetime	Up to 20,000 slpm
Nitrogen	IGP-N	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb				Limited Lifetime	Up to 20,000 slpm
Hydrogen	IGP-H	<1 ppb	<1 ppb	<1 ppb	<1 ppb					Limited Lifetime	Up to 20,000 slpm

GASPURI SERIES *Heated Getter Purifier*

Process Gas	Model	Purification Process	Impurities Removed							Lifetime	Flowrates
			O ₂	H ₂ O	CO	CO ₂	H ₂	CH ₄	N ₂		
Rare Gas	GP-G Series	Getter	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	Limited Lifetime	Up to 150 slpm
Nitrogen	GP-G Series	Getter	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	Limited Lifetime	Up to 150 slpm
Hydrogen	GP-G Series	Getter	<1 ppb	<1 ppb	<1 ppb	<1 ppb			<1 ppb	Limited Lifetime	Up to 100 slpm

GP SERIES *Bulk Gas Purifier (Getter and catalytic)*

Process Gas	Model	Purification Process			Impurities Removed										Lifetime	Flowrates		
		Absorber	Getter	Catalyst	H ₂ O	CO	CO ₂	O ₂	H ₂	CH ₄	N ₂	Acids	Base	Organics			Refractory Compound	
Rare Gas	GP-G Series				<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb						Limited Lifetime	Up to 500Nm ³ /hr
Oxygen	GP-CA Series				<1 ppb	<1 ppb	<1 ppb		<1 ppb	<1 ppb							Auto-Regenerable	Up to 500Nm ³ /hr
Hydrogen	GP-AG Series		✓		<1 ppb	<1 ppb	<1 ppb	<1 ppb		<1 ppb	<1 ppb						Getter has a Limited Lifetime	Up to 500Nm ³ /hr
Hydrogen	GP-A Series	✓		✓	<1 ppb	<1 ppb	<1 ppb	<1 ppb		<1 ppb	<1 ppb						Auto-Regenerable	Up to 500Nm ³ /hr
Hydrogen	GP-G Series	✓	✓		<1 ppb	<1 ppb	<1 ppb	<1 ppb		<1 ppb	<1 ppb						Limited Lifetime	Up to 500Nm ³ /hr
Nitrogen	GP-A Series	✓			<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb								Auto-Regenerable	Up to 20,000Nm ³ /hr
Nitrogen	GP-CA Series		✓		<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb							Auto-Regenerable	Up to 5,000Nm ³ /hr
CDA	GP-A Series	✓			<1 ppb							<5 ppt	<5 ppt	<5 ppt	<5 ppt		Auto-Regenerable	Up to 500Nm ³ /hr
CO ₂	GP-A Series	✓		✓	<1 ppb							<5 ppt	<5 ppt	<5 ppt	<5 ppt		Auto-Regenerable	Up to 500Nm ³ /hr

APIMS tested and verified. HIPURITY is ThermoFisher distributor for KOREA



In-Line Gas Purifiers

Specifications

In-Line Purifier

IGP Series

Product Highlights

- **Easy to use :**
Serves UHP quality purification with simple connection
- **Performance :**
Low ppb level purification (Optionally ppt)
- **Quality :**
SUS316L Body, All leak checked, fully tested with APIMS Analyzer
- **Regenerable :**
Long lifetime by Factory Regenerable, Certified by APIMS analysis (Except some media)



IGP
SUS-316V

Model	Maximum Flow (lpm)	Average Flow (lpm)	Maximum Pressure (psig)	Connection Type	Diameter (inches (mm))	Face to Face (inches (mm))	Face to Face with valves (inches (mm))
IGP1L	1	0.5	1000	1/4" VCR	1.5 [38.1]	3.3 [84.1]	8.9 [226.3]
IGP5L	5	1.5	1000	1/4" VCR	1.5 [38.1]	5.1 [127]	10.60 [269.2]
IGP20L	20	5	250	1/4" VCR	2.0 [50.8]	6.3 [160]	11.90 [302.3]
IGP50L	50	9	250	1/4" VCR	3.0 [76.2]	8.2 [208.3]	13.80 [350.5]
IGP75L	75	10	250	1/4" VCR	3.0 [76.2]	7.9 [201.7]	13.54 [343.9]
IGP100L	100	12	250	1/4" VCR	3.0 [76.2]	12.5 [317.5]	18.10 [459.7]
IGP120L	120	25	250	1/4" VCR	3.0 [76.2]	10.0 [254]	15.6 [396.2]
IGP250L	250	40	250	1/2" VCR	3.0 [76.2]	18.2 [462.3]	28.84 [732.5]
IGP300L	300	80	250	1/4" VCR	4.0 [101.6]	17.3 [439]	23.2 [589]
IGP500L	500	80	250	1/2" VCR	4.0 [101.6]	20.0 [508]	30.64 [778.3]
IGP1000L	1000	300	250	1/2" VCR	6.0 [152.4]	39.3 [999.7]	50.0 [1270.0]
IGP2000L	2000	1000	250	3/4" VCR	6.0 [152.4]	50.8 [1290]	67.1 [1705]

The IGP-Extension purifies UHP Quality gas at ambient temperature without power consumption.

IGP-Extension does not require the additional power and heating as it purifies gas at room temperature.

2 Different media follow customer's application, and additional column is available if increased flowrate is expected.

Factory regeneration is also available, and Regeneration kit can be purchased (In this case, please contact to Hipurity Sales Dept).



Optionally Available

- MFM
- Pressure Transducer
- Temperature Interlock
- 0.003um Particle Filter

IGP Performance			
Gases Purified	Impurities Removed (Trace Only)	Impurities Removed (Standard Unit)	Quality Performance
N ₂ , Rare Gases	H ₂ O	H ₂ O, CO ₂ , CO ₂ , H ₂ , O ₂	< 1 ppb
H ₂	H ₂ O	H ₂ O, CO, CO ₂ , O ₂	< 1 ppb
CDA, O ₂	H ₂ O	N/A	< 1 ppb

IGP Performance - Single Column (SC)							
Model	Impurities Removed	Maximum Flow (lpm)	Maximum Pressure Drop (psig)	Height (in)	Width (in)	Depth (in)	Weight (kg)
IGP200-G*SC-M	H ₂ O	200	1	196	71	66	< 400
IGP1000-G*SC-M	H ₂ O	1000	1	196	188	114	< 600
IGP3000-G*SC-M	H ₂ O	3000	1	234	127	102	< 700
IGP5000-G*SC-M	H ₂ O	5000	1	276	155	186	< 2000
IGP200-G*SC-MN	H ₂ O, CO, CO ₂ , H ₂ , O ₂	200	1	196	71	66	< 400
IGP1000-G*SC-MN	H ₂ O, CO, CO ₂ , H ₂ , O ₂	1000	1	196	188	114	< 400
IGP3000-G*SC-M	H ₂ O, CO, CO ₂ , H ₂ , O ₂	3000	1	234	127	102	< 700
IGP5000-G*SC-MN	H ₂ O, CO, CO ₂ , H ₂ , O ₂	5000	1	276	155	186	< 2000

IGP Performance - Dual Column (DC)							
Model	Impurities Removed	Maximum Flow (lpm)	Maximum Pressure Drop (psig)	Height (in)	Width (in)	Depth (in)	Weight (kg)
IGP200-G*DC-M	H ₂ O	200	1	206	136	66	< 700
IGP1000-G*DC-M	H ₂ O	1000	1	206	250	114	< 900
IGP3000-G*DC-M	H ₂ O	3000	1	234	254	102	< 1300
IGP5000-G*DC-M	H ₂ O	5000	1	276	292	186	< 2700
IGP200-G*DC-MN	H ₂ O, CO, CO ₂ , H ₂ , O ₂	200	1	206	158	66	< 700
IGP1000-G*DC-MN	H ₂ O, CO, CO ₂ , H ₂ , O ₂	1000	1	206	230	114	< 900
IGP3000-G*DC-M	H ₂ O, CO, CO ₂ , H ₂ , O ₂	3000	1	244	234	102	< 1300
IGP5000-G*DC-MN	H ₂ O, CO, CO ₂ , H ₂ , O ₂	5000	1	276	292	186	< 2700

G* : N₂, Rare Gas, H₂, O₂, CDA (Please consult with factory for other gas application.)
* Max flow can be customized for customer's needs.

In-line at the tool to larger flow (pre purification), no power needed

Heated Getter pou

GASPURI SERIES

Heated Getter Purifier



Process Gas	Model	Purification Process	Impurities Removed							Lifetime	Flowrates
			O ₂	H ₂ O	CO	CO ₂	H ₂	CH ₄	N ₂		
Rare Gas	GP-G Series	Getter	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	Limited Lifetime	Up to 150 slpm
Nitrogen	GP-G Series	Getter	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb		Limited Lifetime	Up to 150 slpm
Hydrogen	GP-G Series	Getter	<1 ppb	<1 ppb	<1 ppb	<1 ppb			<1 ppb	Limited Lifetime	Up to 100 slpm

Small to medium size getter purifiers (1 to 5 slpm) Removal of THC and N2 (from RG)

GP SERIES Bulk Gas Purifier (Getter and catalytic)

Process Gas	Model	Purification Process			Impurities Removed										Lifetime	Flowrates		
		Absorber	Getter	Catalyst	H ₂ O	CO	CO ₂	O ₂	H ₂	CH ₄	N ₂	Acids	Base	Organics			Refractory Compound	
Rare Gas	GP-G Series				<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb						Limited Lifetime	Up to 300Nm ³ /hr
Oxygen	GP-CA Series				<1 ppb	<1 ppb	<1 ppb		<1 ppb	<1 ppb							Auto-Regenerable	Up to 500Nm ³ /hr
Hydrogen	GP-AG Series				<1 ppb	<1 ppb	<1 ppb	<1 ppb		<1 ppb	<1 ppb						Getter has a Limited Lifetime	Up to 100Nm ³ /hr
Hydrogen	GP-A Series				<1 ppb	<1 ppb	<1 ppb	<1 ppb									Auto-Regenerable	Up to 300Nm ³ /hr
Hydrogen	GP-G Series				<1 ppb	<1 ppb	<1 ppb	<1 ppb		<1 ppb	<1 ppb						Limited Lifetime	Up to 300Nm ³ /hr
Nitrogen	GP-A Series				<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb								Auto-Regenerable	Up to 20,000Nm ³ /hr
Nitrogen	GP-CA Series				<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb	<1 ppb							Auto-Regenerable	Up to 3,000Nm ³ /hr
CDA	GP-A Series				<1 ppb							<5 ppt	<5 ppt	<5 ppt	<5 ppt		Auto-Regenerable	Up to 300Nm ³ /hr
CO ₂	GP-A Series				<1 ppb							<5 ppt	<5 ppt	<5 ppt	<5 ppt		Auto-Regenerable	Up to 700Nm ³ /hr



Large purifiers: Getters, Catalytic, PdO

GP SERIES Bulk Gas Purifier (Getter and catalytic)

Impurity	Standard inlet
CH ₄	< 25.0 ppm
CO	< 0.5 ppm
CO ₂	< 2.0 ppm
H ₂	< 1.0 ppm
H ₂ O	< 3.0 ppm

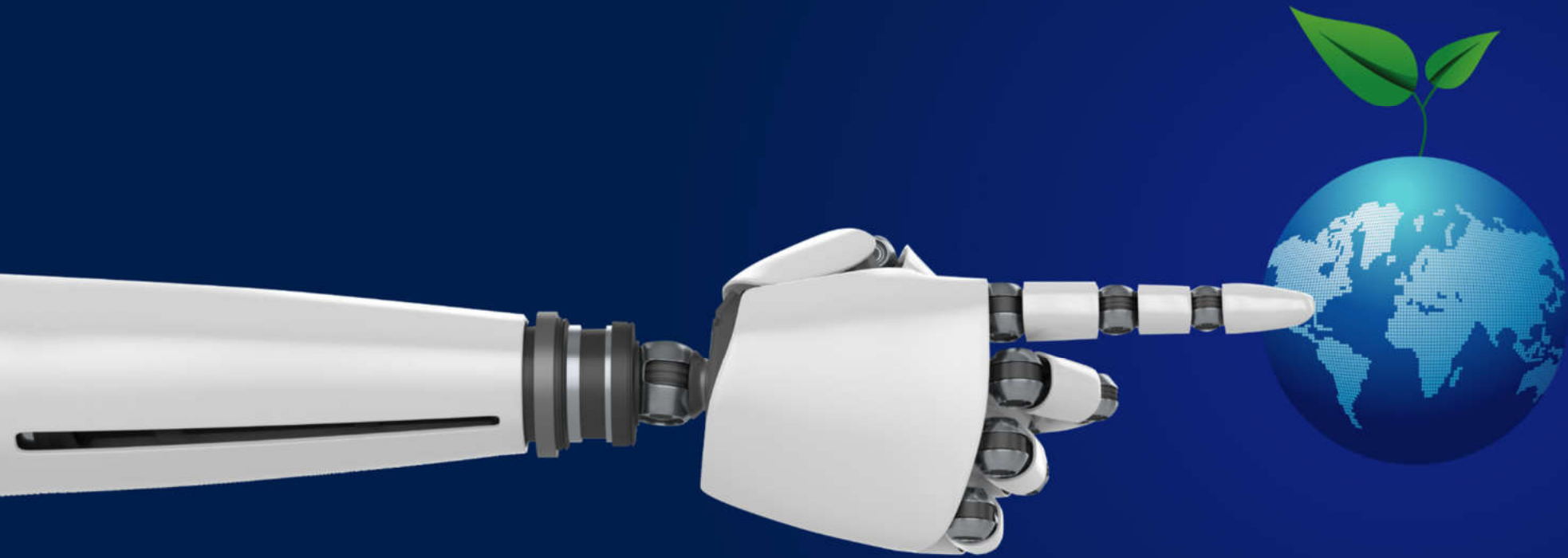
O₂ purifier 30Nm³/Hr

- Dual catalytic absorption technology: Technology: Absorber (molecular sieve) + Catalyst (Palladium)
- Conversion of HC, CO and H₂ in CO₂ and H₂O. Then removal with molecular sieves
- Dual absorber technology: alternance between purification and regeneration mode
- Absorber regeneration via O₂ backflush



100 Nm³/hr O₂ purifier for DB Hitek, second largest foundry in Korea after Samsung

O₂ purifiers main specs and required inlet gas purity



Toxic Gases Abatement Systems

HI-TECH

H High
P Purity
T Technology

● Toxic Gases Abatement Systems

EXHAUST GAS ABATEMENT PRODUCTS FOR PFCs REMOVAL

- CLEANSORB – dry bed removal of process waste gas.
- CLEAN-PROTECT – safeguard against emergency gas release.
- CLEANVENT – mini cartridge for gas cabinet vent lines.



Toxic Gasses Abatement Systems

CLEAN SORB-FABLINE:

is the standard model for the removal of noxious gas such as Fluorinated compounds, Trichlorosilane, etc. at the production level. It is available in three sizes and can be optimally adapted to the requirements of a pilot line. In addition, it can be adapted to a complete production plant.

Applications:

- Plasma Etching: In dry plasma etching, highly reactive radical ions, generated as a low-pressure plasma from halogen gases, are used to etch fine structures into a substrate wafer.
- CVD: Chemical Vapor Deposition is an application used in semiconductor manufacturing to deposit a thin film on the surface of a wafer by means of gaseous compounds.
- ALD: Atomic Layer Deposition (ALD) allows the growth of epitaxial and CVD films to be controlled at the atomic level.
- Ion Implantation
- CIGS Photovoltaic: CIGS Photovoltaics refers to thin films grown from the elements **C**opper **I**ndium **G**allium **S**eleni **d**e

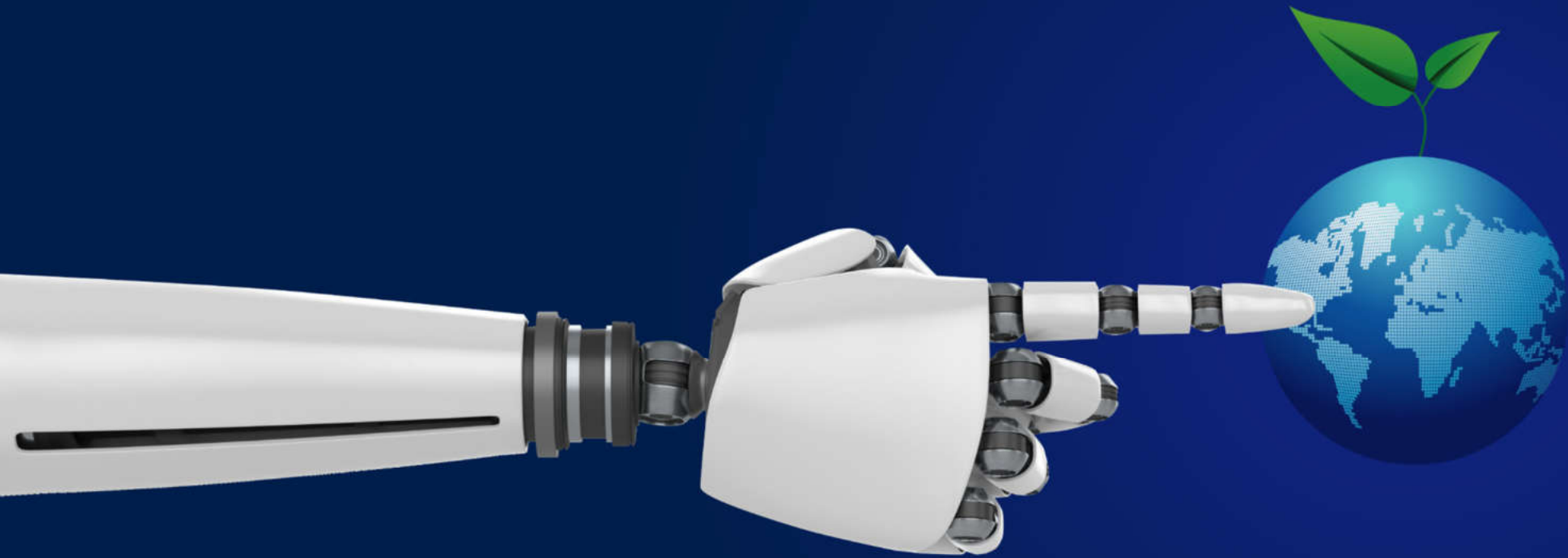


CLEAN VENT:

Is the safe solution for the removal of hazardous purge gases.

- At-source removal of hazardous vent gases from within gas cabinet or valve manifold box
- Safe, irreversible conversion of gases to solid by-products at room temperature
- Cartridges available for over 100 different gases and organometallic precursors





FM approved Corrosive Fumes Duct Systems

HI-TECH

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● Corrosive Fumes Ducting & Fittings

- ETFE COATED STAINLESS STEEL EXHAUST SYSTEMS
- FM APPROVED
 - Research Corporation clean room materials flammability test class 4910
 - Factory Mutual (FM) Research Corporation Standard 4922



● Corrosive Fumes Ducting & Fittings

ACESIAN DUCTING & FITTINGS:

Made in Stainless Steel 304 or 316. it ensures that the users can withstand against any damage from water leaks, impact damage and aggressive chemical spills; or even in an event of fire, our ducts & fittings would not burn, melt or collapse.

Coating material is ETFE (Ethylene Tetrafluoroethylene).

ETFE is a tough and abrasion resistant material that is virtually unaffected by all industrial chemicals. It is also resistant to alkalis, halogens, inorganic compounds and strong inorganic acids. With approval from Factory Mutual, ACESIAN's ducts are the most corrosive exhaust fume system for use in smoke vapor systems without sprinklers.



Straight Duct



Reducer



90° Gore Elbow



45° Gore Elbow



Cross Tee



45° Tee



Straight Tee



Gas Detection
Management



Analyzers
Preventive
Maintenance



On site
Analytical
Services



Predictive
maintenance

● Services

The multidisciplinary maintenance is provided by professionals with all skills and specializations necessary for the maintenance of high-tech industrial plants in order to ensure continuous production.

We guarantee:

- timely intervention and ZERO DOWNTIME
- Just in time management of spare parts and accurate reporting