
Preform ø150mm
VAD Core 15g/min
OVD Clad 116g/min
BIF(G.657A2&B3)
Fiber Optic
Preform
Manufacturing
Equipment
Total Solution

CORPORATE INFORMATION

FIBER OPTIC PREFORM
MANUFACTURING EQUIPMENT
TOTAL SOLUTION STi

The Supreme Thermal Instrument Co. , Ltd. is one of the global companies with R&D institute that provides the special equipment and total solution for manufacturing optical preform. We are engaged in optical preform and mass production equipment researching and manufacturing.

All technicians and developers have many technology experiences in optical preform and equipment manufacturing field.

Therefore, we have strong technical renovation and innovation power. We also can give customer the turnkey project with total solution.

Our products and solutions have been sold to many optical fiber and cable manufacturers of China and India, and also we expect exports to more countries around the world, such as Russia, Vietnam and other southeast Asian countries, etc.

We have passed IS09001-2005 certification.

All optical preform equipment have got international standard certificate. Under strict quality control system , we have been supplying the best technology of supreme thermal instruments, and have received customers' trust with supreme technology, supreme quality and supreme services.

< STI Daegu Factory front view >

CORPORATE INFORMATION FIBER OPTIC PREFORM MANUFACTURING EQUIPMENT TOTAL SOLUTION STi

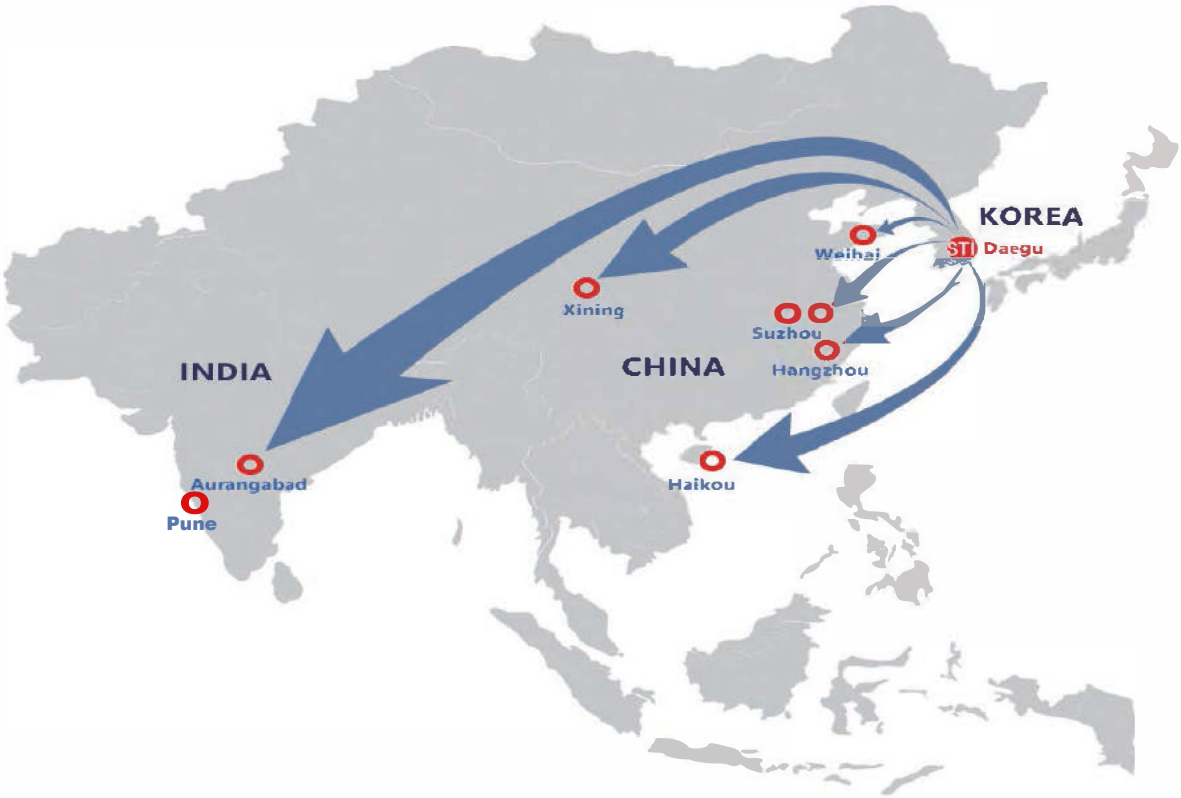
We are doing our best today to continue to supply our customers with new and up-to-date technologies.

STi has world-class facilities and process technologies that can produce special optical fibers such as G.652.D, G.657.A2, G.657.B3, as well as 150mm optical preform.

STi is the only facility company in the world that has production lines for facility and product development in the laboratory, and STi's Korea headquarters lab is providing technical development of products, processes and facilities through excellent research personnel and pre-production training for customers.

STi has experience in installing various overseas manufacturing lines, and through the provision and management of auxiliary equipment related technologies such as specifications, construction, facility layout, utilities-scrubber, electricity, gas, chemical, exhaust and air-of raw materials needed for initial product production, STi provides comprehensive total solutions related to optical preform manufacturing facilities.
STi has future special fiber preform technologies such as G.654.E for long-distance transmission and G.657.A2.B3 for BIF, as well as standard single-mode optical fiber G.652.D.

STi uses SiCl4 as the raw material and has high qulity VAD 15g/min core deposition technology and clad deposition technology with low-cost outer diameter of 150mm.
In addition, STi has sintering technology and overall heat treatment expertise, including core stretching technology and sharping and welding technology.



STi's process engineering team stabilizes the process through process training of the workforce so that the quality of the process technology can be stabilized and the product can be mass-produced normally by applying the process technology to the client's local facilities within the shortest time.

And STi's lab, which has its own development line, develops new products and processes every year and shares the major technologies that come from them with its customers.

Moreover, product and process development using D4, known as eco-friendly raw materials, has already been completed and the current technology level is in the application stage for mass production.

STi already has facility technology with third-generation 150mm preform, which is advantageous in terms of cost, beyond the existing facilities that can produce 130mm preform in diameter for second-generation applications.

Core deposition technology, which is called VAD technique, provides excellent yield and high quality preform compared to OVD method, has robust facility structure that maintains stable yield once installed at level of 15g/min, and can produce one preform per equipment.
Clad deposition facilities produce three preforms from one piece of equipment and can be an excellent choice in cost with a collection rate of 63% or more and high productivity.

The entire components of preform manufacturing facilities, such as machinery, electricity, gas supply unit and program, are self-designed, manufactured and supplied by STi, and have design technology considering the durability, heat resistance and corrosion of the facilities.

FIBER OPTIC
PREFORM MANUFACTURING EQUIPMENT

VAD Core System

Core Sintering System

Core Soaking System

Elongation System

OVD Clad System

Clad Sintering System

Clad Soaking System

Sharping system

Process Technology &
Project Management

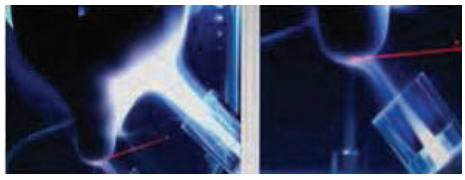
CORE DEPOSITION (VAD)SYSTEM

MODEL
STM - CDV - A150

DESCRIPTION

The design characteristic of the Core Deposition system is that it uses the VAD method suitable for the production of the LWPF and ZWPF optic fibers. Also, it is the equipment with the superior base material production capabilities. It consists of the vertical lathe that enables the transfer of base material in the vertical direction, the heat-resistant and corrosion-resistant deposition chamber that enables the stable deposition, high-efficiency deposition torch (quartz), high-purity gas and chemical feeder, and exhauster maintaining the static pressure.

Its operation applies the PC input/output GUI to facilitate the recipe editing , and it also applies the Siemens motion & drive, ensuring its long-term reliability. It consists of the auto-control system that enables the unmanned operation.

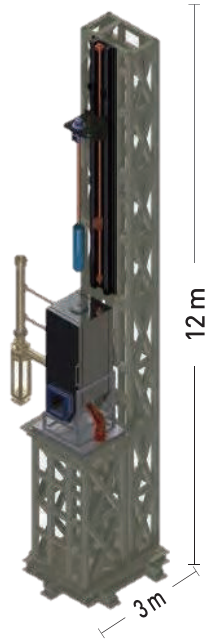


FEATURES

- Low production costs
- High quality preform(for LWPF, ZWPF)
- OH free, Bubble free
- High deposition rate

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	5 m x 5 m x 12 m	
Machine(WT)	8 Ton	
Soot Preform(OD)	Ø235 ± 15 mm	Q.G (Ø100±10mm)
Soot Preform(TL)	1,570 ± 100 mm	MAX 15kg
Soot Preform(WT)	13±1 kg	U.W (9.2± 0.5kg)
Deposition Rate	15 ± 1g / min	
Number of Torch	2	
Chemical & Gases	$SiCl_4$, $GeCl_4$, CF_4, H_2, O_2, N_2	
Power(Total)	80 kw	
Clean Class	# 10,000	
Capa(fkm/Machine)	4,200	
Capa(Mfkm/year)	2.1	365 day



CORE SINTERING SYSTEM

MODEL
STM - CST - A150

DESCRIPTION

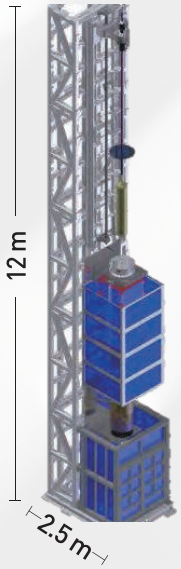
The design characteristic of the Core sintering system is that it enables the heat treatment of the porous white core preform at 1000℃~1600℃, and also the consolidation to obtain the trans-parent and high-quality preform.
The 2 furnaces (Z1/Z2) are mounted on the front of the frame for dehydration and consolidation respectively, and the high-quality quartz muffle tube is mounted inside the furnace. It is made up of the process gas device that enables the MFC control at the bottom of the muffle, and heat/chemical exhauster at the top of the muffle.
The base material is transferred by the vertical precision bed, and rotated by the top chuck. Its operation applies the PC input/output GUI to facilitate the recipe editing, and it also applies the Siemens motion & drive, ensuring its long-term reliability. It consists of the auto-control system that enables the unmanned operation.

FEATURE

- Low production costs(He, Cl_2 gases)
- High quality preform(OH, Bubble free)
- Heater long life time(fixed type)
- High Temp Control(Accuracy, Stability)

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	3 m x 3 m x 12.5 m	
Machine(WT)	8 Ton	
Muffle tube(ID)	300 mm	Core(OD) (100±10mm)
Muffle tube(TL)	4,000 mm	
Core Preform(WT)	13 ±1kg	MAX 15kg
Furnace Temp	1200 ℃ ~ 1600 ℃	
Gases	He, Cl_2, O_2, N_2	
Power(Total)	130 Kw	*UPS
Clean Class	# 10,000	
Capa(fkm/Machine)	4,200	
Capa(Mfkm/year)	3.0	365day



CORE SOAKING SYSTEM

MODEL
STM - CSK - A150

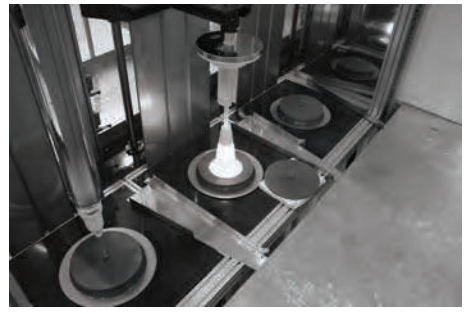
DESCRIPTION

The major feature of Core Soaking System lies in removal of internal stress of core preform to increase core characteristics, which consists of Furnace Quartz Muffle Tube, Up-Down Moving System of Preform, Frame, Preform Hanging Part, and Gas Supply System. With adoption of Kanthal Heater, it uses heat generation design for maintaining around 1100 C degree to reliance and long durability.

Furnace System adopts stable Kanthal A1 Heater and consists of 3 Muffle Tubes and a Furnace.

Thermocouple applies RR type to assure reliability of temp sensing.

Core preform is fixed by moving cart at quartz holder and its conveyance is performed with precise and steady speed by a motor to prevent shaking of preform. Length of the Muffle is over 2.4 m big enough to soak core preform of over 1.5 m.

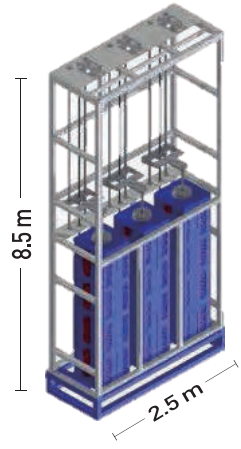


FEATURE

- High quality preform(stress free)
- Not used Gases
- Heater long life time(fixed type)
- High Temp Control(Accuracy, Stability)

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	4 m x 2 m x 8.5 m	
Machine WT	2 Ton	
Muffle Tube(ID)	174 mm	Core(D) (100±10mm)
Muffle Tube(TL)	2,200 mm	
Core Preform(WT)	13 ±1kg	MAX 15 kg
Furnace Temp	Max 1200 ℃	
Power(Total)	100 Kw	
Clean Class	# 10,000	
Capa(fkm/Machine)	8,400	
Capa(Mfkm/year)	6,1	365 day



CORE ELONGATION SYSTEM

MODEL
STM - CEG - A150

DESCRIPTION

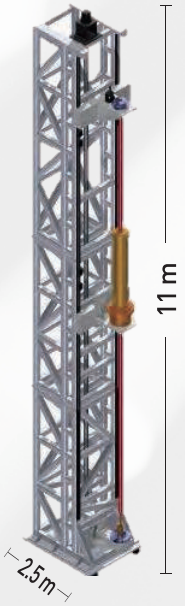
- Furnace Body is water-cooled construction made of Stainless steel(316 L)
- Top chamber & shutter should be applied on furnace.
- Heater: High purity graphite resistance (ash contents : less than 10 ppm)
- Furnace inner temp: 2400 ℃
- N_2 gas for inside furnace is flow-controlled.
- Water & Gas inlet pressure: max 6 Bar
- Water flowrate: 150 lpm or more
- Dia measuring
  - Laser scanning type
  - Dia measuring range: Ø 3 ~ Ø 100 mm
  - Measuring Repeatability: within 70 ㎛

FEATURE

- Chuck(top,bottom) Alignment Accuracy : ±0.05 mm
- High Temp Control(Accuracy, Stability) Range: 1,100 ~ 2,400 ℃ ±1℃
- Ovality : Max ≤ 0.5 mm
- Bow : Max ≤ 0.5 mm / m
- Tension measurement : 2 Kn

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	5 m x 5 m x 11 m	
Machine WT	8 Ton	
G. Furnace(ID)	150 mm	Core(OD) (100±10mm)
After E. Core(OD)	Ø 40mm	30~ 50mm
After E. Core(L)	1,650 mm X 2 pc	(TL) 4,500 mm
Furnace Temp	2,200 ℃ ± 1 ℃	
Gas	N_2	
Cooling Water	150 lpm	
Power(Total)	85 Kw	
Clean Class	# 10,000	
Capa(fkm/Machine)	4,200	
Capa(Mfkm/year)	6.1	365 day



CLAD DEPOSITION (OVD)SYSTEM

MODEL
STM - LDO - A150

DESCRIPTION

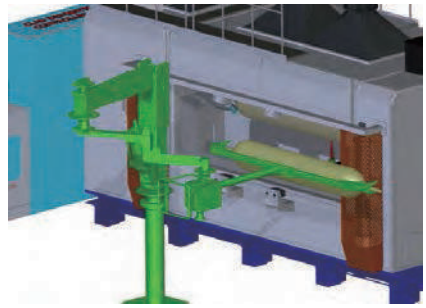
Clad Deposition System, with its technology of high quality and productivity, adopts horizontal OVD (Outside Vapor Deposition) method to realize the lowest cost for optical fiber preform of the same grade.
Eventually, it can simultaneously produce 3 preforms per equip with the chamber built by materials for anti-heat and anti-corrosion enabling extended running time of substitution parts and with systems designed for air cooling and process flow in consideration of the characteristics of high capacity of burner.
Chemical and gas flows can be freely controlled by computer for automatic recipe and cumulative data are recorded in computer to enable analyze and update at any time. Gas cabinet adopts high purity piping(SUS316EP) to allow no factor of contamination and leaking check of helium gas is done at over 10-9. Recipe is a highly advanced equipment epochally improved in consideration of accumulated problems in each step of process carefully observed by equip operators.

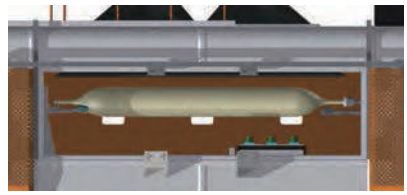
FEATURE

- Low production Cost(CH_4, DR)
- Auto Weight Control(stability_3Spindle)
- Flash Evaporator(repeatability, responsibility)
- CH_4 High Deposition Rate Burner(Low Cost)
- High Purity Material Control

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	6 m x 3 m x 5.5 m	
Machine WT	10 Ton	
Soot Preform (OD)	330 ~ 350 mm	
Soot Preform (TL)	2650 mm	
Soot Preform (WT)	72 ± 2kg	with Core
Number of Spindle	3	Per Machine
Number of Burner	4	Per Spindle
Deposition Rate	114 ± 5 g / min	Per Machine
Gases & Chemical	$SiCl_4$, CH_4, O_2, N_2, Air	
Power(Total)	95Kw	
Clean Class	#10,000	#10,000
Capa(fkm/Machine)	6,300	
Capa(Mfkm/year)	1.62	365 day





CLAD SINTERING SYSTEM

MODEL
STM - LST - A150





DESCRIPTION

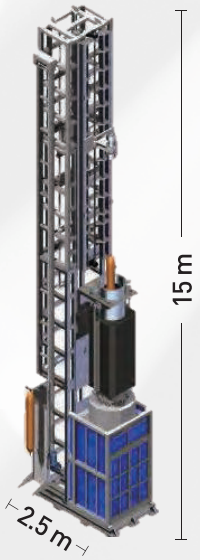
The design characteristic of the Clad sintering system is that it enables the heat treatment of the porous white clad preform at 1000 ℃ ~1600 ℃, and also the consolidation to obtain the trans-parent and high-quality preform.
The 2 furnaces (Z1/Z2) are mounted on the front of the frame for dehydration and consolidation respectively, and the high-quality quartz muffle tube is mounted inside the furnace. It is made up of the process gas device that enables the MFC control at the bottom of the muffle, and heat/chemical exhauster at the top of the muffle.
The base material is transferred by the vertical precision bed, and rotated by the top chuck. Its operation applies the PC input/output GUI to facilitate the recipe editing, and it also applies the Siemens motion & drive, ensuring its long-term reliability. It consists of the auto-control system that enables the unmanned operation

FEATURE

- Low production costs(He, Cl_2 gases)
- High quality preform(OH, Bubble free)
- Heater long life time(fixed type)
- High Temp Control(Accuracy, Stability)

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	3 m x 3 m x 15 m	
Machine(WT)	8 Ton	
Muffle Tube (ID)	370mm	preform OD (150mm±4%)
Muffle Tube (TL)	5700mm	preform TL (2400mm±5%)
Clad Preform (WT)	70± 2kg	
Furnace Temp	1200℃~1500℃	Max 1600 ℃
Gases	He, Cl_2, O_2, N_2	
Power(Total)	160 Kw	*UPS (130)
Clean Class	#10,000	#10,000
Capa(fkm/Machine)	2,100	
Capa(Mfkm/year)	1.40	365 day



CLAD SOAKING SYSTEM

MODEL
STM - LSK - A150

DESCRIPTION

Clad Soaking System is an equipment with its characteristics of removing internal stress of Clad preform to promote the advantage of Clad, which is composed of Furnace Quartz Muffle Tube, Up-Down Moving System of Preform, Frame, Preform Hanging Part, Gas Supply System. With adoption of excellent Kanthal Heater, it applies a design of heat generation technology for maintaining around 1100C degree for long run and durability.

Furnace System adopts stable Kanthal A1 Heater and consists of 3 Muffle Tubes and a Furnace.

Thermocouple applies RR type to assure reliability of temp sensing.

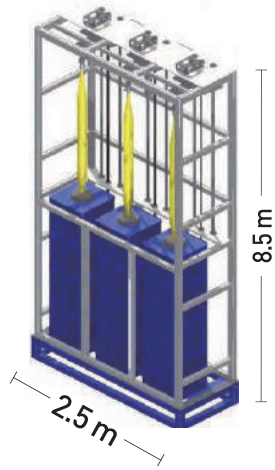
Clad preform is fixed by moving cart at quartz holder and its conveyance is performed with precise and steady speed by a motor to prevent shaking of preform. Length of the Muffle is over 3.0 m big enough to soak Clad preform of over 2.5 m.

FEATURE

- High quality preform(stress free)
- Not used Gases
- Heater long life time(fixed type)
- High Temp Control(Accuracy, Stability)

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	4 m x 2 m x 8.5 m	
Machine WT	2 Ton	
Muffle Tube(ID)	210mm (L: 2450mm)	Max 250mm
Muffle Tube(TL)	3,000 mm	Max 3,500mm
Clad Preform(WT)	70 ± 2kg	
Furnace Temp	1000 ℃~1100 ℃	Max1200 ℃
Power(Total)	90 Kw	
Clean Class	#10,000	#10,000
Capa(fkm/Machine)	6,300	
Capa(Mfkm/year)	3,2	365 day



PREFORM SHARPING SYSTEM

MODEL
STM - PSH - A150

DESCRIPTION

The technology is adopted for a Sharpening System in order to save operation time before extrusion of optical fiber. The sinter-treated bottom tip of Preform will be sharpened by free fall in blob melted in the Furnace of 2200C degree high temp.

A lift system is equipped at the profile of main frame to vertically transport Preform. The System consists of Transformer to supply the furnace with power, cooling water supply mechanism and air gas supply device to prevent the heater from possible damage in furnace.

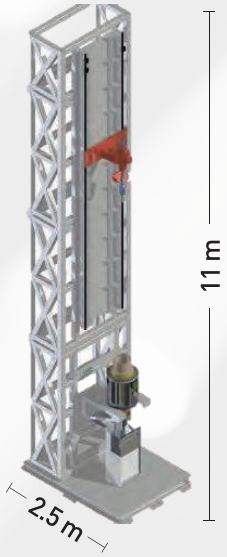
- Dimension : Body ID Ø 460 * 520
- Furnace temp : 2,150 ℃
- Gases : Ar , N2(max 6 bar)
- Cooling Water : PCW(max 7 Bar)

FEATURE

- High Temp Control(Stability, ±0.1 ℃)
- Repeatability
- Gas control(MFC Accuracy , 1% FS)
- PC, PLC Auto control

SPECIFICATION

Items	Spec(nominal)	Remarks
Machine Dim	4 m x 4 m x 11 m	
Machine WT	7 Ton	
Working size	130 ~ 160 mm	Length: ≤ 2500 ~ 3000 mm
Furnace Temp	≤2200 ℃	
Preform(WT)	70 ± 2kg	
Cooling Water	100 lpm	
Gases	Ar, N_2	
Power(Total)	80 Kw	
Clean Class	# 10,000	# 10,000
Capa(Mfkm/year)	5.0	



PREFORM MEASURING SYSTEM

MODEL STM-CRMS-A150

SPECIFICATION

Items	Spec(nominal)
Machine Dim	3.5 m x 2 m x 1.3 m
Machine WT	0.3 Ton
Core diameter	≤ Ø 50 mm
Core bow, ovality	≤ 0.1 mm
Capa(Mfkm/year)	6.0

MODEL STM-CMS-A150
MODEL STM-LMS-A150

SPECIFICATION

Items	Spec(nominal)
Machine Dim	4.5 m x 2 m x 2.5 m
Machine WT	0.3 Ton
Density(g / cm3)	0.1 ~ 0.9 ± 0.01 g
Weight(kg)	Max 100 ± 0.01 Kg
Capa (Mfkm / year)	6.0

SICL4 VAPORIZING SYSTEM

FEATURE

Items	Spec(nominal)
Machine Dim	1.3m x 0.6m x 2.0m
Machine WT	0.5Ton
Chemical	$SiCl_4$, $GeCl_4$
Flowrate(Max)	5~200g/min
P. Accuracy	≤±3torr

FURNACE HEATING CONTROL SYSTEM

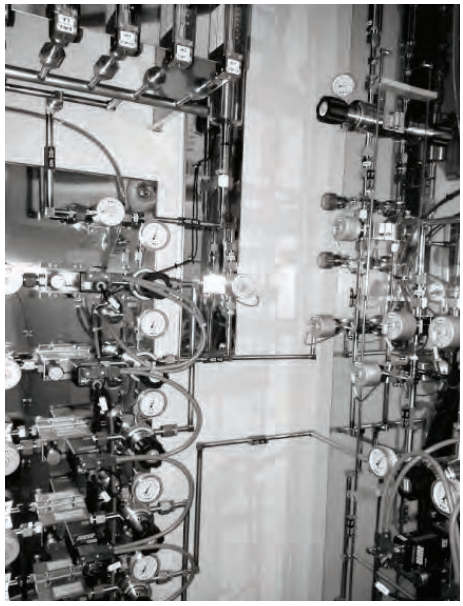
FEATURE

Items	Spec(nominal)
Machine Dim	1.5m x 0.6m x 2.1m
Machine WT	0.5Ton
Temp Control	800℃~1,600℃
T.Accuracy	≤±1℃
Heater	Kanthal super

GAS SUPPLY SYSTEM

CH_4 CABINET

MODEL STM - LDF - A150



FEATURE

- Easy of operation & maintenance
- Precision MFC Control
- Gases : CH_4, O_2, N_2, Air
- Customized design for specific applications
- Maximizes the safety of an operator

PURIFIER (N_2, He)

MODEL STM - LDFN - A150

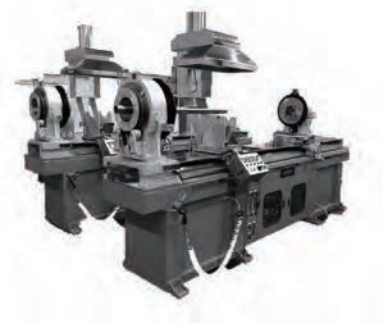
FEATURE

- Easy of operation & maintenance
- Ultra high purity : over 8N
- Purification : N_2, He, O_2, Cl_2
- Customized design for specific applications
- Maximizes the safety of an operator

ACCESSORIES

WELDING M/C

MODEL STM-WLD-A150



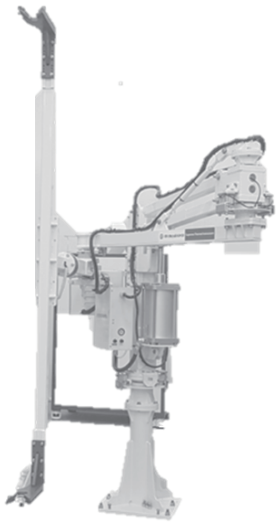
CUTTING M/C

MODEL STM-CUT-A150

PREFORM MOVING SYSTEM

MODEL STM-PMS-A150

MODEL STM-PLS-A150



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