



TSM **ECONOLOGY**

Experience a further improved next generation reflow that realizes ultra-low power consumption and low nitrogen (N₂) consumption. Equipped with the full line-up needed for the stable supply of N₂ gas with high purity and low dew point, this system effectively complies with CO₂ related environmental regulations.

N70 and A70 Series

Best of the best N₂ REFLOW



Scan the QR code with
your smart phone.



TSM Co., Ltd.
(Total Soldering Machinery)

Our next generation Reflow is a full line-up system that will increase production of a variety of products and provide cost savings!

Our environmentally friendly high efficiency N₂ reflow presents an effective alternative for the production of various products as well as a reduction of production costs and CO₂ generation. In addition, by allowing easy installation and maintenance, it ensures stable profit and competitiveness.



Twin Reflow

Dual Reflow

Compact / Slim Reflow

LED / BLU Reflow

TVs / Computers / Mobile Phones / LEDs / BLUs / Settop Boxes Electrical and Electronic Equipment for Automobiles / Medical Appliances, Etc.

- Mixed production system – Two types
- Two sets of reflows – Integrated type
- Provides a more stable operational environment by allowing independent operation

TVs / Computers / Mobile Phones / LEDs / BLUs / Settop Boxes Electrical and Electronic Equipment for Automobiles / Medical Appliances, Etc.

- Increased productivity (Compared to existing single lane type reflows)
- One set of reflow – Production at two lines
 - Minimized Utility Consumption – Electric power and nitrogen (N₂)
- Maximized extendibility and convenience

Flip Chips / BGAs
Pre-flux, etc.

- Optimized line balance
- Minimized machine length (allowing space utilization)
- 10ppm management function

Large LEDs / BLUs / Lighting
Large Test Boards / TVs

- Suitable for LED / BLU production
- Allows production of large general boards

Number of Heating Zones	5	6	7	8	9	9	10	10	12	12	13	15
Number of Cooling Zones	2	1	2	2	2	3	2	3	3	4	2	3

Number of Heating Zones	5	6	7	8	9	9	10	10	12	12	13	15
Number of Cooling Zones	2	1	2	2	2	3	2	3	3	4	2	3

Number of Heating Zones	3	5	6	7	7
Number of Cooling Zones	0	2	1	1	2

Number of Heating Zones	9	9	10	12	12	13	15
Number of Cooling Zones	2	3	3	3	4	2	3

Advanced Technological Innovation, The Next Generation's Reflow



Air / N₂ Reflow

TVs / Computers / Mobile Phones /
LEDs / BLUs / Settop Boxes Electrical and
Electronic Equipment for Automobiles /
Medical Appliances, Etc.

- Ultra-low power consumption
- Minimized N₂ consumption
- Convenient flux management system
- Uniform O₂ ppm control throughout entire zones

One-sided Reflow

Can be used as a Wave Soldering
Machine / Power Boards /
Electrical and Electronic Equipment for
Automobiles Settop Boxes, etc.

- Temperature between upper and lower surfaces : Above 80°C or 90°C
- Connectors, condensers, coils, transformers, etc.

Curing Reflow

LEDs / Bonding
Multi Bonding

- Cures multiple stacked product
- Can be used as a chamber → In-line System

Reflow for Semiconductors

Flip chips
Bonding Packages

- O₂ concentration controlled to 10ppm and less
- Maintains Uniform ppm throughout Entire Zones
- Minimized N₂ consumption

Number of Heating Zones	5	6	7	8	9	10	10	12	12	13	15	
Number of Cooling Zones	2	1	2	2	2	3	2	3	3	4	2	3

Number of Heating Zones	5	6	7	8	9	9	10	10	12	12	13	15	
Number of Cooling Zones	2	1	2	2	2	3	2	3	3	3	4	2	3

Number of Heating Zones	10	Others - Produced to order
Number of Cooling Zones	5	

Number of Heating Zones	5	6	7	9	10	12
Number of Cooling Zones	2	1	2	3	3	4



The Best Technology for The Best Results

Environmentally Friendly CO₂ Reduction
Type Reflow Determining Product Quality

Ultra-low power consumption responding to CO₂ emission
regulation Upgraded next generation reflow realizing the
minimized N₂ consumption

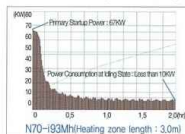
Adopted the latest user oriented program dedicated to reflow

- Ultra-low power consumption
- Partial Startup
- Highly stable O₂ control system
- Temperature monitoring function
- Alarm function for maintenance period (RTPM(Optional))
- Reduced power consumption at idling state
- Reduced peak power at startup (Partial Startup Mode)
- Adopts new concept flux management system

Features

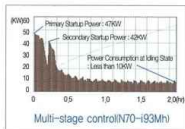


● Power Consumption at Idling State



The N70-I series model, developed ourselves, reduces power consumption significantly compared to other existing systems.

● Partial Start Up Mode



Allows the peak power consumption to be minimized through two staged heater temperature control. Allows the contracted power capacity to be lowered and basic power cost to be saved.

● O₂ Control System



Realizes highly accurate O₂ concentration through automatic O₂ control. (Uniform O₂ control throughout entire zones)

● Temperature Monitoring Function



Measured actual temperature in the oven is indicated in the bar graph. If it reaches the set temperature, the color of the bar graph changes to green. In addition, if the temperature exceeds the upper and lower limits of the set value error range, the graph color changes and an alarm will sound.

● Alarm Function for Maintenance Period

Message for Maintenance Period	Set Time
Fluxator Cleaning	300
Membrane Filter Check	150
Membrane Filter Replacement	1080
Chain Oil Check	1080
Operation Status Check	24
Preparation for Profile Check	24
Profile Check	12
User Setup	
User Setup	
User Setup	

Refers to the function that indicates the Maintenance Period set by the user through a message and alarm at the set time. A maximum of 10 items for inspection and maintenance can be set separately. (Easy to manage the maintenance period)

● NB System



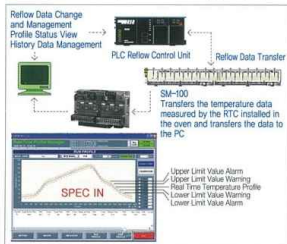
- Reduced N₂ consumption compared to existing N₂ consuming systems
- Suitable for stable O₂ concentration control
- Simplified setup for N₂ flow by applying individual flow meter (lime management)



Low CO₂ Emission, Low Energy Consumption

N70, A70 Series

RTPM (Real time Temperature Profile Monitoring System) / Option



- Sets the optimum profile and checks if the set profile is maintained within the error range by measuring the temperature in the oven in real time (Alarm occurs when there is a problem)

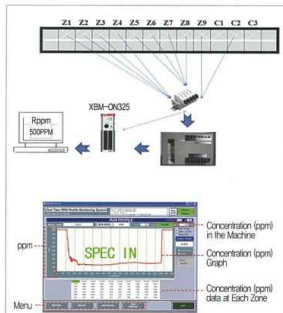
● Reduced Profile Creating Time

When producing a new model by replacing the previously produced model, if the virtual profile saved in the new model matches with the virtual profile saved in the previous model, the work can be performed immediately by checking the profile separately.

● Remote Control Function

Allows remote control through SECS/GEM communication from an office or host computer. (Option)

Rppm (Real time O₂ ppm Profile Monitoring System) / Option



- Monitors O₂ concentration of entire zones in real time
- Provides quick and accurate O₂ Profile Management function
- Checks O₂ profile at once by produced product (The world's first patented technology)

Dual Conveyor / Option



Dual Lane (Option)

- Increased productivity (compared to existing single lane machine)
- Maximized extendibility and convenience → Applicable to maximum dual lane width (300mm)
- Arrangement of fixed axis according to customer's needs → FMMF/ FMFM (F: fixed, M: movable)

FMS (Flux Management System)



- High efficiency flux recovery capability and reduction of pollutants by applying a new flux collecting system
- Improved PM cycle and easy maintenance
- Quick flux collector replacement system available (for docking)

Realizes low ΔT by adopting ultra-uniform temperature control function that applies air circulation by a special nozzle. This help to increase productivity.

● Adopts a high efficiency nozzle suitable to LEDs / BLUs

● Minimized Δt suitable to products that use a jig

● Increased productivity (when using dual rail)



N₂ GENERATOR

(PSA : Pressure Swing Adsorption)

An environmentally friendly, low power consumption N₂ generator that efficiently responds to the needs of customers by adjusting high purity N₂ gas to the desired pressure and supplying it.



PSA Type

N₂ generator with a low noise level that allows easy movement as well as operation and maintenance owing to its compact construction!



Moving Type A

Compact Size

Compact design allows effective use of space

Free Installation and Movement

Installation of standard casters on all models allows free movement and effective space use

Low Noise

Silent operational noise allows relaxed indoor use of the machine

Easy Operation

Easy operation management by a display panel with O₂ purity displayed on it



Moving Type B



TPC - Type

Easy Maintenance

Application of solenoid valves with high durability allows easy maintenance

Simple

By only supplying power, it is possible to supply high purity N₂ gas

Allows a stable supply of N₂ gas with high purity and low dew point



TP - Type

▷ Moving PSA Type A

Model	Capacity Nm ³ /Hr (99.99%)	Discharge Pressure (Mpa)	Air Compressor (kw)	Weight (kg)	Dimension D x W x H(mm)
TPM-N1R-99	1	0.5	1.5	300	860 x 400 x 1,000
TPM-N2R-99	2			300	860 x 400 x 1,000
TPM-N3R-99	3		310	1,100 x 530 x 890	
TPM-N4R-99	4		330	1,100 x 530 x 890	
TPM-N5R-99	5		350	1,100 x 530 x 890	

▷ Moving PSA Type B

TPM-N10R-99		0.5	7.5	600	1,480 x 560 x 1,340
TPM-N12R-99				700	1,480 x 560 x 1,340
TPM-N10RT-99			600	1,510 x 420 x 1,360	
TPM-N12RT-99			700	1,620 x 470 x 1,330	
TPM-N15RT-99			800	1,708 x 520 x 1,265	
TPM-N15RL-99		700	1,800 x 520 x 1,265		
TPM-N17RL-99		900	1,480 x 560 x 1,340		

▷ TPC - Type PSA

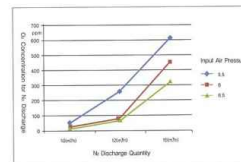
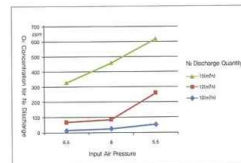
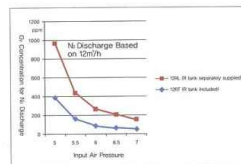
Model	Capacity Nm ³ /Hr (99.99%)	Discharge Pressure (Mpa)	Air Compressor (kw)	Weight (kg)	Dimension D x W x H(mm)
TPC-N30R-99	30	0.5	22	1,500	1,400 x 900 x 2,100
TPC-N40R-99	40		30	1,900	1,450 x 950 x 2,300
TPC-N50R-99	50		37	2,400	1,500 x 1,100 x 2,400
TPC-N60R-99	60		2,700	1,650 x 1,100 x 2,600	
TPC-N80R-99	80		55	3,200	1,800 x 1,200 x 2,800

* If No service tank not included

▷ TP - Type PSA

TP-N30R-99	30	0.5	22	1,520	1,400 x 1,520 x 2,100
TP-N40R-99	40		30	1,830	1,450 x 1,600 x 2,300
TP-N50R-99	50		37	2,340	1,500 x 1,750 x 2,400
TP-N60R-99	60		2,610	1,650 x 1,850 x 2,600	
TP-N80R-99	80		55	3,100	1,800 x 2,050 x 2,800
TP-N100R-99	100		75	3,200	1,850 x 1,700 x 3,000
TP-N120R-99	120	90	3,400	1,950 x 1,800 x 3,200	

O₂ Concentration (ppm) according to Input Air Pressure and N₂ Discharge Quantity

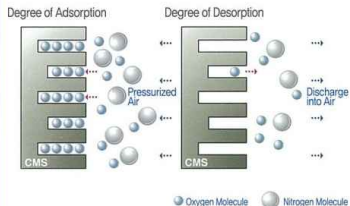
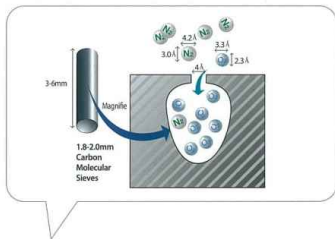


Digital Measurement : TFM-J500
Applied CMS : CMS-220

N₂ generator test room to realize optimum atmosphere in the N₂ reflow oven!

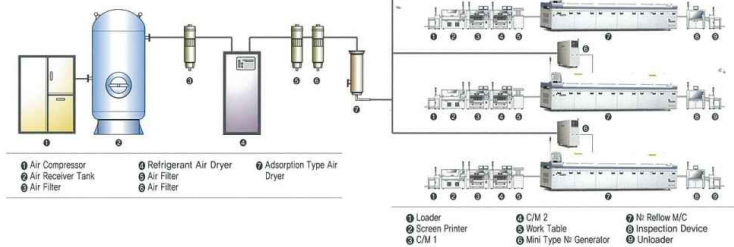
Principle of PSA N₂ Generator

The CMS consists of very tiny holes. When pressurized air is supplied to the CMS, oxygen whose molecular size is smaller than nitrogen is adsorbed first while nitrogen whose molecular size is larger than oxygen is difficult to be adsorbed. Nitrogen molecules which are not adsorbed are used as product nitrogen while the adsorbed oxygen molecules are discharge into the air. This cycle is repeated.

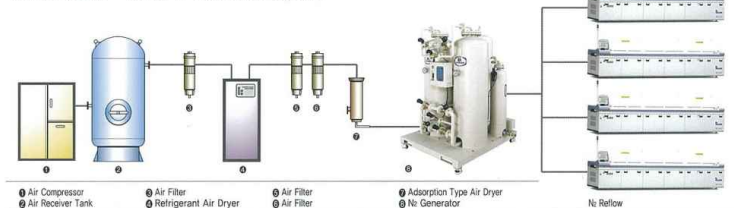


Example of Installation in a Line

< N₂ Generator(TPM - Type) + N₂ Reflow Flow Diagram >



< N₂ Generator(TP - Type) + N₂ Reflow Flow Diagram >



<Inspection and Verification Test>



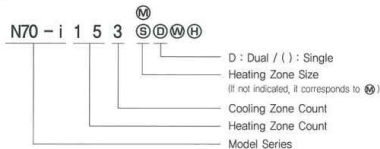
N70, A70 Series

Model

Nz Type (⊗ : Option)		Air Type (⊗ : Option)	
Ⓢ Ⓣ Ⓚ Ⓜ Ⓜ	Ⓜ Ⓣ Ⓚ Ⓜ Ⓜ	Ⓢ Ⓣ Ⓚ Ⓜ Ⓜ	Ⓜ Ⓣ Ⓚ Ⓜ Ⓜ
N70 - i82 ⊗	N70 - i82 ⊗	A70 - j82 ⊗	A70 - j71 ⊗
- i102 ⊗	- i92(3) ⊗	- j82 ⊗	- j82 ⊗
- i103 ⊗	- i103 ⊗	- j92(3) ⊗	- j92(3) ⊗
- i153 ⊗ ⊗	- i132 ⊗ ⊗	- j123 ⊗	- j123 ⊗
		- j132 ⊗ ⊗	- j132 ⊗ ⊗

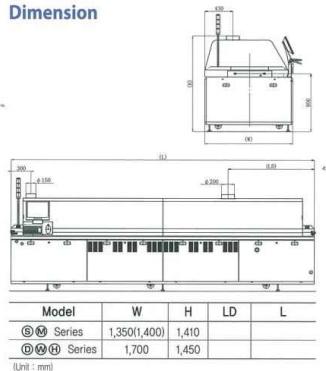
※ The additional models other than those shown above are supplied as options.

Model Numbering



※ The dimensions and product specifications in this catalog may be changed for quality improvement without prior notice.

Dimension



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