AG Associates Heatpulse 8800i Specifications

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8800i.1 OPERATING SPECIFICATIONS

The following are the operating specifications for the Heatpulse® 8800i system.

- **Wafer handling:** automatic serial processing using SMIF-Pod™ cassettes.
- **Throughput:** Process dependent, approximately 80 wafers per hour (in a null cycle) without wafer aligner.
- **Wafer sizes:** 6 inches and 8 inches (standard).
- **Ramp-up rate:** Programmable,up to 100°C per second with Ceramic Shield; up to 150°C per second without Ceramic Shield.
- **Steady-state duration:** 1 - 600 seconds per step.
- **Ramp-down rate:** Programmable, 1 - 250˚C per second. Ramp-down rate is temperature and radiation dependent, maximum 150˚C per second.
- **Recommended steady-state temperature range:** 400 - 1200˚C.
- **ERP/SWP temperature accuracy:** ±2.9°C, when calibrated against an instrumented thermocouple wafer (ITC).
- **Temperature repeatability:** ±2.3°C or better at 1150°C wafer to wafer. (Repetition specifications are based on a 100-wafer set.) RTO = ±0.75%, RTA = 0.75%, RTS = ±0.75%, expressed in percentage deviations (Max.-Min)/2xMean
- **Temperature uniformity:** ±3°C across an 8-inch wafer at 1150°C. (This is a 1-sigma deviation from 100-angstrom oxide uniformity.) For a titanium silicidation process, no more than 1.5 percent increase to uniformity during the first anneal at 650 - 700°C. RTO = ±1.0%, RTA = 1.0%, RTS = ± 1.5%.

8800i.2 PHYSICAL DIMENSIONS

- **Width** 40 in. (102 cm)
- **Depth** 51.5 in. (131 cm)
- **Height** 85.75 in. (218 cm)
- **Weight** 2100 lbs (955 kg)
- **Shipping weight** 2540 lbs (1155 kg)

8800i.3 UTILITY REQUIREMENTS

Utility requirements include:

- **Power**
  - Standard Domestic: 208 VAC, 60 Hz ±3 Hz; 125 A maximum; 3-phase plus ground and neutral
  - European: 400 VAC, 50 Hz ±3 Hz; 90 A maximum; 3-phase plus ground and neutral
  - Japanese: 200 VAC, 50/60 Hz ±3 Hz, 125 A maximum; 3-phase plus ground
- **Water Type** Refer to the 8800i facility manual **(Recirculator)**

8800i.4 FACILITY CONNECTIONS

The following table is a summary of the facility connections for the Heatpulse 8800i system:

Table A-1. *Facility Connections*

UTILITY	SERVICE SIZE	CONN. TYPE
Tube Cooling CDA or Utility N2 **Valve Actuation CDA or Utility N2**	1/2 inch 1/4 inch	Swagelok Swagelok
Cooling Water Supply **Cooling Water Return**	1/2 inch 1/2 inch	Swagelok Swagelok
Gas Box Exhaust	4-inch OD	Duct
Cooling Exhaust **Scavenger Hood Exhaust** **Containment Exhaust (Optional)** **OR** **Exhaust Manifold Outlet**	2-inch OD 2-inch OD 2-inch OD 4-inch OD	Duct Duct Duct Duct
Process Gas Exhaust (Scrubber)	3/8 inch	VCR, Male
Process Gas Supply **Nitrogen Curtain Gas Supply**	1/4 inch 1/4 inch	VCR, Female VCR, Female
Recirculator Water Supply **Recirculator Water Return**	1/2 inch 1/2 inch	Swagelok Swagelok

8800i.5 UTILITY SPECIFICATIONS

The following table is a summary of the utility specifications for the Heatpulse 8800i system:

Table A-2. *Utility Specifications*

UTILITY	FLOW RATE MIN.	FLOW RATE TYP.	FLOW RATE MAX.	PRESSURE MIN.	PRESSURE TYP.	PRESSURE MAX.
CDA or Utility N2 (Cooling)	16 SCFM (432 SLM)	20 SCFM (540 SLM)	28 SCFM (756 SLM)	70 psig (5.0 kg/cm^2)	80 psig (5.6 kg/cm^2)	90 psig (6.4 kg/cm2)
CDA or Utility N2 (Valve Act.)	<1 SCFM (<27 SLM)	<1 SCFM (<27 SLM)	<1 SCFM (<27 SLM)	80 psig (5.6 kg/cm^2) Dynamic	90 psig (6.3 kg/cm^2) Dynamic	100 psig (7 kg/cm^2) Dynamic
Cooling Water Supply	3.0 GPM (11.6 SLM)	4.0 GPM (15.4 SLM)	5.5 GPM (21.2 SLM)	30 psig (2.1 kg/cm^2)	40 psig (2.8 kg/cm^2)	60 psig (4.2 kg/cm^2)
Cooling Water Return	3.0 GPM (11.6 SLM)	4.0 GPM (15.4 SLM)	5.5 GPM (21.2 SLM)	20 psig (1.4 kg/cm^2)	30 psig (2.1 kg/cm^2)	40 psig (2.8 kg/cm^2)
Gas Box Exhaust	0 SCFM (0 SLM)	100 SCFM (2700 SLM)	150 SCFM (4050 SLM)	.5" H_2O (12.7 mm)	.75" H_2O (19 mm)	--------
Cooling Exhaust	25 SCFM (1130 SLM)	30 SCFM (1250 SLM)	40 SCFM (1700 SLM)	1.0" H_2O (25.4 mm)	1.5" H_2O (38.1 mm)	2" H_2O (50.8 mm)
Scavenger Hood Exhaust	20 SCFM (540 SLM)	25 SCFM (675 SLM)	30 SCFM (810 SLM)	.75" H_2O (19 mm)	1.5" H_2O (38.1 mm)	1.5" H_2O (38.1 mm)
Containment Exhaust 0 SCFM SLM) (0 SLM)	0 SCFM (54 SLM)	2 SCFM (19 mm)	.75" H_2O (25.4 mm)	1" H_2O (38.1 mm)	1.5" H_2O	(0
OR						
Exhaust Manifold Outlet	45 SCFM (1700 SLM)	55 SCFM (2000 SLM)	72 SCFM (2600 SLM)	1.0" H_2O (25.4 mm)	1.5" H_2O (38.1 mm)	2" H_2O (50.8 mm)
Process Gas Exhaust (Scrubber)	-------	-------	-------	.75" H_2O (19 mm)	1.0" H_2O (38.1 mm)	1.5" H_2O (63.5 mm)
Process Gas Supply Nitrogen Curtain Gas Supply	-------	-------	-------	30 psig (2.1kg/cm^2) Dynamic	55 psig (3.9 kg/cm^2) Dynamic	90 psig (6.4 kg/cm^2) Dynamic
Recirculator Water Supply	7 GPM (27 SLM)	8 GPM (30.8 SLM)	9 GPM (34.65 SLM)	40 psig (2.8 kg/cm^2)	50 psig (3.5 kg/cm^2)	60 psig (4.2 kg/cm^2)