

Eagle X5120HT

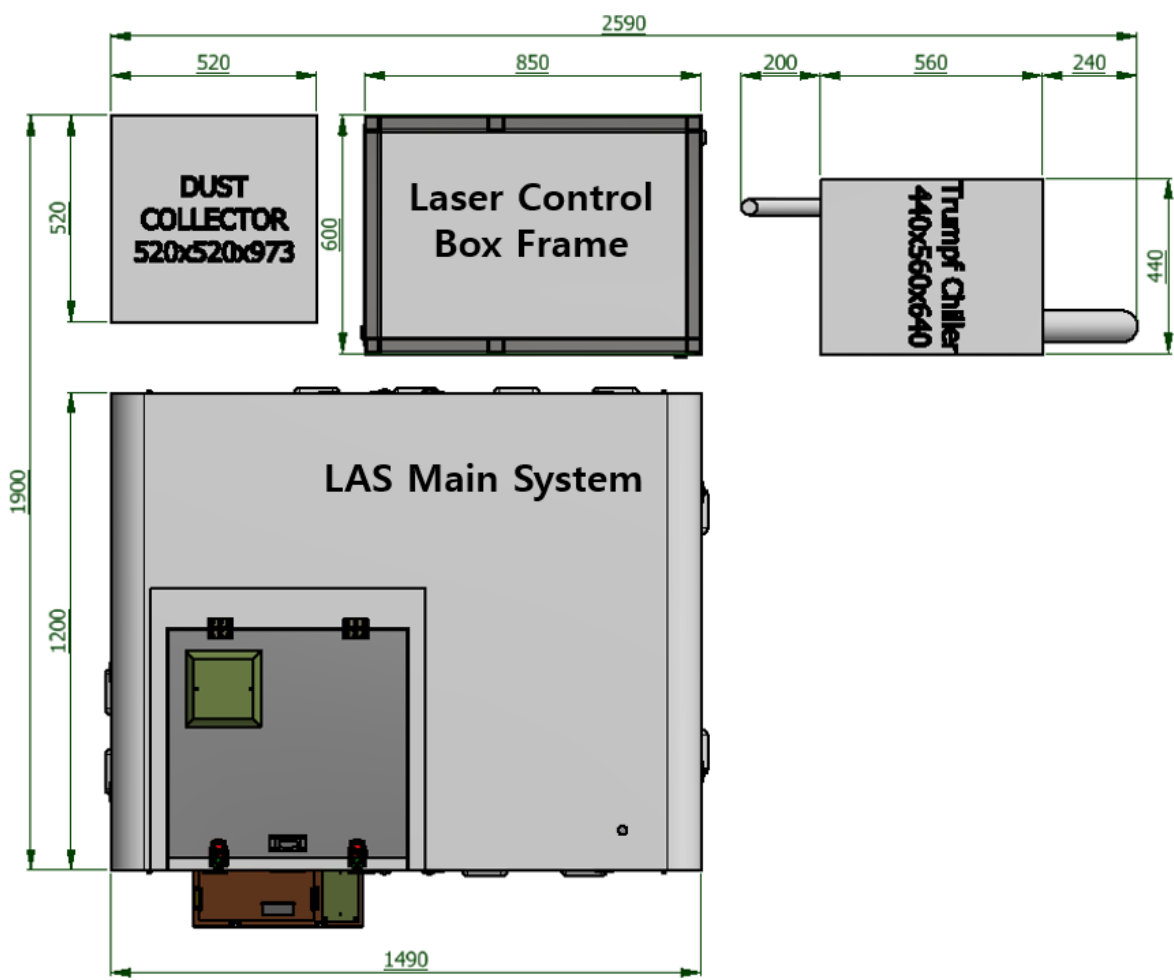
Laser Assisted Soldering



JT CORP



※ Top View : 1,490mm(W) X 1,200(D) X 2,100(H)

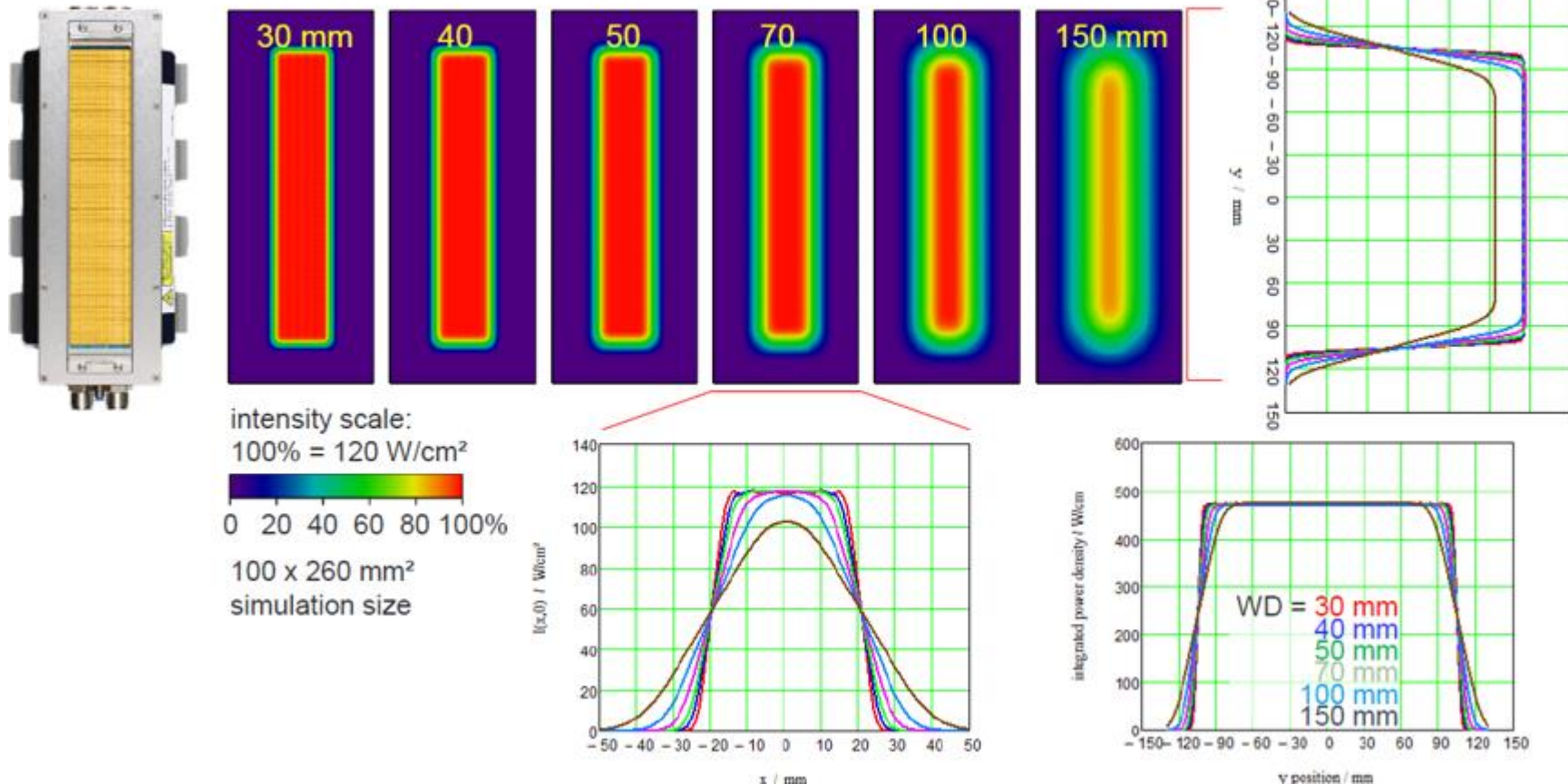


Category	Item	Specification
Laser	LD Type	VcSEL
	Wave length	980 +/-10 m,
	Density	100W/cm ²
	Beam Stability	Less than +/- 2%
System	Carriers	Substrate/Boat carriers
	Load/Unload	Slot to Slot for inline
	Index speed	Max.30mm/sec
	Preheater Temp	Less than 200 °C
	Surface temp check	IR Camera for Real time monitor
	Size	1,490mm(W) X 1,200mm(D) X 2,100mm(H)

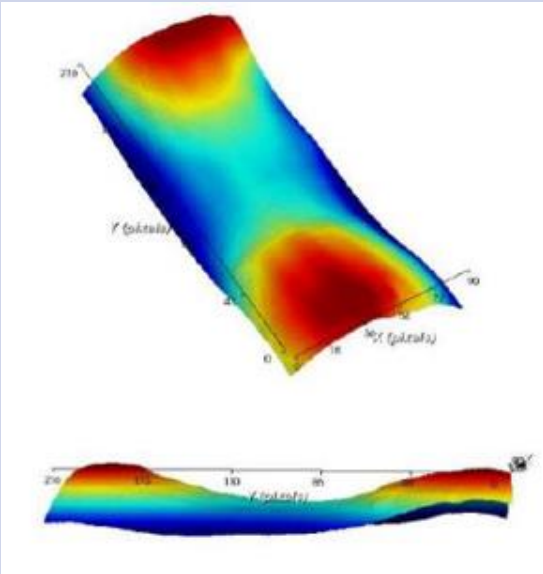
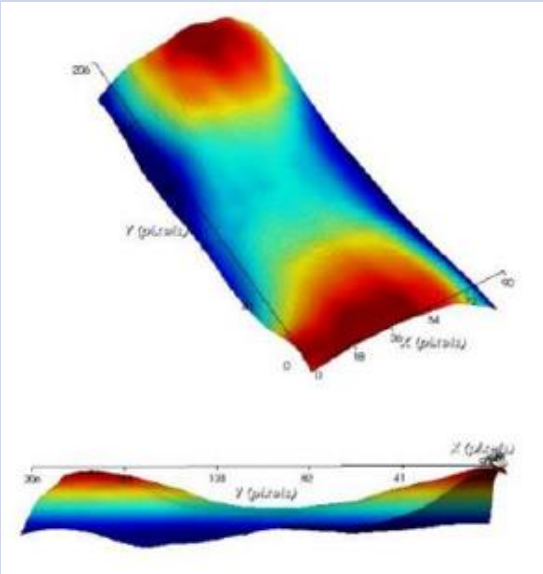
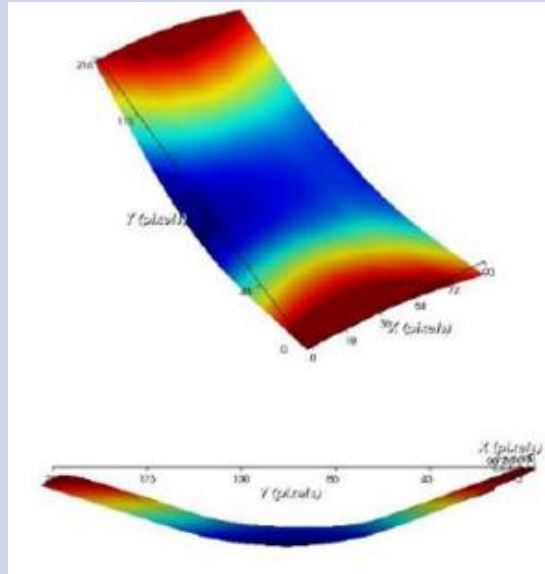
✓ Large Area Laser Energy Uniform Irradiation with VcSEL Module

Intensity Distribution 9.6 kW System

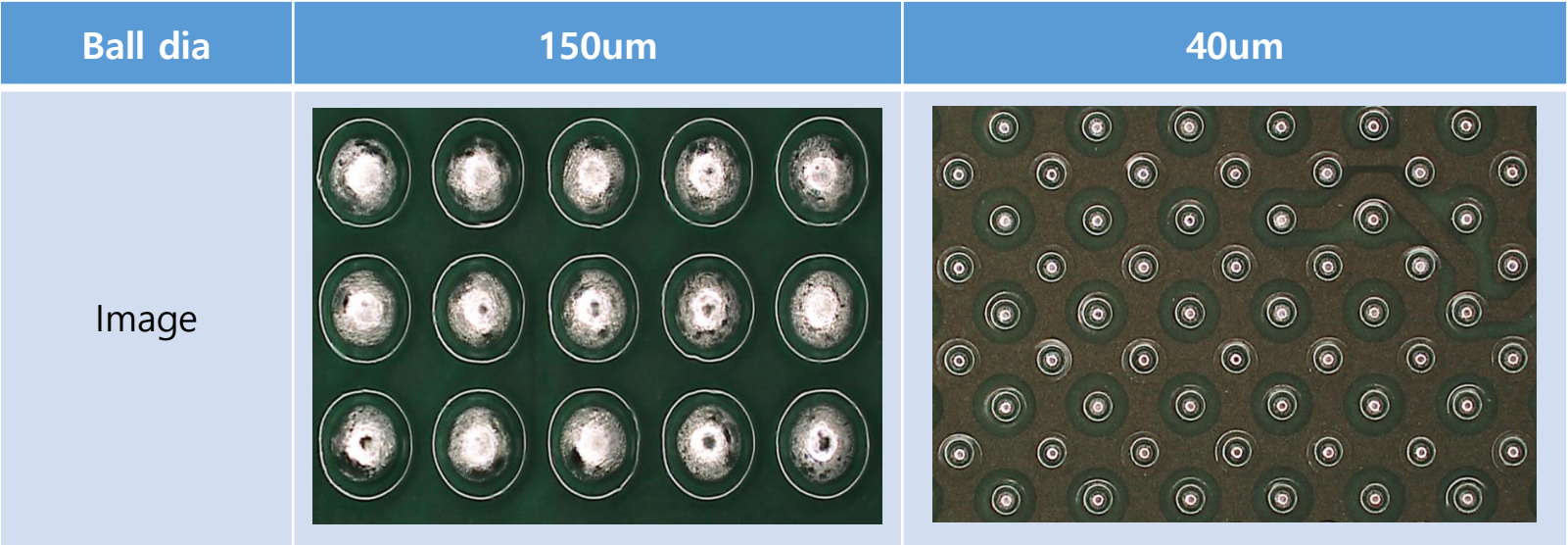
as a function of distance, emission area $\sim 208 \times 40 \text{ mm}^2$



✓ TM's value of LAS is lower than IR reflow by 1/3rd

Process	LAS - OTF	LAS – One Shot	IR Reflow
RT Image			
Value	121um	132um	385um

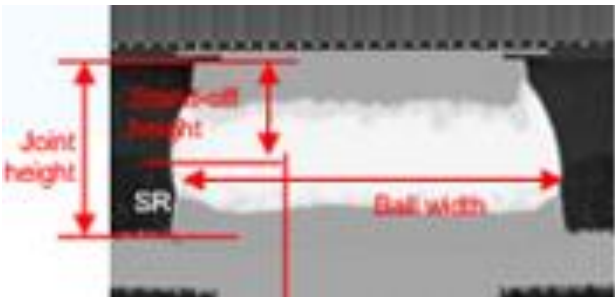
✓ Small Ball Solderability & Warpage result

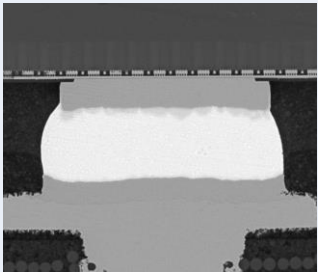
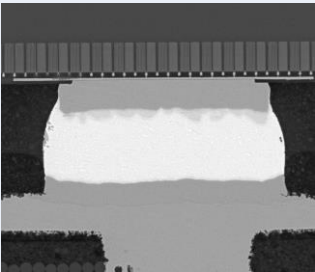
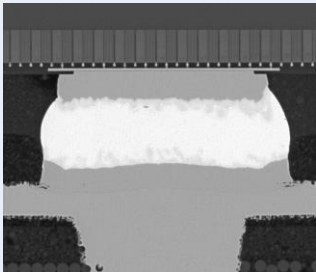
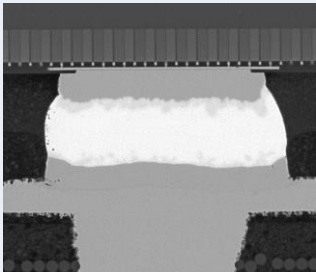


▪ Warpage comparison

Count	1	2	3	4	5	6	7	8	9	10	Average (um)
Heat reflow	2.3	2.5	2.5	2.7	2.6	2.5	2.8	2.3	2.8	2.4	2.54
Laser reflow	0.98	0.84	0.75	0.78	0.56	0.53	0.83	0.88	0.94	0.81	0.79

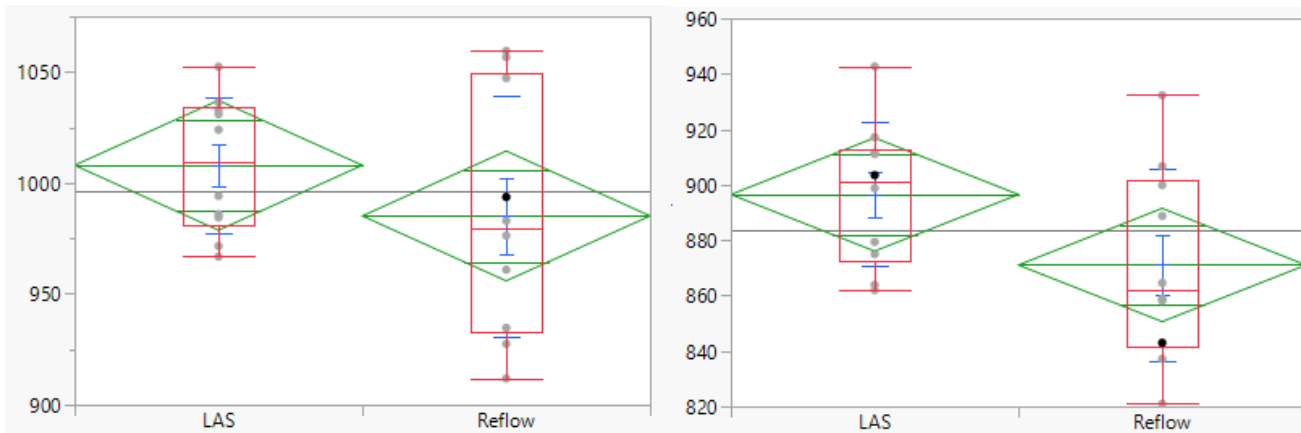
✓ Image of a soldering section



ITEM	LAS		Reflow	
	Edge die	Center die	Edge die	Center die
Joint image				
Stand-off height	22.1	23.4	21.3	21.5
Joint height	34.2	34.4	35.8	34.9
Bump width	78.5	80.3	80.7	78.9

- ✓ **Destructive Test Result**
 - Same soldering quality as IR Reflow

	Leg#	Min	Max	Avg.
BST	LAS	967	1052	1008.0
	Reflow	912	1060	985.2
BPT	LAS	862	943	897.5
	Reflow	821	932	871.1



- Showed good solder joint both soldering method.
- LAS showed little better BST, BPT strength than reflow.

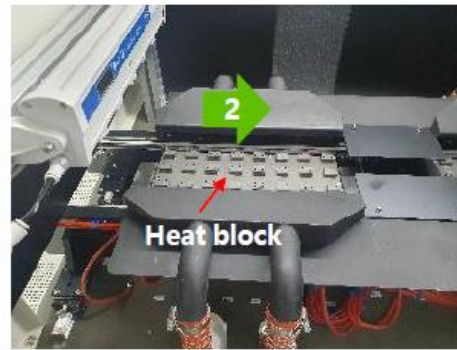
✓ Automatic Mode

Laser Assist Soldering with VcSEL

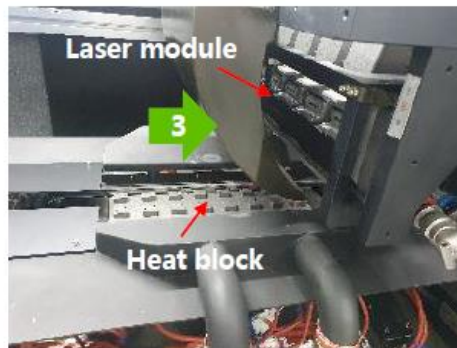
➤ LAS system process flow (Model : JT X5100HT)



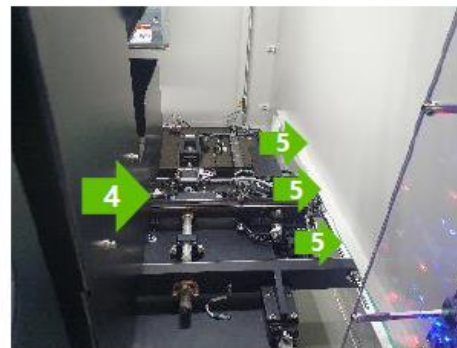
<Boat input>



<Pre-heating>



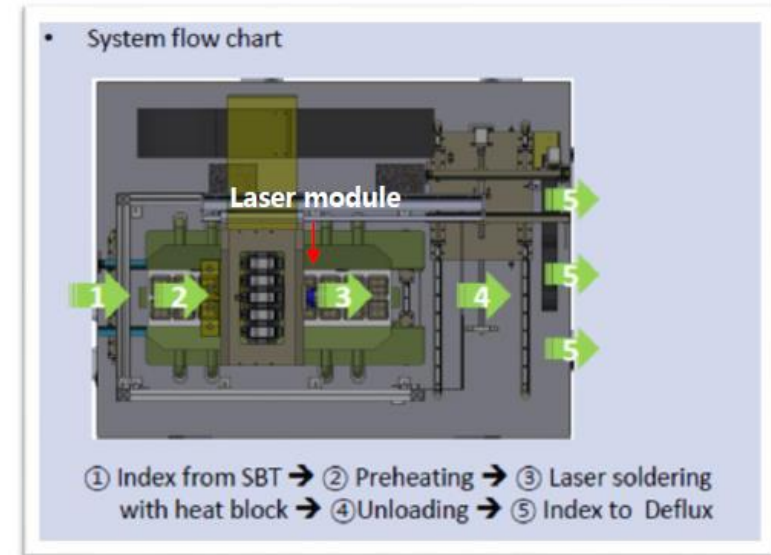
<Laser soldering>



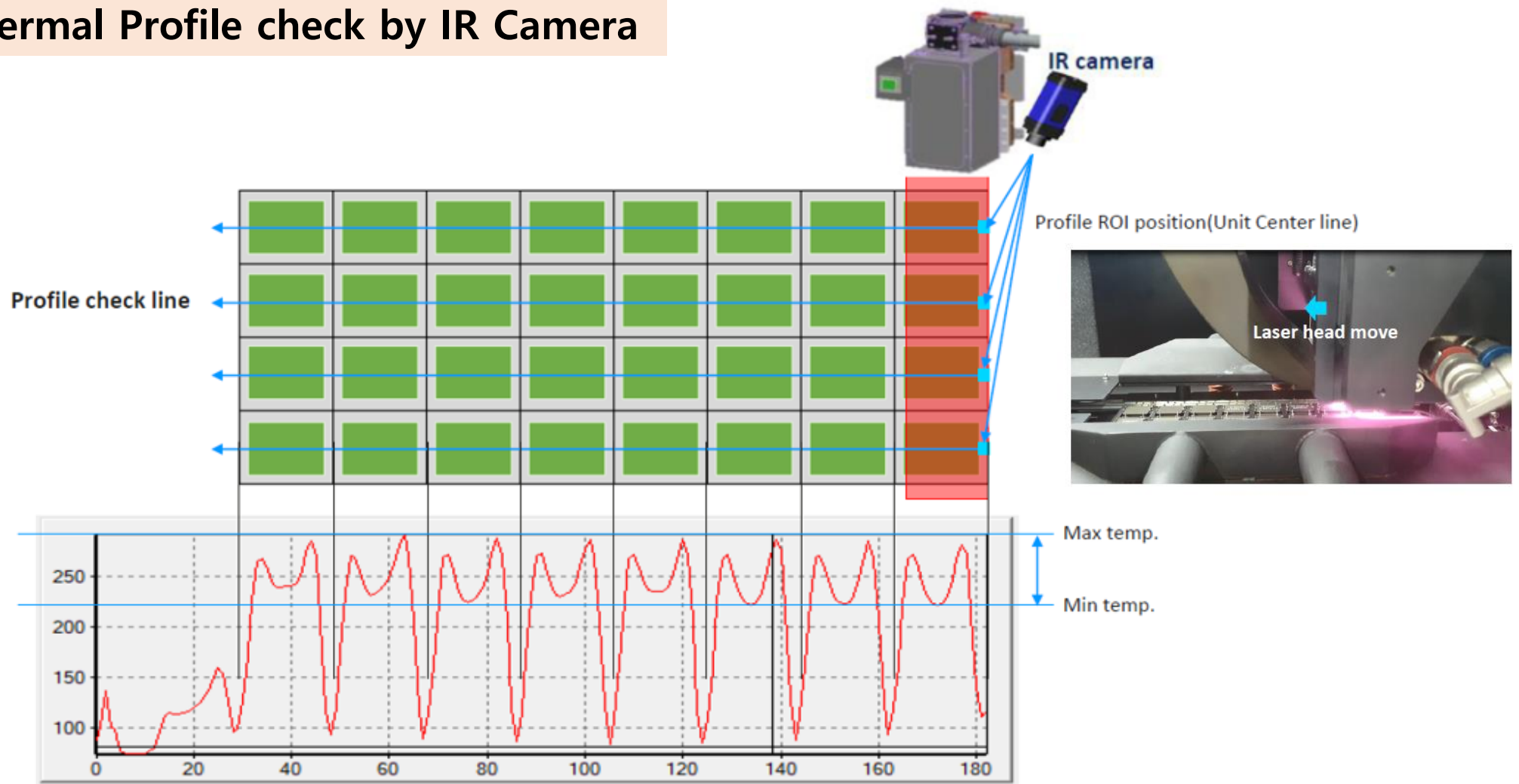
<Unloading>





<Index to deflux>



✓ Laser Thermal Profile check by IR Camera



- Unit center area showed lower temperature than edge area.
- Will check out of workable temperature range.

Category	Eagle X5120HT	1913 (H Company)
		
Dimensions	1,490 x 1,200 X 2,100mm	5,890 x 1,370 x 1,600mm
Thermal Process time per unit	8 Sec/Boat (240ea)	300Sec/Boat
Soldering Effective Area	250mm X 32mm (100mm working distance)	50 ~ 225mm (Dual Lane)
Working Zone	2 Zone (Preheating 1, Working 1)	16 Zone (Heating 13, Cooling 3)
Vacuum Heating Stage	Pre-Heating : Max 200°C Working Stage : Max 150°C	-
Typical Nitrogen Consumption	No Usage	500 ~ 700 SCFH
Power Consumption	7.2kW	12~19kW

Thank you!



JTCORP

