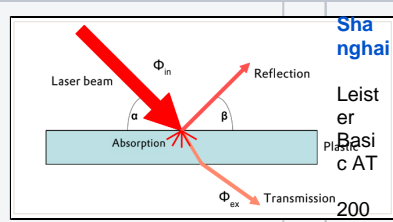


# Laser Welding OLD

**LASER TRANSMISSIVE MATERIALS**      **THEORY, KNOWLEDGE, & MODELS**      **CAPABILITIES**

Commercial Laser Transmissive "Black" Grades	Thicknesses	Absorbing Layer
R-3-410BL LZT	1mm	R-4-270BL, BR11BL
	1.5mm	R-4-270BL, R-4-240BL
	2mm	R-4-270BL, R-4-240BL
A-1130 HS LZT BK979	1mm	A-1625 HS BK324
	2mm	A-1625 HS BK324
AE-8940 LZT BK979	1mm	AE-8940
	2mm	AE-8940
A-1145 HS LZT BK979	1mm	A-1625 HS BK324
	2mm	A-1625 HS BK324
AE-8930 LZT (inactive)	1mm	AE-8935, AE-8940, AE-8950, AE-9933, AE-9950
	2mm	AE-8935 BK
Laser Welding Transmissive on Transmissive using "clearweld" dye		

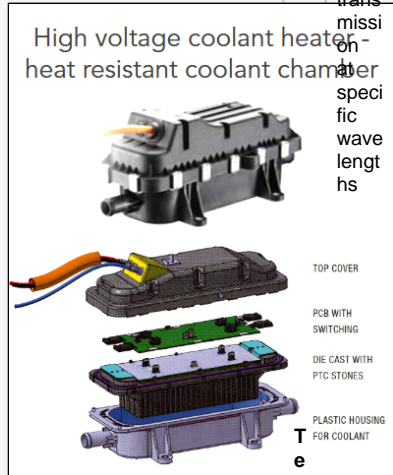
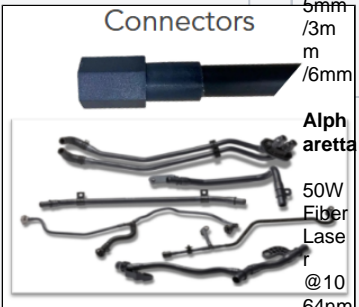
**Introduction to Laser Welding**



**Laser Welding Database**

Ongoing updated database that contains historical data, laser settings, laser transmission values, etc

Hermetically sealed parts, electrical connectors, sensors, switches, e-water pump, e-ATF pump, slot liners



Shanghai  
Leister  
Basic AT  
200W  
Fiber Laser @1070nm  
Spot size: 0.6mm  
5mm  
3mm  
6mm  
Alphareta  
50W Fiber Laser @1064nm  
Spot size: 1mm  
Laser Transmission  
measuring % transmission at specific wavelengths  
Te  
st  
ing



Alphareta: Perkin Elmer Lambda 950  
Shanghai: LPKF TMG3



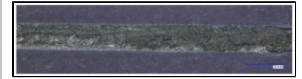
**Weld Strength**

Lap shear testing for weld strength



**Microscopy**

Imaging to analyze cohesion at weldline



Laser Welding Team			
Alpharetta	Emmanuel David	Jacob Brooker	Elias Irick
Shanghai	Hanson Li	Lingjun Rao	Neil Liang