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Reflow Comparison Matrix

	CONDENSATION INERT	FORCED CONVECTION	I/R CONVECTION
SYSTEM PERFORMANCE			
1. Start-up to True Process Ready	11 minutes	20 to 45 minutes	50 to 120 minutes
2. Oven Repeatability	within 1° - 4° c	within 1° - 10° c	within 5° - 25° c
3. Thermal Symmetry	< 5° c	2° - 8° c	8° - 24° c
4. Load Sensitivity	< 2° c	3° - 8° c	8° - 30° c
5. Component Internal Temperature (compared to lead temperature)	20° - 30° c cooler	10° - 0° c	10° c cooler to 15° c hotter
6. ESD Potential Added	0 volts	0 to 75 volts	0 volts
7. Ease of Profiling - No. of passes required	1 - 2	1 - 5	2 - 10
THERMAL DYNAMICS			
8. Heat Transfer Rate	rapid	slow	rapid
9. Uniformity of Heat Transfer	uniform	uniform	non-uniform
10. Heat Recovery	rapid	slow	rapid
11. Range of Temperatures	constrained to a known maximum	wide range	wide range
GENERAL			
12. Controlability	excellent	very good	good
13. Feasibility for:			
Low Volume	excellent	very good	fair
Medium Volume	excellent	excellent	good
High Volume	excellent	excellent	very good
14. Relative Cost	medium	medium	medium to expensive

KEY:

- Start-up to True Process Ready: From a cold start to a true process ready state at which the system is stabilized and ready to process product.
- Oven Repeatability: How much the system drifts over time (as measured at PCB level).
- Thermal Symmetry: How much of a difference PCB orientation/flow direction makes.
- Load Sensitivity: The impact of passing a volume of product (load) through the system.
- Component Internal Temperature: How much cooler the internal portion of a component remains when the lead interconnect is at full liquidous.
- ESD Potential Added: How much measured ESD potential the system adds to a PCB assembly. (Note: Most Forced Convection systems do not add ESD but a very few have been observed to exhibit this trait).
- Ease of Profiling: How many passes does it typically take to profile a PCB assembly.