

Reverse Costing analysis



Involar MAC250A Microinverter

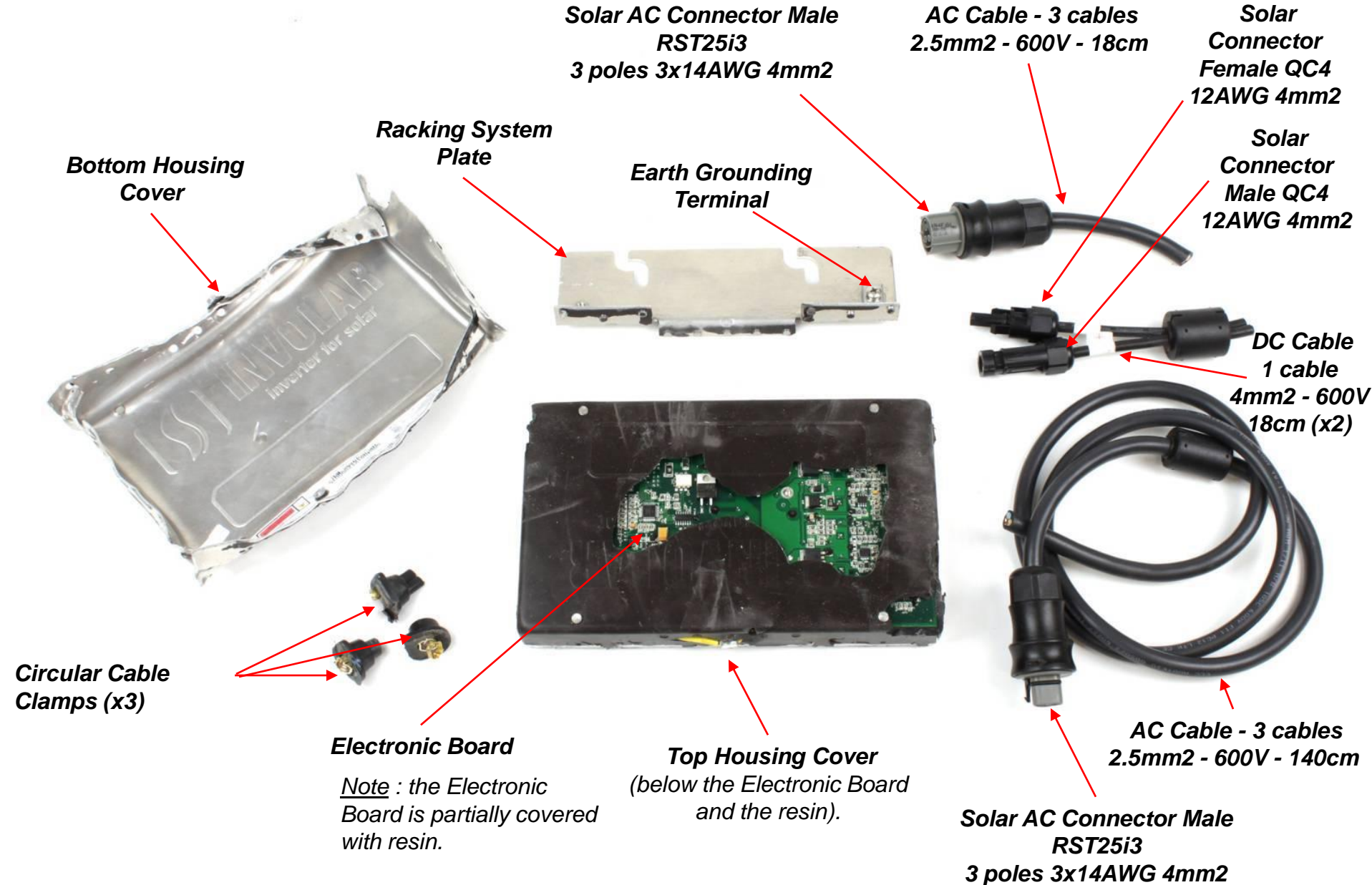
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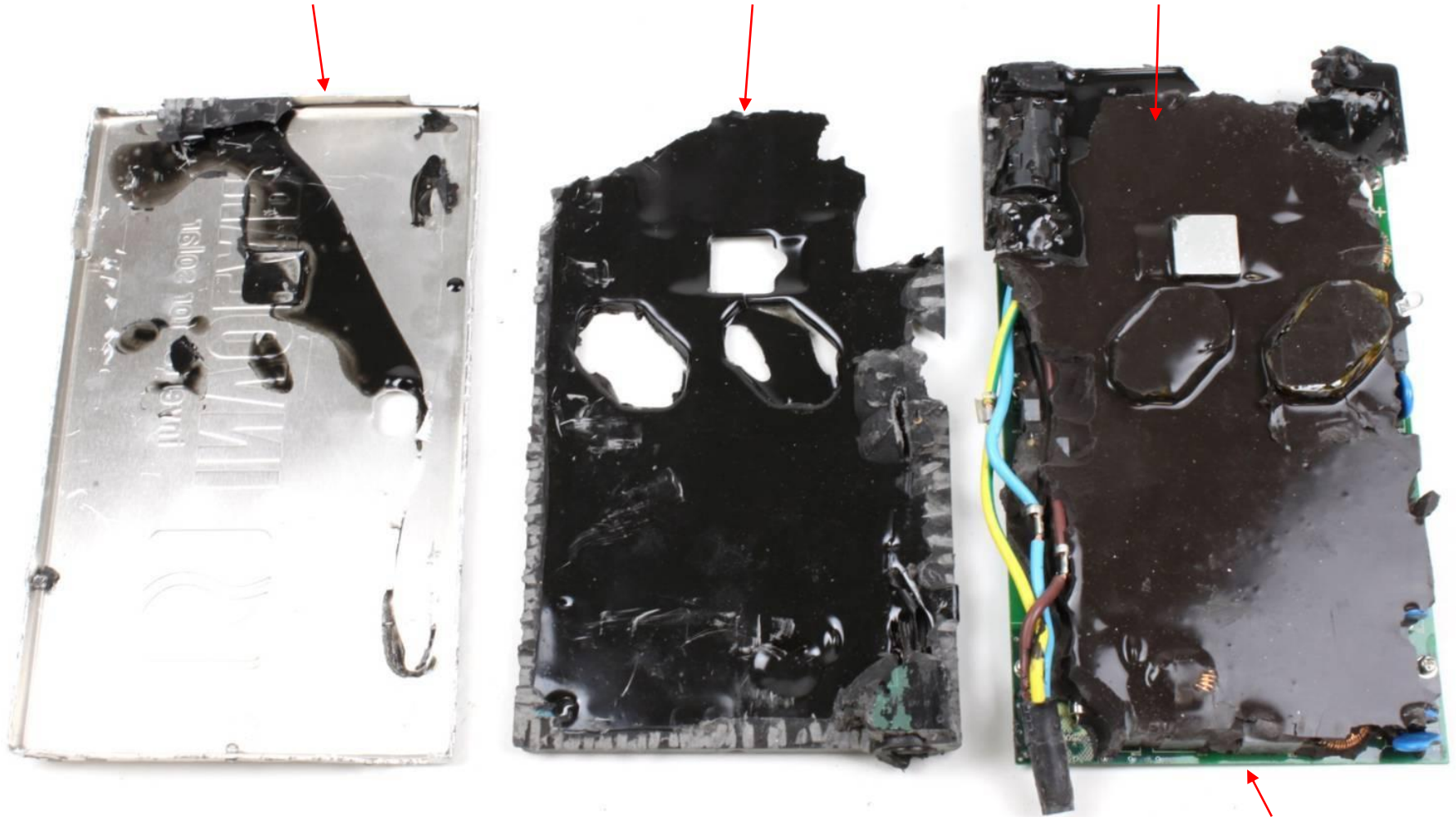
Inverter Opening



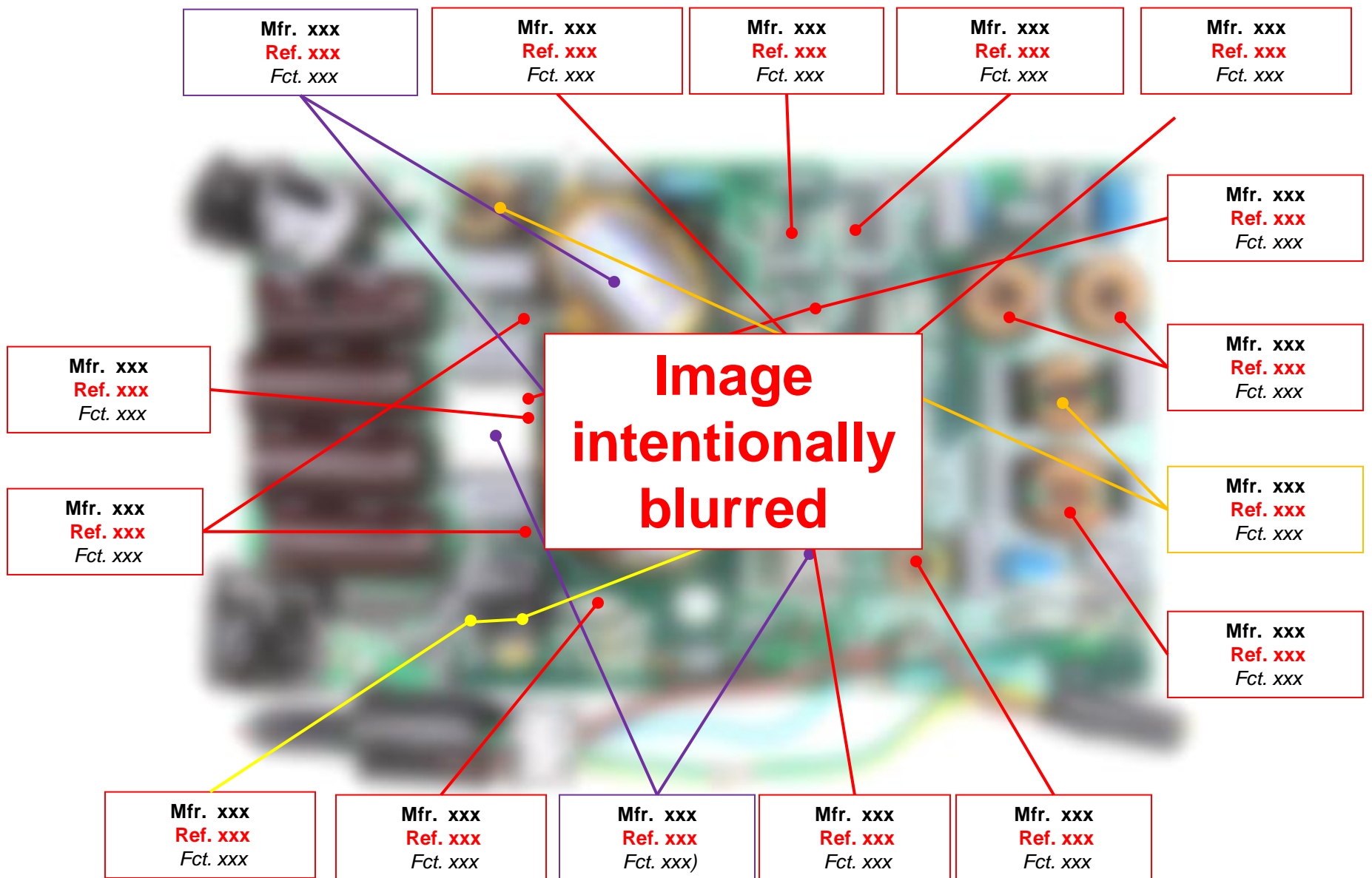
Top Housing Cover

Hard resin

Soft resin



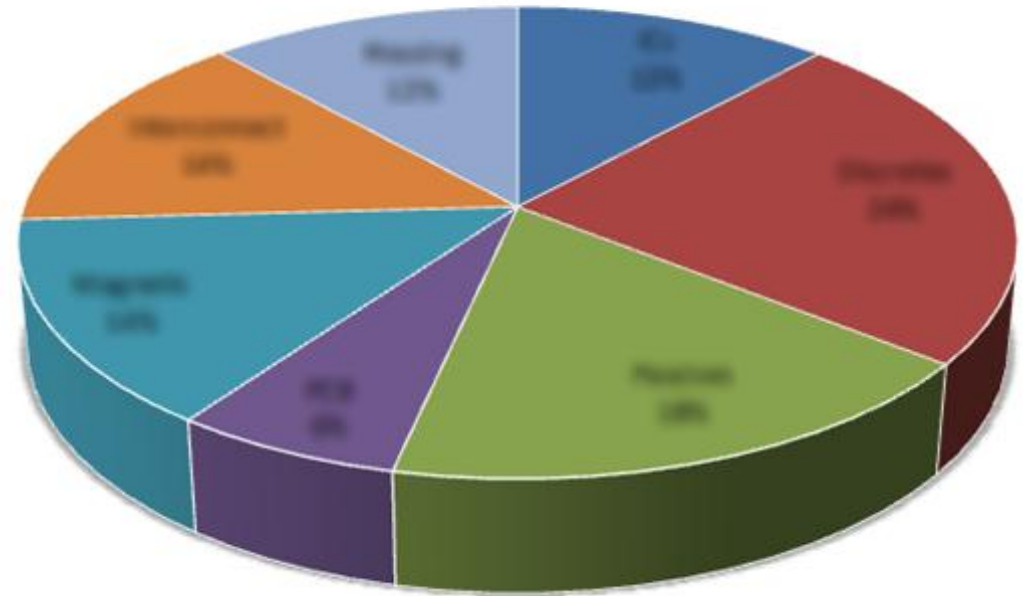
Electronic Board
(top side)



Designation	Costs (\$)	(%)
ICs	1000	10%
Discretes	1500	15%
Passives	800	8%
PCB	1200	12%
Magnetic	700	7%
Interconnect	700	7%
Housing	600	6%
TOTAL	10000	100%

The Electronic and Electrical components represent xx% of the total material cost of \$xxx.

Material Cost Breakdown



[-] Involar MAC250A - Electronic Board (China)

- + [icon] Screenprinting (side 1)
- + [icon] Chipshooter (Side 1)
- + [icon] Pick and place SMT (Side 1)
- + [icon] Reflow (side1)
- + [icon] Automated Optical Inspection (side 1)
- + [icon] Storage(1)
- + [icon] Screenprinting (side 2)
- + [icon] Chipshooter (Side 2)
- + [icon] Pick and place SMT (Side 2)
- + [icon] Reflow (side 2)
- + [icon] Automated Optical Inspection (side 2)
- + [icon] Storage(2.1)
- + [icon] Manual Report Protective Carrier
- + [icon] Storage(2.2)
- + [icon] Manual report TH Cps
- + [icon] Storage(2.3)
- + [icon] Wave soldering
- + [icon] Storage(2.4)
- + [icon] Manual Withdrawal Protective Carrier
- + [icon] Storage(3)
- + [icon] In circuit test
- + [icon] Storage(4)
- + [icon] Rework
- + [icon] Storage(5)
- + [icon] Depaneling
- + [icon] Storage(6)
- + [icon] Functional test
- + [icon] Storage(7)
- + [icon] Board conditioning

↑ From the Screen Printing step to the Optical Test : these manufacturing steps are carried out in serial (the slowest equipment causes an additional immobilization of the other equipment).
↓

↑ Same operations are done on the 2d side.
↓

↑ A Protective Carrier/Pallet is mounted on the panel to protect the SMD component from the Wave Soldering.
↓

↑ Manual Placement of Through Hole Components (TH) and Connectors.
↓

↑ Wave Soldering and withdrawal of the protective carrier.
↓

↑ In circuit test (possible rework)
↓

↑ Depaneling
↓

↑ Functional Test
↓

↑ Conditioning
↓

Operation	Equip Time	Labour Time	Net Operation Time	Brut Operation Time	Cumulative Yield	Equip Cost	Labour Cost	Entity Cost	Full Labour Cost by Op	Operation Total Cost	Curr
screenprinting soldering paste - Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0025	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,8333	0,8333	1,3331	100,00%	0,0038	0,0011	0,0000	0,0007		
Screenprinting soldering paste	3,3333	3,3333	3,3333	5,3323	100,00%	0,0150	0,0042	0,0000	0,0028		
Pick and place SMT- Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0063	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	0,8333	100,00%	0,0058	0,0007	0,0000	0,0007		
Pick and place Chips	5,8320	0,0000	5,8320	5,8320	100,00%	0,0409	0,0046	0,0000	0,0048		
Pick and place SMT- Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0043	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	1,4958	100,00%	0,0072	0,0012	0,0000	0,0007		
Pick and place Chips	0,0000	0,0000	0,0000	0,0000	100,00%	0,0000	0,0000	0,0000	0,0000		
Pick and place SMT from 3 to 20 pins	2,8800	0,0000	2,8800	5,1695	100,00%	0,0250	0,0041	0,0000	0,0024		
Pick and place SMT from 22 to 80 pins	0,0000	0,0000	0,0000	0,0000	100,00%	0,0000	0,0000	0,0000	0,0000		
Pick and place SMT from 82 to 208 pins	0,0000	0,0000	0,0000	0,0000	100,00%	0,0000	0,0000	0,0000	0,0000		
Reflow - Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0015	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	1,0524	100,00%	0,0017	0,0008	0,0000	0,0007		
Reflow	4,4444	0,0000	4,4444	5,6129	100,00%	0,0092	0,0044	0,0000	0,0037		
Automated Optical Inspection - Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0019	0,0000	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	0,9522	100,00%	0,0020	0,0000	0,0000	0,0007		
Automated Optical Inspection	5,0000	0,0000	5,0000	5,7131	100,00%	0,0123	0,0000	0,0000	0,0041		
Storage	0,0000	0,0000	0,0000	0,0000	100,00%	0,0000	0,0000	0,0000	0,0000		
screenprinting soldering paste - Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0025	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,8333	0,8333	4,1267	100,00%	0,0116	0,0033	0,0000	0,0007		
Screenprinting soldering paste	3,3333	3,3333	3,3333	16,5067	100,00%	0,0465	0,0130	0,0000	0,0028		
Pick and place SMT- Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0063	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	1,6518	100,00%	0,0116	0,0013	0,0000	0,0007		
Pick and place Chips	9,5760	0,0000	9,5760	18,9815	100,00%	0,1330	0,0150	0,0000	0,0079		
Pick and place SMT- Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0043	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	0,8333	100,00%	0,0040	0,0007	0,0000	0,0007		
Pick and place Chips	6,8400	0,0000	6,8400	6,8400	100,00%	0,0330	0,0054	0,0000	0,0057		
Pick and place SMT from 3 to 20 pins	10,8000	0,0000	10,8000	10,8000	100,00%	0,0521	0,0085	0,0000	0,0089		
Pick and place SMT from 22 to 80 pins	2,1600	0,0000	2,1600	2,1600	100,00%	0,0104	0,0017	0,0000	0,0018		
Pick and place SMT from 82 to 208 pins	0,0000	0,0000	0,0000	0,0000	100,00%	0,0000	0,0000	0,0000	0,0000		
Reflow - Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0015	0,0007	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	3,2579	100,00%	0,0054	0,0026	0,0000	0,0007		
Reflow	4,4444	0,0000	4,4444	17,3754	100,00%	0,0286	0,0137	0,0000	0,0037		
Automated Optical Inspection - Setup	0,9000	0,9000	0,9000	0,9000	100,00%	0,0019	0,0000	0,0000	0,0000		
Panel loading/unloading	0,8333	0,0000	0,8333	2,9476	100,00%	0,0063	0,0000	0,0000	0,0007		
Automated Optical Inspection	5,0000	0,0000	5,0000	17,6857	100,00%	0,0380	0,0000	0,0000	0,0041		
Storage	0,0000	0,0000	0,0000	0,0000	100,00%	0,0000	0,0000	0,0000	0,0000		



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