



OEE



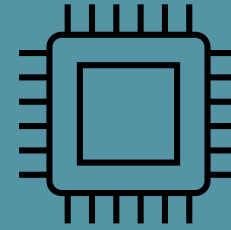
Known Good Loadboard
Known Good Socket
Pin Testing

Contact US



4JMSOLUTIONS - 2022

IMPROVING OEE



For Tester Overall Equipment Efficiency, one not only needs to reduce the changeover and setup time, but also to reduce any engineering activity related to checked load boards and sockets.

- Ensure that the Loadboard is 100% on all test sites, by using a specific tester
- Ensure that all test sockets are 100% before a setup
- Test sockets tested and failing pins changed, tracking pin history
- Reducing intervention on a tester will maximise its use in production

KNOWN GOOD LOAD BOARD

TESTER
PLATFORM

TEST PROGRAM
DEVELOPMENT

TEST
LOAD BOARD

TEST KIT

FLEXY TEST

ANY ISSUES
FOUND

	Board amount (1 year, all Divisions)	Tester time spent for debug (avg)	Saving (Tester hours)
Duplicated items	Up to 1200	8h	Up to 9600 hours
Repaired boards	450	2h	Up to 900 hours
ROI = Total Tester time Saving = 10500 hours = ~ 437 Days of Tester utilization Equiv. 1,24 Tester Gained / year			

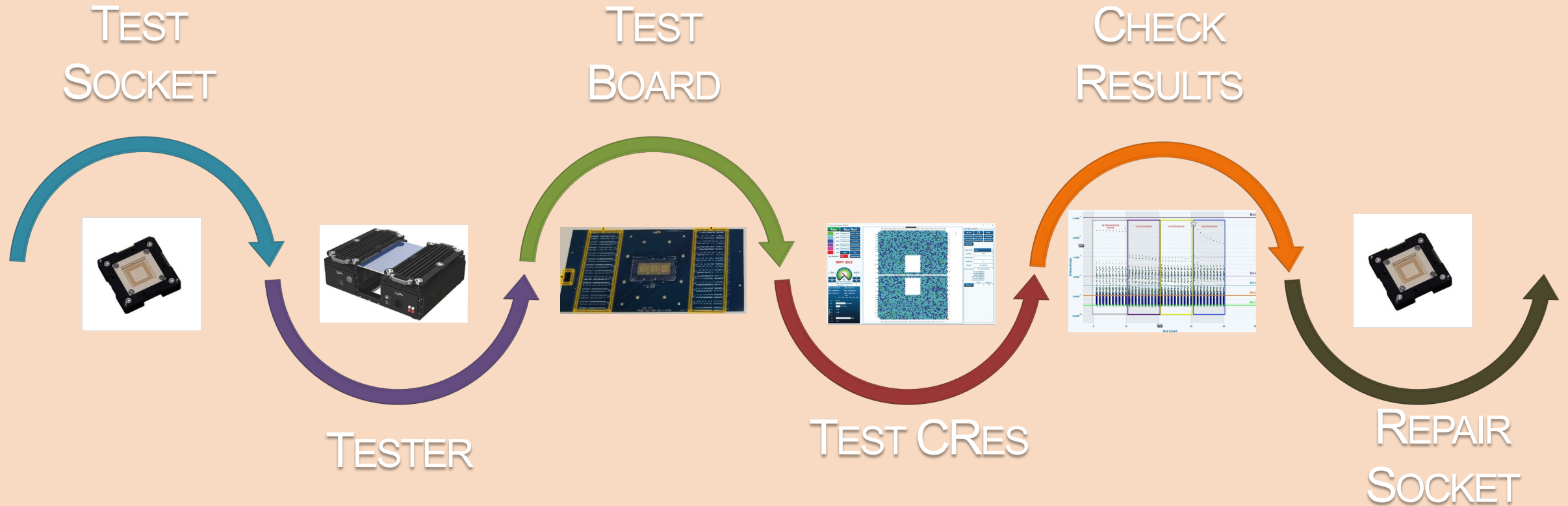
KNOWN GOOD LOAD BOARD - ROI

Data derived from Customer site

	Board amount (1 year, all Divisions)	Tester time spent for debug (avg)	Saving (Tester hours)
Duplicated items	Up to 1200	8 hrs	Up to 9600 hours
Repaired boards	450	2 hrs	Up to 900 hours

ROI = Total Tester Time Saving = 10500 hours = ~ 437 Days of Tester utilisation
Equivalent to 1.24 Testers Gained / Year

KNOWN GOOD SOCKET



[MODUSTEST](#)

[ModusTest Program](#)

KNOWN GOOD SOCKET - ROI

Major Savings from KGS Process with MPT (Edit White Cells Only)

Action	IQC+Pin Savings	Setup/Debug Time Reduction	FPY (First Pass Yield)	FTY (Final Test Yield)	Total Savings	
% IQC failing pin rate	10%	N/A	N/A	N/A		
pin cost (\$)	0.5					
Total Pin count/month	10000					
% Estimated Overkill	10%					
OEE Improvements by Setup/Debug Time Reduction with 95% FTY	N/A	0.50%	N/A	N/A		
FPY Improvement (%)		N/A				1%
# of set ups		50				
Total Tester Cell Saving		0.25	0.5			
Cost of tester (\$)		\$ 125,000.00				
Cost of Handler (\$)		\$ 250,000.00				
FTY Improvement		N/A	N/A	3%		
Total Tested/Month				1,000,000		
Price of Good Unit				\$ 0.50		
Monthly Savings	\$ 1,000.00	\$ 93,750.00	\$ 187,500.00	\$ 15,000.00	\$ 296,250.00	
Yearly Savings	\$ 12,000.00	\$ 1,125,000.00	\$ 2,250,000.00	\$ 180,000.00	\$ 3,555,000.00	

* Additional savings from labor & collateral savings are not included.

* A typical MPT to Test Cell ratio is 1:100. It can go up to 1:500 or higher for the products with long test times and low insertion counts.

* A typical throughput varies between 300 sockets/Day to 1500 sockets/Day depending on the sockets and the MPT collateral Designs.

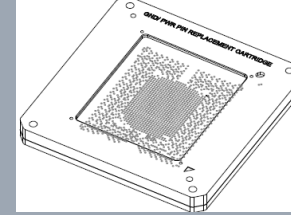
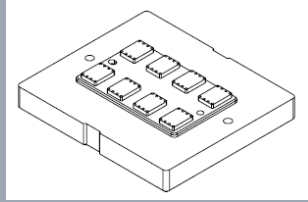
* A typical collateral cost ranges from 5K (low pincount + multi-footprint) to 20K (high pincount + small pitch + single footprint).

BENEFITS

- KNOWN GOOD LOADBOARD & KNOWN GOOD SOCKETS
- TEST CELL SETUP TIME REDUCED TO MINIMUM
- 100% YIELD IMMEDIATELY
- LONGER HIGHER YIELD ACHIEVED
- LOWER NUMBER OF SOCKET CONTACTS NEED REPLACING

BENEFITS

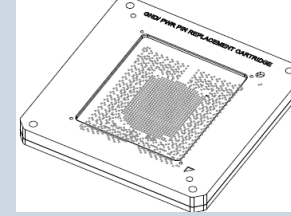
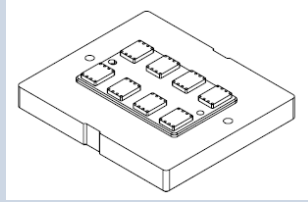
- HIDDEN BENEFIT –
- ONLY HANDLER VARIABLES REMAIN
- WORK DIRECTLY ON THE REAL PROBLEMS
- FOR INSTANCE, SPEED OF DEVICE INSERTION INTO SOCKET
- FOR INSTANCE, FORCE AND TRAVEL OF DEVICE INSERTION



- WORK IN PROGRESS

- Possible to automate CRes Testing for batch incoming check (robot tester)
- Possible to receive pin sets in transfer cartridges specific for a particular socket
- Transfer cartridge can be loaded by customer to use pin inventory
- Batch load socket from transfer cartridge, saving time
- Transfer cartridge to return to supplier for re-use

PIN TESTING



• WORK IN PROGRESS

- one empty transfer cartridge populated by the customer offline, fast replacement by using probes in customer inventory
- one fully populated transfer cartridge with probes at supplier factory so customer instead of buying probes is buying probe replacement kits. These cartridges can be returned to supplier for reuse and pin repopulation getting some credit back and reducing environmental footprint saving plastic/cost.

Further improvements are

- embedding this for offline testing of the probes / cherry picking of the probes.. very customer specific-
- “transfer cartridge” meaning to move pins from one socket to another... etc.

PIN TESTING



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CONTACT Us