

ACHIEVING QUALITY EXCELLENCE

STRATEGY TO INJECT THE AQE PROBLEM SOLVING METHODOLOGY
INTO THE ROSEVILLE PRINTED CIRCUIT FACILITY

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SC05332

SCOPE

This document outlines the project management plan to proliferate the use of "Achieving Quality Excellence" problem solving methodology (Dr. Mikel Harry) into The Roseville Printed Circuit Facility. This plan does not address the long term visionary injection of AQE into convergence, design or suppliers.

PREMISES AND ROLE DEFINITIONS

- RPCF management sets facility goals to recognize and find LEVERAGE improvement opportunities. The Action Plan format will be used.
- Hierarchical pareto will be used to focus problem solving efforts on areas where leveraged improvement opportunity is greatest.
- The RPCF BELT RACK will take the RPCF STAFF goal definition(s) and apply quality reports and other resources to hierarchically pareto the goals into product opportunities by board type and defect code. This will be done within the Application Workshop/Action Plan format.
- Formation of PROBLEM SOLVING TEAMS will be the responsibility of THE RPCF BELT RACK based on the problem defined.
- When hierarchical pareto directs the leveraged problem to multiple PROBLEM SOLVING TEAMS, THE RPCF BELT RACK may request a Multi-vari study from each team to compare the results to determine the leverage team. Problem solving activity on teams lacking leverage on that problem will cease.
- Problem solving will occur within the structure of the PROBLEM SOLVING TEAM using the Application Workshop/Action plan format led by a Team "Green Belt".
- The role of a "Green Belt" is to; 1. Understand, support and apply THE AQE PROBLEM SOLVING ACTION PLAN.; 2. Be statistically sound in calculating mean, standard deviation, CP, CPK and rolled throughput yield.; 3. Provide technical leadership within THE PROBLEM SOLVING TEAM.
- A "Brown Belt" is a "Green Belt" with exceptional statistical skills. Tami Munstenteiger is a "Brown Belt".
- A "Black Belt" is devoted full time to the facilitation and proliferation of the AQE problem solving methodology and is a resource to the total factory.
- THE PROBLEM SOLVING TEAM Leader retains total team responsibility.
- Application Workshops will be conducted in Teams responsible for the highest leveraged problem first. Hierarchical pareto prioritizes team problem assignment.
- No more than three Application Workshop/Action Plans will be active at the same time within RPCF to assure proper focus in the overall strategy. A consensus based statement (PROBLEM SOLVING TEAM/MANAGEMENT) of project completion criteria will be contained in the Action Plan.
- The Action Plan is used to structure interactive "review and approve" reporting between The RPCF STAFF, The RPCF Belt Rack and THE PROBLEM SOLVING TEAM.

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ISSUES ADDRESSED IN THIS PLAN

- Appointment and training of "Green Belts" as Application Workshop leaders within each PROBLEM SOLVING TEAM.
- Additional training of managers in "goal setting" by Dr. Harry.
- Outline leadership and environmental issues for AQE within The RPCF STAFF.
- PCM need to address common understanding of DPU. (defects per unit)
- ETCHOUT case study project completion.
- Statistical refresher training (I.E. mean, std. dev., Cp, Cpk, basic inferential statistics).
- A long term "Vision" plan that includes activities that address:
 - > Determination of the "units" to use in calculations involving defects/unit.
 - > A "Resource Guide" to locate "Green Belts" trained to be experts in specific topics.
 - > An overall training plan.
 - > A cultural marketing plan to improve AQE in Participative Management and sustain management support. This includes a team reward scheme.
 - > An implementation measurement plan to assess AQE in problem solving success.
 - > AQE in convergence.
 - > AQE in design and supplier groups.

PLAN TO INJECT THE AQE METHODOLOGY INTO RPCF PROBLEM SOLVING TEAMS

Prepared by: Bazal/Munstenteiger Rev. Date: 4/22/88

	APRIL														MAY													
	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	4	5	8	9	10	11	12	5	6	7	8	9	2	3	4	5	6	9	10	11	12	3	6	7	8	9	10	3
1. Appoint Green Belts	: COMPLETE	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2. Green Belt Training	:	:	:	:	:	:	:	:	:	X	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
3. Goal Setting Training	:	:	:	:	:	:	:	:	X	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
4. Address DPU	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	X	X	X	:	:	:	:	:	:	:	:	:
5. Leadership/Environ. Outline	:	:	:	:	:	:	:	:	:	:	:	:	X	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
6. Case Study Data Anal.	:	:	:	:	:	:	:	X	X	X	X	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
7. Case Study Completion	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	X	:	:	:
8. Statistics Refresher	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	X	:	:	:	:	:	:	:	:	:	:
9. Long Term Vision Plan	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	END 7/15/88
10. Application Wksp. #1	COMPLETE	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11. Application Wksp. #2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	X	:
12. Application Wksp. #3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	END 6/17/88

SCHEDULED DATE X

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PLAN TO INJECT THE AQE METHODOLOGY INTO RPCF PROBLE SOLVING TEAMS.

PROGRAM ACTIONS

Rev. Date: 4/22/88

ACTION ITEMS

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| 1. Appoint Green Belts. | Owner: STAFF/Bazal | Due: COMPLETE |
| 2. Green Belt Training.
Additional training will occur during the M. Harry visit. | Owner: M. J. Harry | Due: 4/27/88 |
| 3. Provide outline for leadership/environmental issues. | Owner: Hilliard | Due: 5/2/88 |
| 4. Address DPU. | Owner: BAZAL/THOMPSON
CLAY
MUNSTENTEIGER | Due: 5/11/88 |
| 5. Goal Setting Training.
PCM and RPCF managers get specific Action Plan Goal training. | Owner: M. J. Harry | Due: 4/26/88 |
| 6. Case Study Experiment Data Analysis | Owner: Kluck/Munstenteiger | 4/25/88 |
| 7. Case Study Completion.
Fixes, controls and reports are to be complete. | Owner: Kluck | Due: 5/16/88 |
| 8. Long Term Vision Plan.
This plan will inject AQE into mfg., design and supplier groups. Convergence, DPU, success measurement, training and cultural marketing issues are also addressed. | Owner: The "Belt Rack" | Due: 7/15/88 |
| 9. Statistics Refresher.
Green Belts and other interested parties can get a refresher class in basic statistics to be able to use a common language when statistically structuring a problem for solution. | Owner: Munstenteiger | Due: 5/9/88 |
| 10. Application Workshop #1. | Owner: Dr. Harry | Due: COMP |
| 11. Application Workshop #2. | Owner: Bazal | Due: 5/20/88 |
| 12. Application Workshop #3. | Owner: Bazal | Due: 6/17/88 |

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PCM AND RPCF MANAGEMENT ROLES IN AQE PROBLEM SOLVING METHODOLOGY

TACTICS & TOOLS	AQE LOGIC FILTER STEP	RESPONSIBLE GROUP	OWNER	FACILITATOR	RESOURCES
PCM BUSINESS ANALYSIS (GOAL DEFINITION)	RECOGNIZE LEVERAGE	PCM MGMT.	WHITESIDES	N/A	STAFF & BLACK BELTS
RPCF BUSINESS ANALYSIS (FACTORY GOAL DEFINITION)	RECOGNIZE LEVERAGE	RPCF STAFF	HILLIARD	N/A	STAFF & BLACK BELT
DOLLAR REPORTS					
QUALITY REPORTS					
HIERARCHICAL PARETO (R) DEFECT CODES	CLASSIFY OPPORTUNITIES INTO PRODUCT AREAS	RPCF BELT RACK	BAZAL.	BRN. BELT	TOTAL FACTORY, BLK & BRN GREEN BELTS
MULTI VARI ANALYSIS	ISOLATE SOURCE OF VARIATION	PROBLEM SOLVING TEAM	TEAM LEADER	GREEN BELT	TEAM MEM., GREEN, BRN AND BLK.
THEORY					
VARIABLES					
(R)					
BRAINSTORM	LINK PROD. TO PROCESS	PROBLEM SOLVING TEAM	TEAM LEADER	GREEN BELT	TEAM MEM., GREEN, BRN AND BLK.
EXPERIMENT DESIGN (R)	CONFIRM PROCESS VARIABLES	PROBLEM SOLVING TEAM	TEAM LEADER	GREEN BELT	GREEN, BRN AND BLK.
RUN EXPERIMENT	CONFIRM PROCESS VARIABLES	PROBLEM SOLVING TEAM	TEAM LEADER	GREEN BELT	MFG., GREEN BELT
ANALYZE RESULTS (R)	CONFIRM VARIABLES	PROBLEM SOLVING TEAM	TEAM LEADER	GREEN BELT	GREEN, BRN. AND BLK BELTS
ENG. SOLUTION (R)	SOLUTION SOLVING	PROBLEM LEADER TEAM	TEAM BELT	GREEN BRN. AND	GREEN, BRN. AND BLK BELTS
CONTROL VITAL FEW (X1, X2, Xn)	CONTROL VITAL FEW	PROBLEM SOLVING TEAM	TEAM LEADER	GREEN BELT	QC. ENG. PROD. ENG., MFG.

(R) Report to Management/RPCF Belt Rack on "Review and Approve" basis.

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THE MISSION OF THE ROSEVILLE PRINTED CIRCUIT FACILITY IS TO BRING NEW PRINTED CIRCUIT PRODUCTS TO OUR CUSTOMERS ON TIME AND TO POSITION PRINTED CIRCUIT MANUFACTURING TO PRODUCE RELIABLE PRINTED CIRCUIT BOARDS ON A PREDICTABLE SCHEDULE AT A COMPETITIVE COST. TO ACCOMPLISH THIS MISSION, THE ROSEVILLE PRINTED CIRCUIT FACILITY WILL PERFORM AS FOLLOWS:

- PROVIDE INPUT TO MANUFACTURING PLANS AS AN INTEGRAL PART OF THE ISP&T EFFORT TO BRING NEW PRODUCTS TO THE MARKETPLACE ON TIME
 - PROVIDE TIME LINE PLANNING FOR PRINTED CIRCUIT PRODUCTS
 - COORDINATE PRINTED CIRCUIT PLANNING WITH OTHER FACTORY ORGANIZATIONS
 - HELP DEFINE MANUFACTURING REQUIREMENTS WITH THE FACTORY, INCLUDING IMPLEMENTATION OF DESIGN CHANGES, REVISION CONTROL AND BUILD LEVEL DEFINITION

- CONTROL THE EVOLUTION OF NEW AND EXISTING PRODUCTS WITHIN PRINTED CIRCUIT MANUFACTURING
 - PROVIDE MANUFACTURING INPUT TO DESIGN PRIOR TO DESIGN RELEASE
 - SANITIZE DESIGNS THROUGH INVOLVEMENT IN DESIGN REVIEWS AND VERIFICATION BUILD CYCLES
 - DEVELOP MANUFACTURING DOCUMENTATION AND PROVIDE INPUT TO DESIGN SPECIFICATIONS
 - TRANSFER PRODUCTION BUILD OF PRODUCTS TO OTHER PCM LOCATIONS
 - PROVIDE A REINFORCEMENT OF TECHNICAL SUPPORT TO OTHER PRINTED CIRCUIT BUILD LOCATIONS, INCLUDING OUTSIDE VENDORS
 - SUPPORT PRINTED CIRCUIT PRODUCT RELATED OEM ACTIVITIES

- DEVELOP AND TRANSFER PRODUCTION PROCESSES WITHIN PRINTED CIRCUIT MANUFACTURING
 - BE A LEADER IN DEVELOPING AND IMPLEMENTING STATE-OF-THE-ART MANUFACTURING AND TESTING TECHNOLOGIES AND PROCESSES
 - COORDINATE THE TRANSFER OF PROCESSES AMONG PCM LOCATIONS
 - PROVIDE TECHNICAL SUPPORT TO OTHER PRINTED CIRCUIT BUILD LOCATIONS

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- PRODUCE AND DISTRIBUTE ARTWORK, DRILL DATA, TEST DATA AND DOCUMENTATION FOR PRINTED CIRCUIT MANUFACTURING
 - PROVIDE QUALITY TOOLING ON TIME
 - DEVELOP BETTER METHODS FOR TOOLING PRODUCTION
 - DEVELOP AND IMPLEMENT NEW ARTWORK TECHNOLOGIES AND PROCESSES FOR FUTURE NEEDS
- BUILD QUALITY PRODUCTS ON TIME
 - PRODUCE PROTOTYPE, LEAD, VERIFICATION AND FIRST RELOT BOARDS AND PROVIDE BACKUP MANUFACTURING CAPABILITY FOR EMERGENCY NEEDS
 - IMPLEMENT MODERN MANUFACTURING PHILOSOPHIES AND TECHNIQUES
 - BRING ALL PROCESSES UNDER STATISTICAL CONTROL
 - OPTIMIZE THE UTILIZATION OF RESOURCES AND ELIMINATE WASTE
 - IMPLEMENT A POLICY OF RESERVE CAPACITY FOR SPECIAL NEEDS
 - PROVIDE TECHNICAL SUPPORT FOR CURRENT PRODUCTION
- STRIVE FOR CONSTANT IMPROVEMENT IN ALL ACTIVITIES

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