Electric
Works
Company

Panasonic

ANCHOR

Panasonic

Panasonic Electric Works, India

Presentation For Environmental Best Practice Award

11th Sept-25

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Overview - PEWIN

IUO 2

MANUFACTURING FACILITIES

SALES & BRANCH OFFICES
30

MANUFACTURING
4 Areas
6 Factories

- NABL accredited laboratory
- ISO 5000:2018 certified for energy management
- RoHS compliant products

Not just a Switches Company!!

We were always known as a company that dealt primarily in switches. Switches form only a portion of our offerings, here is a glimpse of the sectors that we've established our presence in. Our products are available under the Anchor and Panasonic brand.

Wiring Devices | Wires & Cables & Tapes | Switchgear | PVC Conduits
Water Heaters | IAQ (Fans) | Lighting | Smart Homes and Buildings
Solar Energy | Housing | EV Charger | Power Tools

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Electric Works Company

Panasonic

Project:-Resource Optimization in Cable and Switch Socket Manufacturing

Project Objective :-

- To improve material efficiency and reduce environmental impact by:

✓ Reducing Copper Scrap by 13% in the cable manufacturing process through process control and waste reduction.
✓ Optimizing the design of Switch & PM 6A 3-Pin Sockets to reduce the use of plastic and brass materials, enhancing resource utilization without compromising product quality.

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Project-1: Reduction of Copper Scrap by 13% in Cable manufacturing process

● Trigger of the project

Copper = 90% of total material cost and is a finite natural resource.

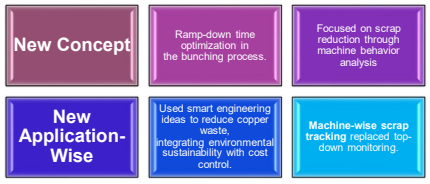
High copper scrap increases indirect **CO_2 emissions**, raising the carbon footprint.

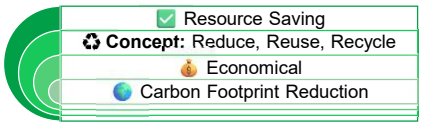
Scrap reduction supports **climate goals** and lowers industrial carbon emissions.

Aligns with both **economic efficiency** and **ecological responsibility**.

Our top management promotion for Circular economy act as **trigger,** for various initiatives of Reduce, Reuse & Recycle.

● Uniqueness

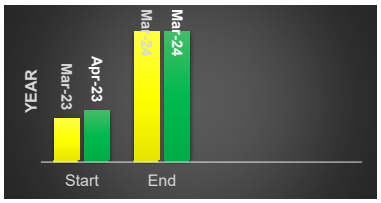




● Key Milestones vs. Initial Roadmap

Planned Road Map	Achieved Milestones
Identify high copper scrap sources	Scrap reduced in 13% section
Analyze economic impact	Cost savings achieved through material optimization
Initiate waste reduction strategies	Proactive measures implemented in conductor section
Shift focus to critical processes	Bunching process targeted for improvement
Align with sustainability goals	Reduced carbon footprint and improved efficiency

● Project start and end dates vs. planned dates



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Reduction of Copper Scrap by in Cable manufacturing process

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All tangible benefits

Gains on productivity/downtime / cycle time reduction

Parameter	Tangible Benefits
Copper Scrap Reduction	**21.048** MT/year
Cost Savings	**₹17.89** million/year
CO_2 Emission Reduction	**58** MT/year
Process Optimization	Increased ramp-down time from **70s to 120s**

➢ **Reduced Carbon Footprint by 58 MT Equivalent of Co2 Per Year**

Savings in energy, water, carbon and toxicity

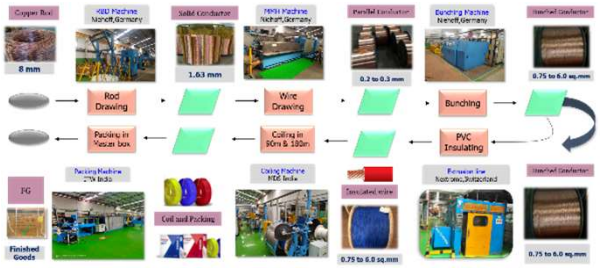
Parameter	Impact
Energy	Reduced machine idle time through optimized ramp-down
Water	No direct water usage, but indirect savings via reduced cooling cycles 5%
Carbon Emissions	↓ 58 MT/year through scrap reduction
Toxicity	Lower copper waste = reduced environmental toxicity risk

cost benefits

Year	FY 23-24	FY 24-25
Cu scrap Qty/Month (Kg)	13052	11298
Cu scrap ReductioKg/Month		1753
Cu purchase rate		851.43
Saving in Cu scrap INR/Month		1492743.484
Saving in Cu scrap INR/Year		17912921.81

➢ **Saving due to Cu scrap reduction= 17.91 MINR/year**

Wire and Cables Process flow



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Reduction of Copper Scrap by in Cable manufacturing process

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Intangible Benefits

People / Society

- Promotes sustainable manufacturing practices
- Reduces Natural Resource Consumption
- Alignment with our national sustainability goals (Net zero by 2030)

Reduce greenhouse gas emission to substantially zero by 2030

Moral / Motivation

- Boosted team morale through visible impact
- Increased ownership and pride in process improvements
- Improvement in teamwork culture

Skill Upgradation

- Enhanced analytical and problem-solving capabilities
- Improved data interpretation and machine-level diagnostics

Attitude Shift / Development

- Shift from reactive to proactive problem-solving
- Greater awareness of environmental and economic interlinkages
- Strengthened commitment to climate action and cost control

Others

- Better cross-functional collaboration and teamwork culture
- Foundation for replicable models across Indian manufacturing units

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Reduction of Copper Scrap by in Cable manufacturing process

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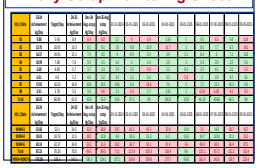
Strong Replication Potential

- Applicable across electrical, electronics, and automotive sectors.
- Ideal for industries using copper or other high-cost materials.
- **Proven methodology:**

Daily Scrap Monitoring Sheet



Operator engagement

Machine-level optimization

Before	Before
12 layer (kg)	Scrap/day (kg)
0.2	1.2
0.28	5.04
0.4	4.8
0.53	7.95
1	15
0.13	0.78
0.22	10.56
0.4	4.8
0.395	50.13

QC sample check Scrap data

Before	After
Scrap/day (kg)	Scrap/day (kg)
1.2	0.72
5.04	2.7
4.8	3.6
7.95	5.7
15	9
0.78	0.48
10.56	4.8
4.8	2.4
50.13	29.4

Before: High scrap at bunching stage due to rapid ramp-down.

Need to remove 15 rounds to verify weight. Huge Cu scrap.

Before Ramp down time 70 Sec

After: Optimized ramp-down time, improved training, and real-time tracking.

By doing this we eliminate wire stretching issue at Buncher machine Now No Need to remove top rounds of Buncher scrap we save **20** kg/day

Develop Program & also Ramp down time Changed from 70 Sec to 120 sec

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Project-2: Reduction of Plastic and Brass Material Usage by Design Optimization in Switch & PM 6A 3-Pin Sockets

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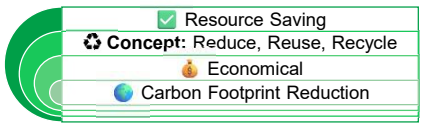
● Trigger of the project

- **Impact on profitability** and long-term sustainability.
- **High raw material consumption**: Over **431 MT/year** in sockets and switches.
- Sockets emerged as the highest contributors to raw material consumption
- **Motivation to redesign** and standardize 3-pin socket offerings.
- **Commitment to environmental goals and cost optimization.**
- **Enhancement of design capabilities** and compliance knowledge..

● Uniqueness

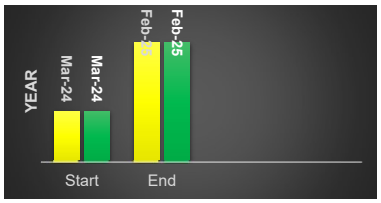
- **New Concept**
- **A design-centric sustainability strategy.**
- **Focused on component redesign rather than material substitution.**
- **New Application-Wise**
- Integration of **CAE analysis**, **FMEA**, and **lab validation.**
- Enabled **horizontal deployment** across multiple product series.
- Maintained **IS:1293 and IS:3854 compliance** while reducing material usage.



● Key Milestones vs. Initial Roadmap

Key Milestones (Achieved)	Initial Roadmap (Planned)
Identify high RM usage products	Selected 3-pin sockets as major RM consumers
Conduct benchmarking and Itakona	Completed benchmarking with in-house & competitors
Design optimization and CAE analysis	Finalized optimized design meeting BIS standards
DFM and tool drawing release	Released drawings and initiated mold development
Mold trials and lab validation	Successfully completed trials and lab evaluations

● Project start and end dates vs. planned dates



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Project-2: Reduction of Plastic and Brass Material Usage by Design Optimization in Switch & PM 6A 3-Pin Sockets

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List all tangible benefits

- **Material Savings**
  - Achieved a **20% reduction in plastic usage**.
  - Total raw material reduction: **85.03 MT/year** (Plastic: 43.89 MT + Brass: 41.14 MT)
- **Process Efficiency**
  - **Reduced process and handling time**
  - **Lower assembly cycle time**
- **Inventory & Logistics Optimization**
  - **Inventory reduction** due to component standardization
  - **Reduced transportation volume and cost**

Savings in energy, water, carbon and toxicity

Parameter	Savings Achieved
Energy	Reduced process and handling time, lower assembly cycle time.
Water	Indirect savings through reduced material processing and cleaning
Carbon	Estimated reduction of ….MT CO_2/year due to material optimization
Toxicity	20% reduction in plastic usage = lower environmental toxicity and pollution risk

Total RM weight reduction in Tons & Cost saving in Mn

		Raw Material (Plastic)	Total RM Saving (Tons)	RM Rate/Kg	Total Savings (Rs in Mn)
Plastic	Roma	PC - Makrolon - 6557 10035 White	15.6	226.5	3.53
		Zytell FR 50, 25% GF Natural	0.64	494.48	0.31
		Makrolon 6557 - 901510 Black	3.47	225.61	0.78
	PM	Urea Formaldehyde	13.91	94.85	1.32
		PC - Makrolon - 2407	10.28	220	2.26
		Total Plastic RM Saving	**43.89**		**8.21**
		Raw Material (Metal)	**Total RM Saving(Tons)**	**RM Rate/Kg**	**Total Savings (Rs in Mn)**
Metal	Roma	Brass (L/N/E - contact parts)	27.38	534.05	14.62
		Brass (Pillar)	1.45	534.05	0.77
	PM	Brass (L/N - contact parts)	12.31	534.05	6.57
		Total Metal RM Saving	**41.14**		**21.97**

Before

- **Before Resource consumption = 431.35 MT/Year**
- **Before Cost :- 117.4 MINR**

After

- **After Resource consumption = 346.32 MT/Year**
- **Resource/ Energy Saving = 85.03 MT/Year**
- **After Cost :- 87.4 MINR**
- **Total cost saving = 30 MINR**

Summary	
Total RM saving(Ton)	85.0
Total cost saving(Mn)	30

Plastic reduction by 20% equivalent to 85 MT/year

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Project-2: Reduction of Plastic and Brass Material Usage by Design Optimization in Switch & PM 6A 3-Pin Sockets

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Intangible Benefits

- Resource conservation & Waste Reduction
- Pollution reduction: Less plastic = Less pollution
- Transportation reduction leads to less emission of CO2.
- Alignment with EPR & national sustainability goals (Net zero by 2030)

● Environmental impact

Reduce greenhouse gas emission to substantially zero by 2030

Improved reporting, visualization, and communication of technical data

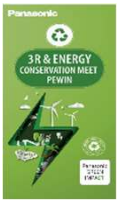
● Better Documentation Capabilities

- Gained expertise in CAE analysis, FMEA, and design optimization
- Deeper understanding of component behavior and material performance

Tech Skill Upgradation

Ensured adherence to IS:1293 and IS:3854 through design and testing

● Compliance with IS Standards



- Better cross-functional collaboration and teamwork culture
- Foundation for replicable models across Indian manufacturing units

Others

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Project-2: Reduction of Plastic and Brass Material Usage by Design Optimization in Switch & PM 6A 3-Pin Sockets

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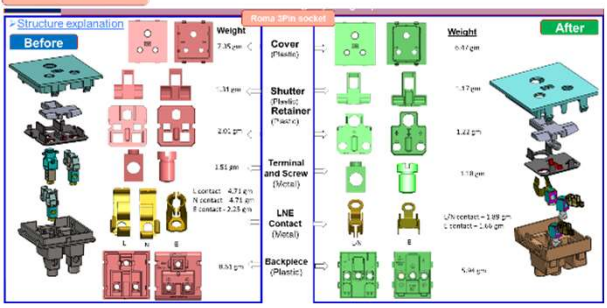
Strong Replication Potential

- BIS-compliant design fits multiple product lines.
- Proven cost and material savings encourage reuse.
- Process steps are standardized and repeatable.
- Compatible with automation and mass production.
- Supports sustainability goals and Extended Producer Responsibility (EPR) mandates

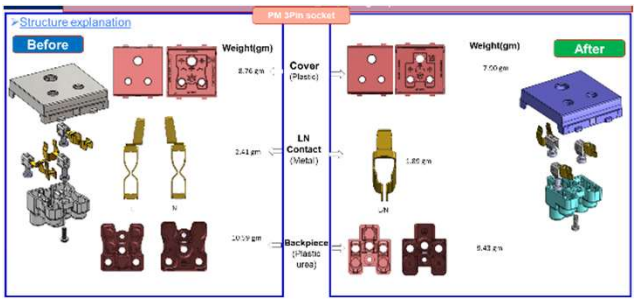
Next step for spreading benefits:

- Deploy optimized design in Ziva, Rider, Regent & PNM series.
- Extend Roma structure to Roma Plus & Tiona sockets.
- Apply twin socket design to Penta PC, Rider & Regent.
- Target 300 MT raw material saving in FY25 & FY26.
- Achieve ₹160 million cost benefit through wider rollout.

Before:



After:



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List of challenges Faced & Countermeasures

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● Project-1

Challenges: Biggest challenge of Machine parts wear and tear due to high machine unloading speed / low ramp down time i.e. from 70s to 120s.

Countermeasure Implemented in-house maintenance and replaced irreparable parts. Additionally, reduced ramp-down speed to minimize mechanical stress.

Maintenance Challenges:

● Project-2

Challenges: Ensuring the newly designed contact parts meet **BIS standards** while being suitable for **automated production.**

Countermeasure: **Lab evaluations** post-trials to validate strength and durability. Additionally, new **molds, tools, and fixtures** were developed to support the optimized design.

Technical Challenge:

Challenge: Collecting and categorizing scrap data (sampling and leftover) machine-wise and reason-wise.

Countermeasure : Started machine-wise & size-wise data collection of sampling scrap, identified root causes, and implemented machine ramp-down setting changes.

Challenge: A new function-specific contact part was designed for the 3-pin socket structure to comply with BIS standards while ensuring the design is optimized for automation production.

Countermeasure : Conducted **CAE analysis and design validation** to meet BIS compliance and automation feasibility, followed by mold trials and lab evaluations to confirm durability and manufacturability.

Administrative Challenges:

Challenge: Time-consuming process to train operators and streamline accurate data booking; mismatch in data entries due to inconsistent recording practices.

Countermeasure: Given ownership to machine operators and provided training to ensure accurate data entry

Challenge: High initial investment was required for **new molds, tools, and jigs/fixtures**

Countermeasure: Performed **detailed ROI analysis** and aligned the project with long-term cost-saving goals and sustainability objectives

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Replication Potential

High potential across **electrical, electronics, automotive** sectors

Methodology adaptable to various production environments

Model for other units and group companies

Identified high-impact areas for scrap reduction.

Conducted machine-level diagnostics and operator training.

Standardized process improvements across similar machines.

Created SOPs and visual aids for easy adoption.

Project-1

Time Period

April-24 • Idea Generation

June-24 • Implementation start

Feb-25 • Completion

Scalable Design Optimization

Cross-Functional Collaboration

Knowledge Transfer and Standardization

Sustainability Alignment

Internal Benchmarking.

Cross-Unit Collaboration

Supplier Alignment.

Documentation & SOPs.

Project-2

Time Period

March-24 • Idea Generation

July-24 • Implementation

Feb-25 • Completion

Achievement Sharing Mode

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3R Energy Meet

1st Step • All 3R themes of One Unit compete internally for Theme selection & facilitate award accordingly.

2nd Step • All unit Top 3 theme selection for Inter Unit Competition.

3rd Step • Interunit Competition between all Panasonic Units of Daman.

4th Step • All shortlisted Themes final compete Japan at Global level

Knowledge Sharing Platforms

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Priority plans on fast track for +1 year and +2 year

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Project-1

+1 Year Plan

➢**Ramp-down Optimization:** Extend to all bunching machines | Resources: Maintenance team, SOP updates

➢**Scrap Monitoring Digitization:** Implement dashboard tracking | Resources: IT support

➢**Operator Training:** Conduct Training sessions | Resources: Trainers, training materials

+2 Year Plan

➢**Cross-Unit Replication:** Rollout to other group companies Resources: Project leads, inter-unit coordination

➢**Sustainability Integration:** Align with EPR targets Resources: EHS team

➢**Benchmarking & Audits:** Annual scrap audits Resources: Internal audit team, data analysts

Project-2

+1 Year Plan

➢Extend optimized design to all socket and switch variants.

➢Align suppliers with new component standards and sustainability goals.

➢Conduct cross-functional training for design, production, and maintenance teams.

➢Roll out centralized digital documentation (SOPs, CAE models, validation reports).

➢Optimize inventory by phasing out old components and standardizing spares.

+2 Year Plan

➢Replicate design optimization methodology across other product categories.

➢Integrate project outcomes into ESG and EPR sustainability reporting.

➢Benchmark against global standards and best practices in electrical manufacturing.

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Major learnings from the project implementation

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Project-1

- **Data-Driven Decisions**: Machine-wise scrap tracking enabled targeted improvements.
- **Operator Involvement**: Training improved ownership and reduced resistance.
- **Small Tweaks, Big Impact**: Ramp-down time change led to 13% scrap reduction.
- **Team Collaboration**: Success through Production, EHS, and Maintenance synergy.
- **Sustainability + Cost**: Environmental gains aligned with financial savings.
- **Standardization**: SOPs and visuals helped scale improvements.
- **Continuous Improvement**: Past success drove new gains.
- **Benchmarking**: Internal targets ensured focus and accountability.
- **Preventive Maintenance**: Reduced downtime and scrap.
- **Compliance Readiness**: Project supports future EPR regulations.

Project-2

- **Smart design** changes can significantly reduce material usage without compromising quality.
- **CAE analysis** is essential for validating performance before physical trials.
- **Compliance** with IS standards (IS:1293 & IS:3854) can guide effective design decisions.
- **Cross-functional collaboration** accelerates problem-solving and innovation.
- **Standardizing** components simplifies inventory and reduces duplication.
- **Sustainability and cost-saving goals** can be achieved simultaneously.
- **Proper documentation** enables easy replication across units and teams.
- **Training and skill development** are crucial for successful implementation.
- **Early supplier involvement** ensures smoother transitions to new designs.
- The methodology is scalable across other products and industries.

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Top 10 best practices

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1. 3R to 10R Transition

2. Life Cycle Thinking

3. GHG Accounting

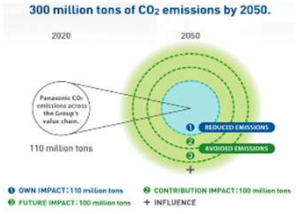
4. Leaner to Circular Economy

5. Energy &Env.Monitoring

Energy Conservation – 4.5%
Renewable Energy – Warehouse & Idle Start
Water Reduction – 1% (Water Positive Cont.)
REC Certificate procurement Planning

To Achieve 25% ~ 30%

6. Panasonic Green Impact Alignment



7. Diesel to Electric Bus

8.Compression Moulding Waste Utilization

9. Innovation & Continuous Improvement

10. Machine-Level Optimization SOPs

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Environment parameter: energy/water/carbon/toxicity and emission

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Company Name	Energy Usage	Water Usage	Carbon Emission	Toxicity
Competitor A (Above)	Diesel cut 50% ↑	ZLD at Sri City ↑	1-Net-zero roadmap ↑ 2-Inventorisation in progress ↓	Zero-waste certified ↑
Competitor B (Above)	**10 %** ↓	ZLD & STP reuse ↓	1- 6% reduction ↓ 2-Assessment planned ↓	Toxic chemical combustion for energy recovery; no % disclosed ↓
Panasonic Life Solutions India Pvt Ltd	12% renewable energy (5.2 MW solar panels) ↑	Water recycle – 50% ↑	1- Net-zero by 2050; 90% Scope 1 & 2 ↑ 2-Scope-3: 30% by 2030; 90% by 2050 ↑	Hazardous waste reduced by 2% annually
Competitor C (Below)	< 8% ↓	7,380 MT recycled ↓	1- Avoided 25,093 $MTCO_2e$ ↓ 2- Not specified ↓	Hazardous waste managed; no % disclosed ↓
Competitor D (Below)	No Renewable ↓	ZLD implemented ↓	1- General reduction ↓ 2- Not specified ↓	General mention in report; no % disclosed ↓

Comparison on Men/Material/Methods/Technology/ Measurement.

Factor	Competitor A	Competitor B	**Panasonic Life Solution India Pvt Ltd**	Competitor C	Competitor D
Men	Skilled	Semi-skilled	Trained & Engaged Operators	Semi-skilled	Untrained
Material	High-cost	Moderate	Copper (90% cost) – Optimized Use	High-cost	High-cost
Methods	Traditional	Semi-modern	Process Optimization & RCA	Manual	Outdated
Technology	Basic	Moderate	Ramp-down Optimization, Machine-wise Data	Basic	Low-tech
Measurement	Monthly	Irregular	Daily Scrap Monitoring	Occasional	No tracking

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