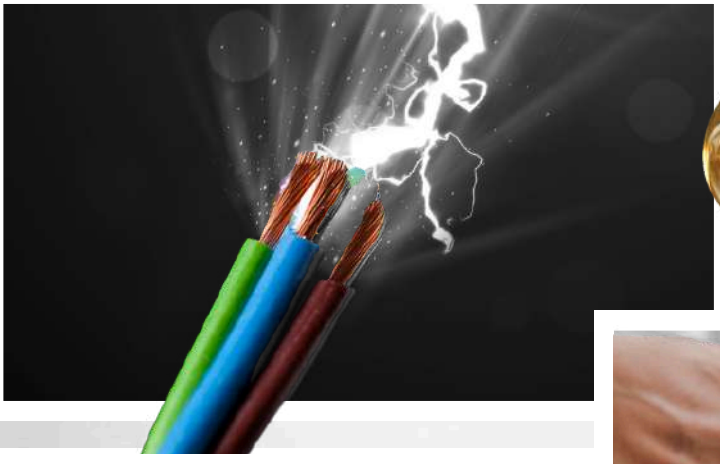
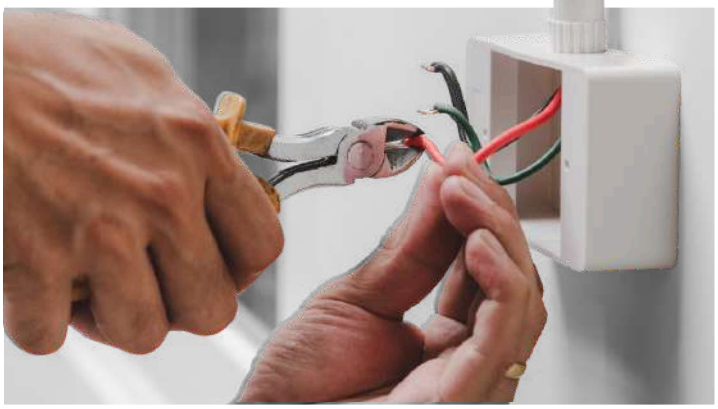
ARIHANT

Arihant स्पर्श Newsletter

A Touch of Excellence, Every Month

JANUARY 2026





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MESSAGE OF THE MONTH

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New Year Warm Wishes from Our Directors

Abhishek Jain
(Director)

Dear Colleagues,

As we bid farewell to the past year and step into a new one, I want to express my sincere gratitude for your hard work, dedication, and invaluable partnership.

May the upcoming year bring new opportunities, challenges, and triumphs for accomplishments for us as a team. Wishing you all a prosperous New Year.

Hemang Jain
(Director)

Wishing everyone at Arihant a very happy new year. May your efforts blossom and your talents shine even brighter this coming year.

As we step into this new year I want to express my gratitude for your support and dedication. Here is to another year of great success and collaboration.

SPOTLIGHT OF THE MONTH

Featured Articles

Dive into this month's insightful articles, covering industry trends, innovations, and expert perspectives. Stay informed, stay inspired, and explore ideas that drive excellence at Arihant Electricals.

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1. Why Some Organizations Soar While Others Sink?

Mr. Ajay
(Finance & Accounting)

In every industry, certain organizations rise effortlessly above the competition while others struggle to stay afloat. It is the result of strategic choices, cultural habits, and leadership philosophies that determine an organization's long-term trajectory.

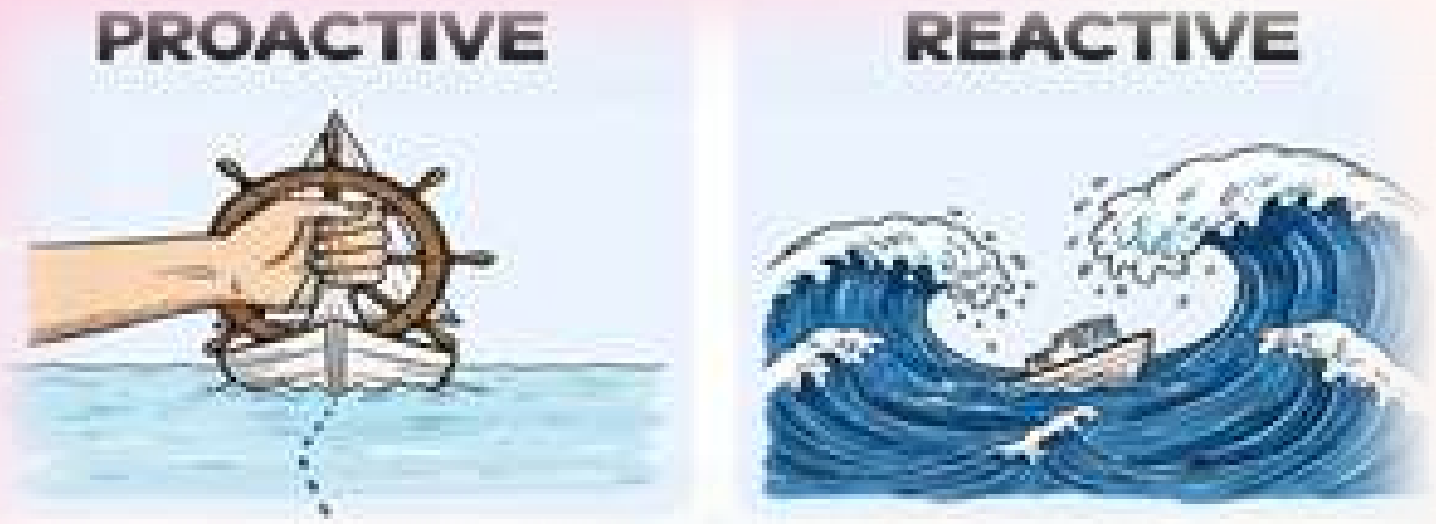
Understanding why some organizations soar while others sink is essential for leaders who want sustainable success.

- **Vision That Inspires vs. Vision That Confuses**

High-performing organizations have a crystal-clear vision—one that energizes employees and guides decision-making. This vision acts like a compass, uniting everyone toward a common purpose.

- **Strong Leadership vs. Reactive Leadership**

Leaders who help their organizations soar are proactive, adaptable, and emotionally intelligent. A successful organization uses the blend of Proactive and Reactive strategy



- **Empowered Employees vs. Overmanaged Workforces**

Employees drive organizational success. Thriving companies invest in people through training, autonomy, and meaningful recognition.

- **Strategic Adaptability vs. Rigid Thinking**

Organizations that soar respond quickly to market shifts. They adjust strategies, adopt new technologies, and stay connected with customer needs.

- **Culture of Innovation vs. Culture of Fear**

In a rapidly evolving world, stagnation is as dangerous as failure.

DARE TO BELIEVE

Soar by Choice, Not by Chance

Organizations don't soar because the conditions are perfect—they soar because they choose to build the right conditions. Vision, leadership, culture, empowerment, adaptability, customer-focus, and financial discipline are the key factors that determine whether an organization rises or falls.

Success is crafted intentionally. Failure happens by neglect.

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2. Future Trends in SMPS (Switch Mode Power Supply)

Mr. Sudhakar Sharma
(Marketing)

(GaN & SiC: The Game Changer for High-Power Industrial SMPS)

SMPS are evolving rapidly as industries demand higher efficiency, compact size, and improved performance. The next generation of SMPS will be shaped by wide-bandgap semiconductors, high-frequency switching, digital control, and advanced topologies.

1. Wide-Bandgap Devices: SiC & GaN
Silicon Carbide (SiC) and Gallium Nitride (GaN) offer fast switching, lower losses, and compact design benefits. GaN is popular in consumer fast chargers, while SiC leads in industrial and EV applications.

2. Ultra-High-Frequency SMPS
Designers are increasing switching frequencies into the MHz range, reducing magnetic and passive component sizes. GaN-based chargers operating at 1–2 MHz are now mainstream.

3. Digital Control & Programmable SMPS
Digital controllers enable programmable outputs, advanced protection, remote monitoring, and adaptive algorithms—ideal for telecom and industrial power.

4. Resonant & Soft-Switching Topologies
LLC resonant converters, ZVS, and ZCS topologies reduce switching losses and EMI, improving efficiency even at high loads.

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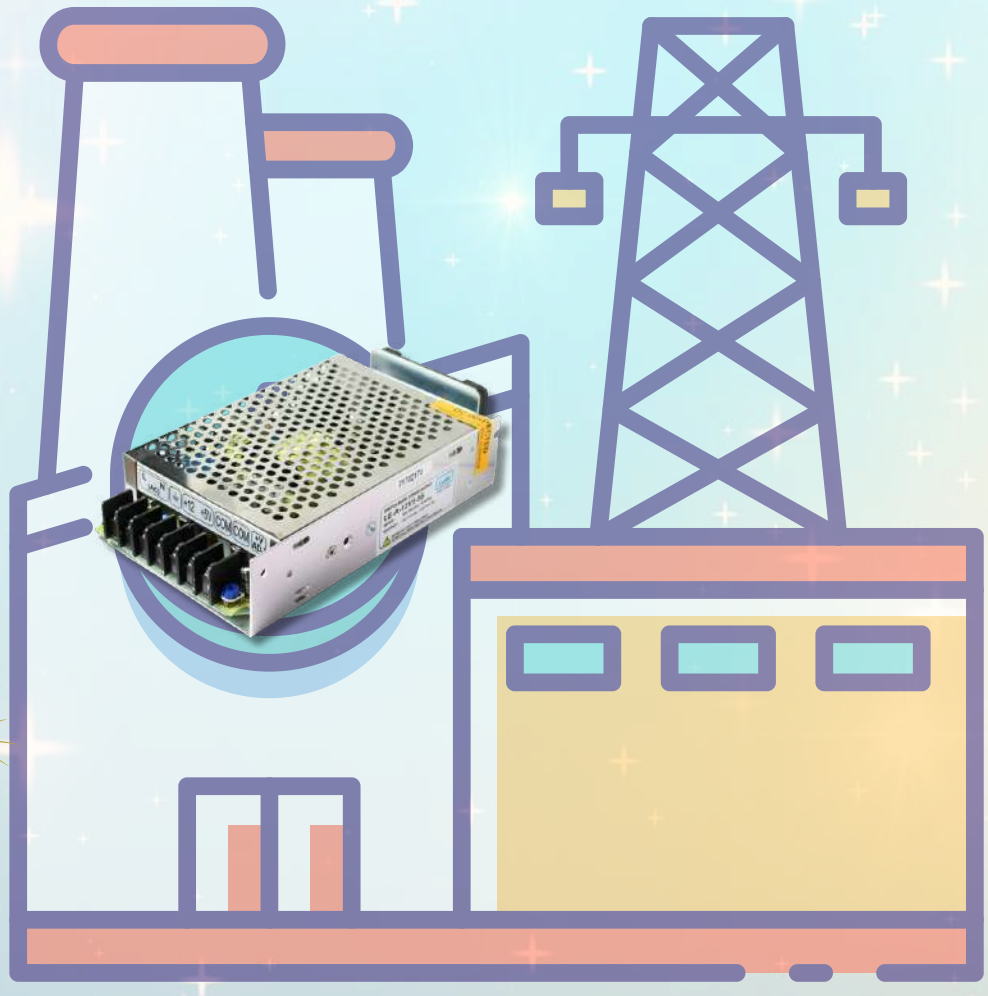
5. Integrated Power Solutions
Power-in-package and power-on-chip technologies integrate MOSFETs, drivers, and controllers into a single compact module—perfect for IoT and automotive systems.

6. AI-Driven Optimization
AI algorithms help predict load changes, manage thermal stress, and optimize efficiency dynamically, especially in data centers and HPC systems.

7. Improved EMI/EMC Performance
Spread-spectrum modulation, soft-switching, shielding, and optimized PCB layouts help designers meet strict global EMC standards.

8. Green Power Regulations
Energy standards like 80 PLUS Titanium and EU CoC Tier 2 push manufacturers to improve efficiency and reduce no-load consumption across all power ranges.

Conclusion
SMPS technology is entering a new era—smaller, cooler, faster, and more efficient. From GaN and SiC to digital control and AI-driven optimization, the future of SMPS is transformative and critical to next-generation electronics.



3. Engineering the Future at ARIHANT Electricals

Dr. Manoj Pandey
(Research and Development)

Five Years of R&D Excellence

Engineering Depth That Powers Innovation

Over the past five years, Arihant Electricals has deliberately transformed its Research & Development function into a technology-centric, system-level engineering organization. This document captures not only what has been achieved, but how—through disciplined processes, advanced engineering tools, and deep domain expertise.

R&D as a System Engineering Function

R&D at Arihant Electricals follows a system-engineering philosophy, integrating electrical, electronics, embedded software, thermal, mechanical, and manufacturing considerations from the earliest concept stage.

Strategic Objectives

- Reduce technology risk through early simulation and validation
- Design for manufacturability, reliability, and serviceability
- Ensure compliance with international electrical and safety standards
- Build in-house competence for mission-critical applications

Design Principle

Reliability is engineered—not tested later.

R&D Organization & Governance

Multidisciplinary Team Structure

The R&D organization comprises closely coordinated domain-focused teams:

- High-Voltage & Insulation Engineering
- Power Electronics & Magnetics
- Embedded Controls & Firmware Development
- Mechanical Design & Thermal Engineering
- Test Engineering & Validation

Structured design reviews, cross-domain FMEA, and gated development milestones ensure robustness and traceability.

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High-Voltage Engineering – Design Approach

Insulation-Centric Design Philosophy

High-voltage development follows an insulation-first methodology:

- Electric-field stress control via geometry optimization
- Partial discharge inception voltage as a primary metric
- Creepage and clearance optimization for polluted environments
- Material selection based on aging, tracking, thermal endurance, and availability

Key Design Targets

- PD < 5 pC at 1.3× rated voltage
- Thermal class margins ≥ 20°C

High-Voltage Testing & Validation

Advanced Qualification Infrastructure

- Power-frequency HV testing up to 200 kV
- Impulse testing up to 200 kV (1.2/50 µs)
- PD measurement sensitivity from 1 pC
- Environmental and thermal endurance testing

Test data is continuously fed back into design optimization loops.

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Power Electronics – System Architecture

Converter Design Methodology

Power electronics development emphasizes **efficiency, controllability, and ruggedness:**

- Topology selection based on power density and control needs
- Device-level optimization using Si, SiC, and GaN
- EMI/EMC-aware layout and grounding
- Design for high dv/dt and di/dt environments
- DPT and SPT measurement tools and setups
- Air and liquid-based thermal optimization

Simulation tools such as PLECS (IPOSIM), PSIM, and LTspice support topology evaluation and loss estimation.

High-Frequency Magnetics & Thermal Design

Magnetics as a Performance Enabler

- Ferrite optimization for 10 kHz–200 kHz
- Leakage inductance control through winding geometry
- Skin and proximity loss mitigation using litz and foil conductors
- Thermal path engineering via oil, air, or conduction cooling

Finite-element tools support flux density, loss, and temperature-rise analysis.

Embedded Control & Firmware Engineering

Real-Time Intelligence

- RTOS-based firmware architectures
- High-speed ADC and control-loop optimization
- Digital control of converters and drives
- Industrial communication protocol stacks

Hardware-in-the-loop (HIL) testing validates firmware before deployment.

Data Acquisition, Diagnostics & Cyber Safety

Designing for Observability and Security

- High-speed data logging
- Predictive fault detection
- Secure boot and firmware integrity checks
- Fiber-optic and RF-based communication links

Mechanical & Precision Engineering

From CAD to Production

- Advanced CAD/CAE for enclosures and structures
- Vibration, shock, and fatigue analysis
- CNC machining, molding, and precision fabrication
- Assembly process engineering for repeatability

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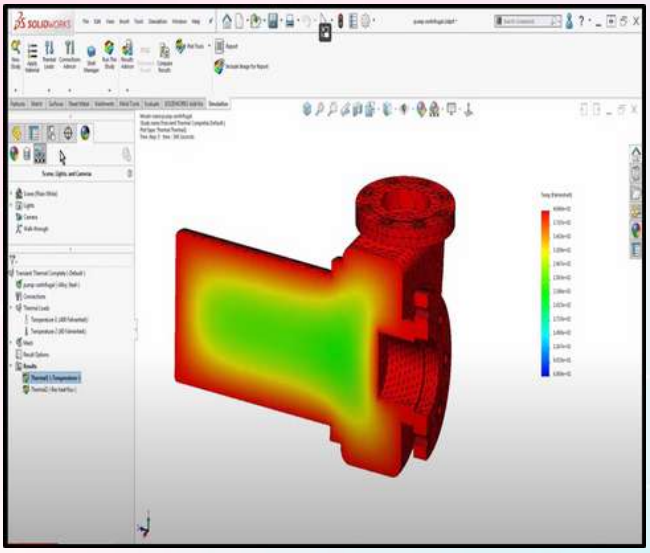
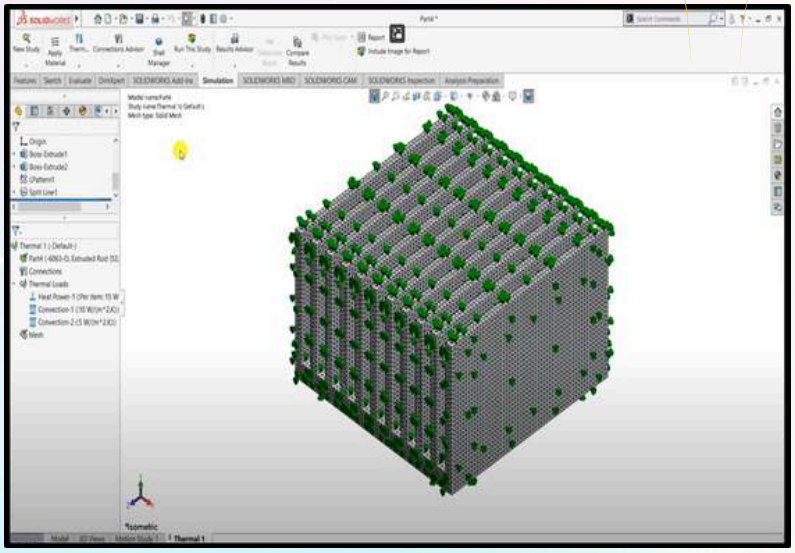
Test Engineering & Reliability Qualification

Design Verification Strategy

- Functional testing under nominal and extreme conditions
- Accelerated thermal and environmental stress testing
- Electrical endurance and life-cycle testing
- Root-cause analysis with corrective-action loops

Reliability is quantified, not assumed.



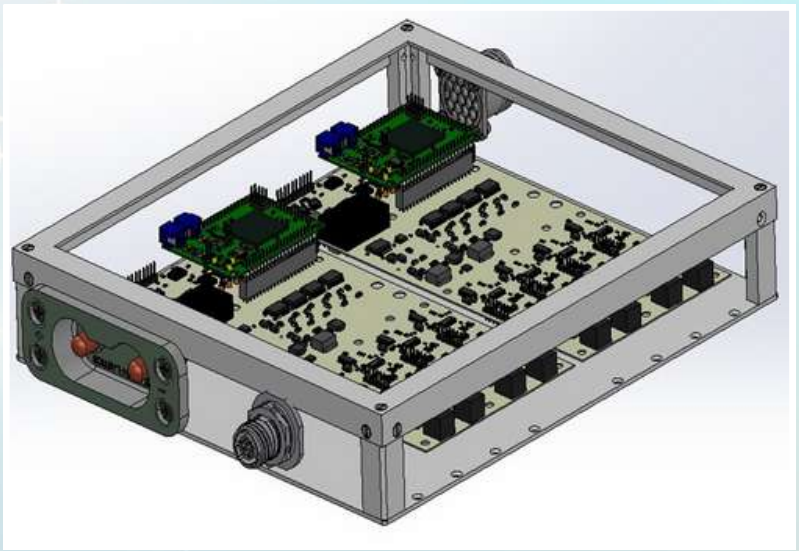


Case Studies – Engineering in Action

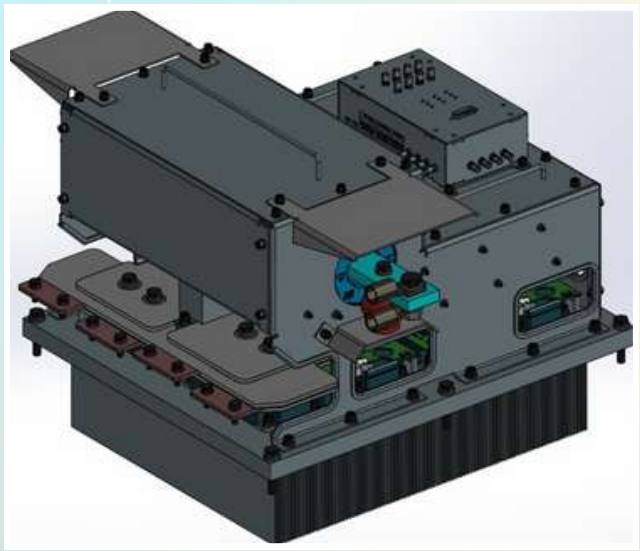
End-to-end engineering ownership demonstrated across:

- High-voltage systems for defense and railways
- Custom power supplies with stringent regulation
- Embedded-controlled systems for industrial automation

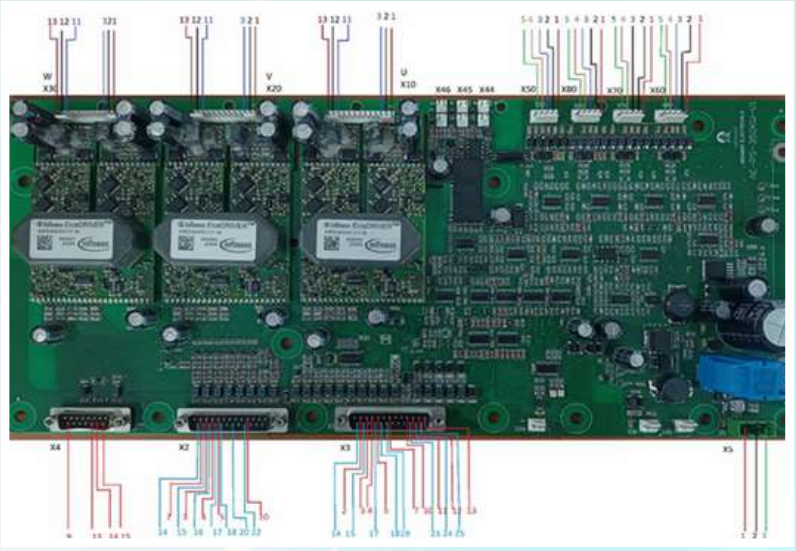
New Products Developed



Avionics-grade Battery Management System (BMS)



Underslung Traction Converter



GDU Board for 350 kW Power Stack

54 kW Rectifier Power Supply

RF-based Multi-Channel TCU

Quality, Standards & Compliance

- ISO 9001-aligned processes
- Documentation-driven development
- Change management and configuration control
- CAPA-driven continuous improvement

Future Technology Roadmap

- Thermal-flow and electromagnetic co-simulation
- AI-assisted control and diagnostics
- High-power stack laboratories
- Patent-backed proprietary platforms

HIGHLIGHTS FROM EVENTS AND CONFERENCES

1. CII–RDSO Conference Innovative Technologies in Railways

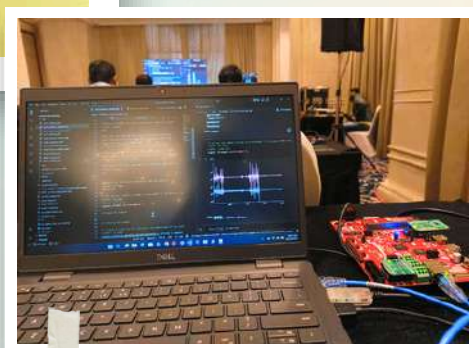
Arihant Electricals participated in the CII–RDSO Conference on Innovative Technologies in Railways, gaining insights into advancements in railway infrastructure, signalling systems, safety frameworks like Kavach, and future metro expansion plans. The conference highlighted opportunities driven by digitalization, Industry 4.0, and greater industry, MSME collaboration, fostering innovation across the evolving Indian Railways ecosystem.

2. CII India Edge 2025
Building Atmanirbhar Defence

Arihant Electricals engaged in an insightful interaction with the leadership of the Army Design Bureau during the CII–SIDM session on “Building Atmanirbhar Defence” at CII India Edge 2025. The session offered valuable insights into India’s defence priorities, the drive for indigenisation, and the critical role of industry partners in strengthening national capabilities, reinforcing our commitment to innovative and future-ready defence solutions.

3. R&D Champions at MICROCHIP Training

Our R&D champions recently participated in a training program at MICROCHIP, enhancing their skills and gaining valuable industry insights. Empowering our teams through learning is how we build future-ready solutions.



4. HR Huddle Meet at PHD House

Our HR attended the HR Huddle Meet at PHD House, organised by PHDCCI, on the theme “Four Generations, One Workplace”, gaining valuable insights into managing multi-generational teams and evolving people practices.

PEOPLE & CULTURE

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At Arihant Electricals, our people are our greatest strength. This month, we celebrated birthdays, welcomed new team members, and fostered a positive workplace culture. Through these moments, we continue to build a collaborative and engaging work environment where everyone thrives!

December Birthday Celebrations

Celebrating our incredible team members and wishing them joy, success and prosperity!

Birthday celebration of Mr Rajesh Kumar

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Upcoming January Birthdays

Wishing you joy, success, and a fantastic year ahead!

Shivam Gupta	January 3
Ravi Kumar (RLY)	January 6
Nitin Rana	January 10
Rajendra Rathore	January 12
Dhirendra Srivastava	January 13
Jugendra Singh	January 15
Arun Joshi	January 16
Navdeep Sharma	January 23
Saurabh Dikshit	January 23
Bani Biswas	January 27

Welcome Aboard! (New Joinees - December 2025)

Excited to have new talents join the Arihant family as we grow together!

Nitish Gautam
Engineer QC

Sachin Kumar
Engineer QC

Devesh Sahu
Engineer QC

MOMENTS OF LAUGHTER & FUN

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The Curious Case of the Missing Signal

One busy morning, a system refused to communicate.
Logs were checked. Connections re-verified.
Someone even suggested replacing the cable, again.
After a round of serious discussions, a quiet voice from the corner asked,

"Is the emergency stop still engaged?"

A quick glance. A small switch flipped.
The system came alive instantly.
The room burst into laughter.
Since then, the golden rule on the shop floor is:
"Before diving deep into diagnostics, check the basics... and the big red switch."

FUN & BRAIN TEASERS CORNER

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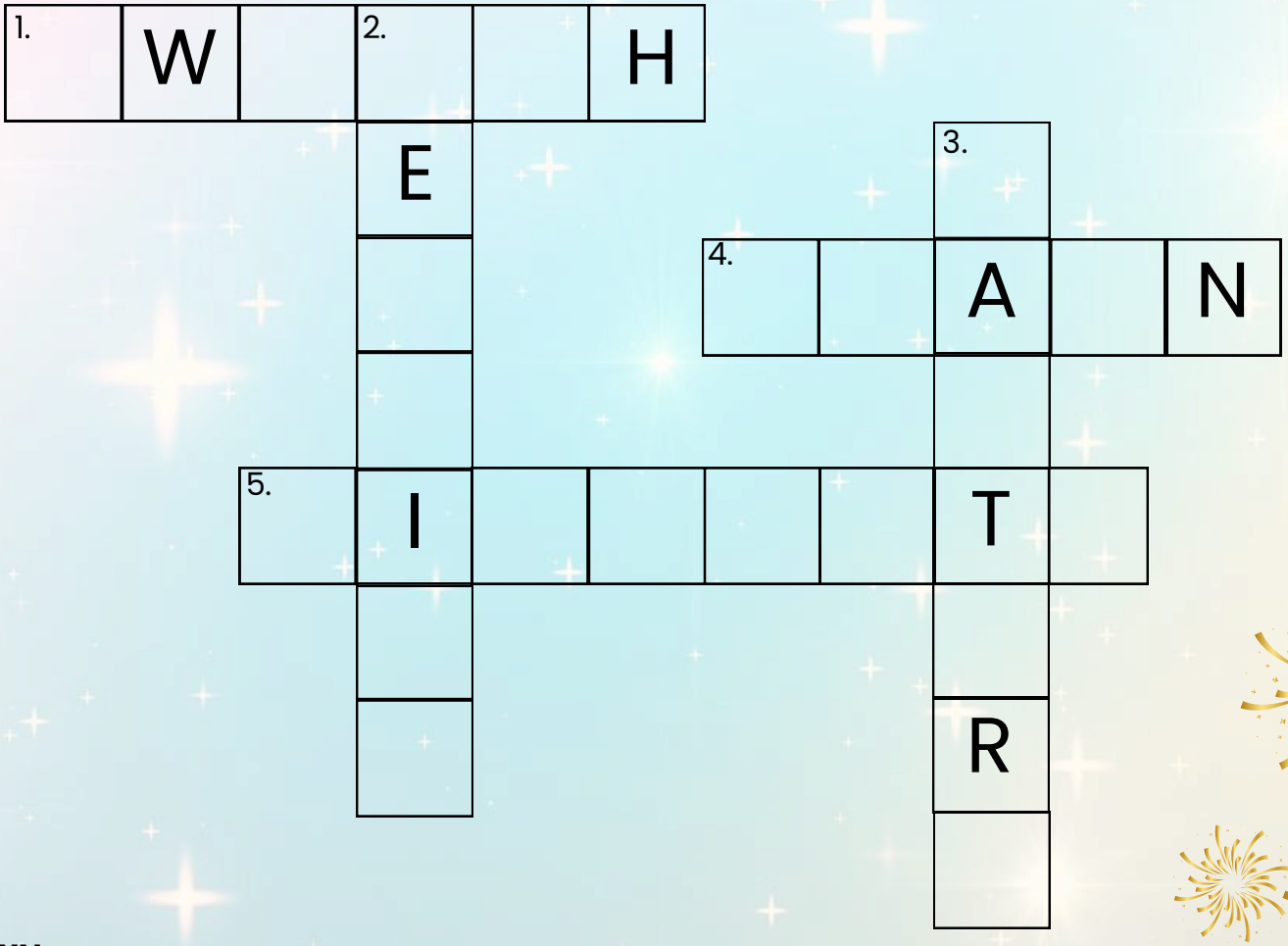
Crossword Puzzle

Test your knowledge of electrical systems, engineering basics, and industries served by Arihant Electricals in this month's **Crossword Puzzle**. Solve it and **share your answers with the HR Head.**

The **first three correct entries will be featured** in our February edition, don't miss the fun and friendly competition!

ACROSS

1. (6 Letters) Device used to switch electrical circuits on or off.
4. (5 Letters) Mode of transport Arihant actively supports electrical solutions.
5. (8 Letters) Path through which electric current flows.



DOWN

2. (7 Letters) The process of checking systems to ensure proper functioning.
3. (7 Letters) Stored electrical energy source used during power cuts.

LITTLE CREATORS' CORNER

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Small hands. Big imagination. Unlimited fun!

This corner is for our Employee's Kids **happy playground of colours and ideas**, where anything you imagine can come to life! Just fun, creativity and your own special touch. So grab your crayons or colours and show us your world, the way you see it!

- **Parents can help share the artwork with the HR team.**
- **Some super-cool creations will be featured in the next Arihant Newsletter!**

Ready... set... CREATE!

Colour & Create: The Smart Train

Kids are invited to colour the Smart Train and make it their own using their favourite shades. They can add anything they imagine — **windows, lights, passengers, clouds, tracks, or even a friendly, smiling conductor.**

Let imagination run on track.

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Guess the Object!

Can you guess what these are? Read the hints carefully and write down your answers!

1. **I have hands but no fingers, I tell you the time, I hang on a wall or sit on a table. What am I?**

(Hint: Don't be late!)

2. **I'm used to measuring how far or how tall something is. I have numbers along my edge. What am I?**

(Hint: I help you measure and draw perfectly straight lines.)

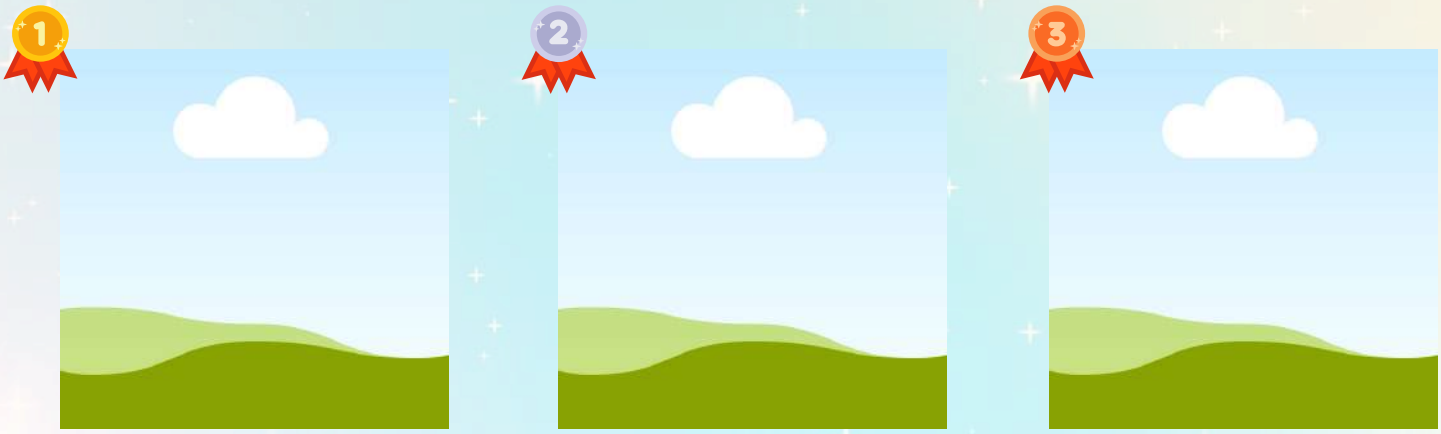
3. **I'm invisible but you can feel me. I move clouds, fly kites, and make leaves dance. What am I?**

(Hint: I'm all around you, but you can't see me.)

4. **I have teeth but I don't eat. I hold things together and can be opened and closed. What am I?**

(Hint: You use me on clothes, bags, or shoes.)

December Crossword Puzzle Winner Announcement



Puzzle Answers from Our Last Edition

1. A	2. R	M	C	H	A	I	R				
	A										
3. F	I	R	E	4. D	E	T	E	C	T	O	R
	L			E							
	W			S							6. M
	A			5. I	N	D	U	C	T	I	V	E
	Y			G							T
	S			N							E
											R

Note: The winners were selected according to the quickest response time.

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Wishing you a wonderful 2026
filled with love, laughter and
unforgettable moments.

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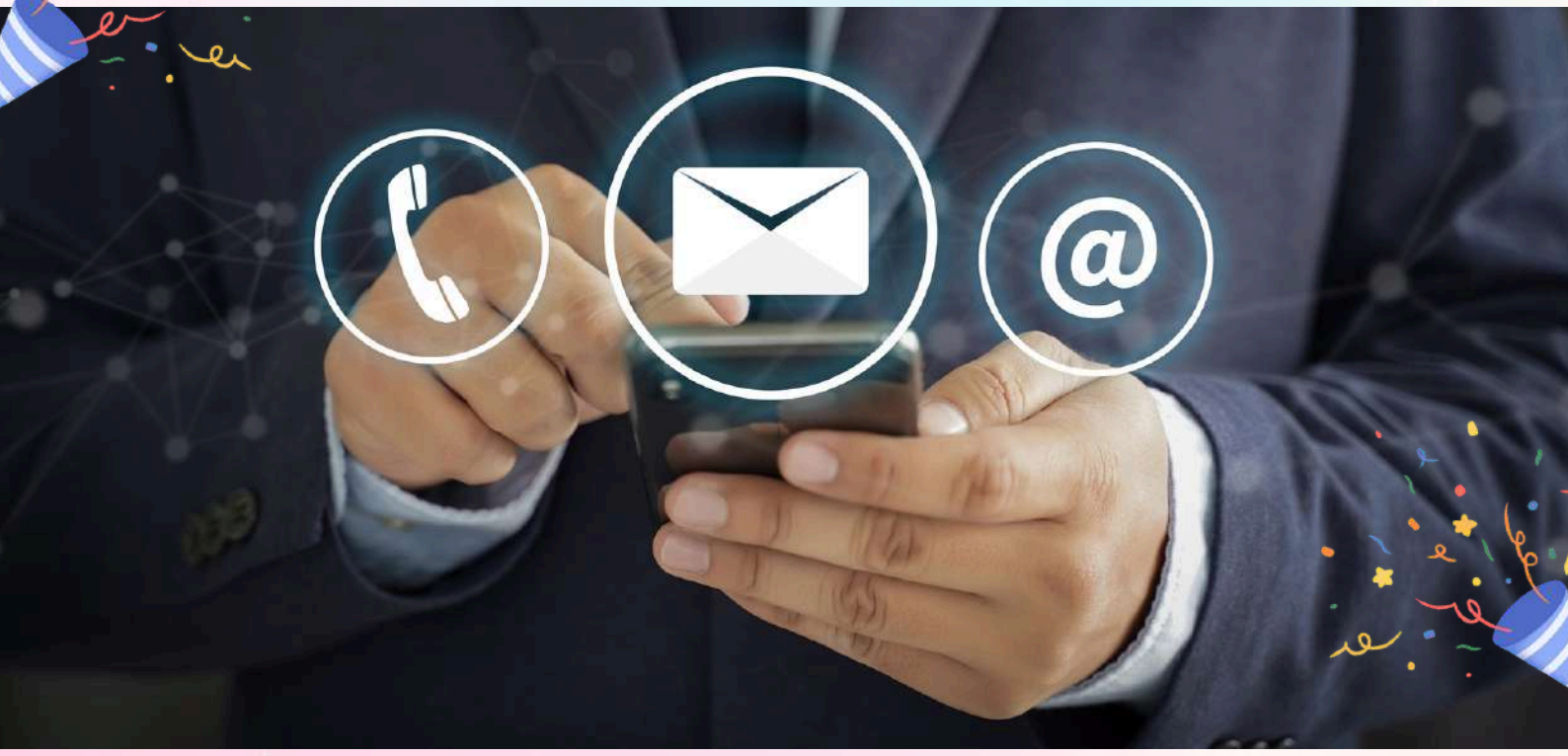

We solicit your valuable suggestions and feedback to enhance this newsletter for future editions. You can share your thoughts and suggestions by writing to us at: hrd@arihantelectricals.com