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A COLLECTIVE LEAP IN EXCELLENCE



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Acknowledgements

This edition celebrates the core of what drives us forward: our unwavering commitment to top-tier quality and seamless, timely delivery across all our projects. We are also incredibly proud to spotlight our latest digital award winners, a true reflection of our team's forward-thinking approach. A heartfelt thank you to all our brilliant contributors for sharing your insights and shaping this fantastic issue. We hope you find this issue inspiring. Happy reading!

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Building the future with excellence, safety, and purpose



At the Semiconductor Fabrication Facility Project, Dholera

As we navigate an increasingly dynamic and demanding EPC landscape, it is imperative that we look beyond conventional measures of scale and direct our focus with discipline towards the core performance drivers that will secure our organisation's future.

Our capacity to deliver enduring value to our clients and sustain our position of market leadership rests upon four critical internal metrics: **safety, timely delivery, operational excellence,** and **workforce efficiency.** These are the very pillars upon which our competitive strength is built, and the standards by which we must hold ourselves accountable.

Safety: Living our 'Vision KNOW Harm' together

Whenever we evaluate our organisational metrics, safety remains our primary, non-negotiable consideration. The execution of complex, large-scale EPC projects involves inherently high-risk environments, where our teams manage heavy machinery, high-elevation tasks, and hazardous conditions daily. No deadline is important enough, and no commercial target is significant enough, to justify compromising the well-being of our people or our partners.

Every individual, from our senior project managers to our newest worker on site, must return home safely to their families at the end of the day. Achieving this requires an inclusive safety culture where every team member feels personally responsible for their peers.

We must continue to fully leverage our digital safety ecosystem, using immersive Virtual Reality safety induction modules and AI-driven vision analytics for real-time hazard detection. A safe site is a stable, high-performing site. Prioritising welfare is a core expectation of leadership across every IC and business unit; an organisation that cares for its people is an organisation engineered to perform.

Timely Delivery: Safeguarding client and customer trust

In our sector, time is a critical contractual and operational asset, but more profoundly, it is the foundation of customer trust. The infrastructure projects we deliver together involve substantial capital commitment from our clients and carry direct significance for public infrastructure, national growth, and commerce. When we encounter delays, we do not merely incur liquidated damages, we disrupt the business plans our clients have built around our commitments and risk eroding the deep trust they have placed in us, over decades.

Timely delivery, therefore, is something we all have a stake in. It is the most visible expression of who we are as an organisation, our customer-centric mindset, our operational discipline, and our collective pride in the work we do.

Achieving our schedules is a shared endeavour. It calls for rigorous upfront planning, proactive risk management, and seamless communication across every department and every client interface. As project teams, we are at our strongest when we anticipate challenges together, whether they arise from supply chain constraints, regulatory approvals, or seasonal disruptions, and when we build practical, well-aligned contingency plans in close partnership with our clients.

> ***Timely delivery is something we all have a stake in. It is the most visible expression of who we are as an organisation, our customer-centric mindset, our operational discipline, and our collective pride in the work we do.***

We also have powerful tools at our disposal. By embracing advanced project management software and structured scheduling frameworks, we can collectively move from reactive problem-solving to predictive, confident execution. This is a shift we can make together and one that will define the standard of delivery that our clients, our organisation, and each of us can be proud of.

Operational Excellence: First Time Right

When we execute with precision, whether in civil works, structural erection, mechanical installation, or commissioning, we deliver the flawless asset quality our clients expect and deserve. When standards slip, the consequences ripple across the entire project: rework consumes materials and workhours we cannot recover, schedules are disrupted, costs escalate, and the morale of our teams takes an unnecessary toll.

Digital tools like drones, IoT, AI scheduling, and cloud dashboards are transforming construction sites, enabling real-time visibility, predictive maintenance, and smarter resource use. The result is fewer delays, better decisions, and stronger productivity on site.

Together, we must embed Lean construction thinking and First Time Right culture into how we plan and execute. This means eliminating non-value-adding activities, reducing idle time and material wastage, and standardising the processes that have proven to work, across every project site. Where viable, we should actively pursue precast and modular construction methods that improve both precision and productivity, while reducing dependency on variable site conditions.

Enhancing performance through workforce efficiency

Productivity is not about working harder or longer. It is about making every hour count. It is the quality of our planning, the efficiency of our execution, the decisions we make on the ground, and the discipline we bring to eliminating waste at every stage. When our teams are productive, we deliver more value in less time.

Our workforce is our most significant investment, and this metric serves to measure how effectively we utilise our collective time, technology, and resources. Improving workforce efficiency is not about increasing working hours or placing unreasonable demands on our workforce; it is about improving the efficiency and enablement of the working environment so our people can excel.

> ***Improving workforce efficiency is not about increasing working hours or placing unreasonable demands on our workforce; it is about improving the efficiency and enablement of the working environment so our people can excel.***

Improving our financial output per hour worked provides the organisational stability needed to reinvest in advanced equipment, offer competitive compensation, and confidently navigate market fluctuations successfully.

Moving forward together

It is truly inspiring to see a growing number of winners at our Quality & Timely Delivery Awards this year. This upward trend reflects who we are and what we stand for.

As we look ahead, the portfolio before us presents real and meaningful opportunities to demonstrate our capabilities at their best. But seizing them will require us to be agile, to see every challenge as an opportunity, and to stay closely engaged with our customers at every step.

Our long-term standing in the market will be built not on isolated wins but on consistency, and on our collective, unwavering commitment to customer success. I have every confidence in our ability to deliver, together.

S N Subrahmanyan
Chairman & Managing Director, L&T

TIMELY DELIVERY AWARDS



NDCT Rajasthan Atomic Power Plant, Units 7 & 8
Heavy Civil Infrastructure IC



132 kV BADIYA Substation, UAE
Power Transmission & Distribution IC



1,425 MW Al Kahfah Solar PV IPP, KSA
Renewables IC



132 kV ESKAN YALAYIS Substation, UAE
Power Transmission & Distribution IC



2,000 MW Ar Rass 2 Solar PV IPP, KSA
Renewables IC

RISING TO THE CHALLENGE: WHERE ENGINEERING EXCELLENCE MET TIMELY DELIVERY

NDCT RAJASTHAN ATOMIC POWER PLANT, UNITS 7 & 8

Heavy Civil Infrastructure IC



In the world of civil engineering, some projects test not just technical prowess but the spirit and resilience of the team behind them. Such was the case with the balance works of Natural Draught Cooling Towers (NDCT) and Cooling Water Pump House for Rajasthan Atomic Power Plant (RAPP) Units 7 & 8, where the path to success was truly a challenging one.

When L&T boldly took on the challenge of completing the RAPP 7&8 NDCT package in 2022, the stakes could not have been higher. With the reactor side nearly ready, the NDCT became the cornerstone for the entire project's progress. After the previous contractor withdrew, only idle, deteriorated equipment and a web of vendor complications remained. It was now up to L&T to restore momentum and credibility, with the Nuclear Power Corporation of India Limited (NPCIL) placing its trust in their ability to rescue this prestigious nuclear assignment.

Against all odds, the project was completed three days ahead of schedule. The journey was marked by zero non-conformance reports (NCRs), zero concrete rejections, and impeccable zero-defect welding. Such exceptional performance did not go unseen, and the team received both Quality and Timely Delivery Awards at the Performers League 2025, as well as the Heavy Civil Infrastructure Business Annual Awards for Best Project Planning and On-Time Completion.

VOICES FROM **GROUND ZERO**

Timely completion was a commitment shared by every team member from Day One. Each person treated the schedule not merely as a duty, but as a personal responsibility, all intent on finishing at least a day ahead of schedule.

C Manikandan
Project Manager



A young team, a bold challenge

The anchor of the project was a youthful, dynamic team with an average age of 30, steered by Project Manager C Manikandan. This vibrant group was driven by fresh perspectives, innovation, and a shared determination to succeed. Manikandan recalls, "Timely completion was a commitment shared by every team member from Day One. Each person treated the schedule not merely as a duty, but as a personal responsibility, all intent on finishing at least a day ahead of schedule."

The philosophy was simple yet profound: greater responsibility produces greater achievement. This belief, combined with technical excellence, proved that young, committed engineers can meet and exceed the demands of India's most challenging nuclear projects.

VOICES FROM
GROUND ZERO

> Our approach in enabling simultaneous work fronts, optimising resource allocation, and managing risks proactively won us the client's confidence. Faced with tight deadlines, we introduced precasting in place of the traditional cast-in-situ beams, a decision that considerably sped up structural progress without compromising the stringent quality required for nuclear infrastructure.
>
> **Anish Achuthan Kutty**
> Planning Head



Precision in planning: The key to rapid progress

What enabled the team to deliver ahead of schedule was a series of innovative construction methodologies that redefined project timelines.

Planning Head Anish Achuthan Kutty and team demonstrated that detailed project planning is the backbone of successful execution. He adds proudly, "Our approach in enabling simultaneous work fronts, optimising resource allocation, and managing risks proactively won us the client's confidence."

Coordinating everything from equipment recovery to vendor management and labour mobilisation, the planning team ensured that excellence was not an aspiration but a daily reality.

"Faced with tight deadlines, we introduced precasting in place of the traditional cast-in-situ beams, a decision that considerably sped up structural progress without compromising the stringent quality required for nuclear infrastructure," Anish says. The shift ensured not just compliance with client and regulatory expectations but timely delivery as well.

Other innovations included low-level rebar cage tying, which allowed parallel work fronts and minimised high-elevation activities, and the use of telehandlers and boom lifts to harness technology for faster, safer construction. The erection of the critical WYE branch in the Circulating Main Line Cooling (CMLC) piping saw flawless, zero-defect welding.



The pump house: Where civil, design, and MEP teams unite

Overcoming legacy equipment challenges

From day one, L&T inherited a host of idle, dilapidated machines from the previous contractor. Key assets like jumpform systems had languished unused at heights of up to 184 metres for nearly two years.

The project team was faced with the formidable task of reviving these neglected machines, which had suffered from prolonged inactivity and exposure to the elements. The jumpform systems, essential for constructing high-rise structures, posed a particular challenge due to their location and the extent of disuse. Despite these obstacles, the team approached the situation with determination and resourcefulness, ensuring that each piece of equipment was carefully inspected, repaired, and restored to operational condition. This proactive approach not only salvaged valuable assets but also enabled the team to move forward with critical construction activities without delay.

The Plant & Machinery (P&M) team rose to the challenge, undertaking painstaking vendor coordination and technical interventions to revive tower cranes and jumpform systems at both 184 metres and 31 metres, setting the stage for accelerated work.

The IR team took charge of manpower deployment, mobilising labour from across locations. At peak, 600–700 workmen were engaged within a single cooling tower, a remarkable feat for any civil project. Even the socio-local challenges of the Chambal region were overcome through proactive liaison with authorities, ensuring uninterrupted work progress during the demanding 36-month execution window.

VOICES FROM
GROUND ZERO

> Quality served as a key enabling factor for the timely completion of the project. Adherence to stringent standards minimised rework, avoided delays, and ensured smooth progress, winning the client's confidence.
>
> **Bagish Kumar U**
> Quality Head



Quality a key enabler

"Quality served as a key enabling factor for the timely completion of the project. Adherence to stringent standards minimised rework, avoided delays, and ensured smooth progress, winning the client's confidence," summarises Bagish Kumar U, Quality Head.

The project faced significant vendor constraints due to legacy issues and the strict NPCIL approval process. Yet, the Quality team went above and beyond, coordinating closely with vendors and the client to ensure timely supply and approvals for specialised works, such as the CMLC lining and drift eliminators, delivering both schedule and cost benefits.

Execution that restored momentum

The HCI IC team behind the NDCT balance works for RAPP Units 7 & 8 has demonstrated what disciplined execution can achieve when a project inherits uncertainty, legacy constraints, and compressed timelines. By reviving idle equipment, re-sequencing construction methodologies, and embedding quality into daily execution, the team stabilised a stalled package and delivered a critical nuclear infrastructure component ahead of schedule.

"The awards have brought recognition to the team," notes Manikandan, "but the real achievement was proving that even under the most demanding conditions, strong planning, execution discipline, and quality focus can restore confidence and deliver results."

Delivered three days ahead of schedule with zero NCRs, zero concrete rejections, and flawless welding, the NDCT RAPP 7&8 project stands as an example of how methodical recovery and execution control can meet nuclear-grade expectations while maintaining delivery commitments. ■

A TIMELY CONTRIBUTION TO DEWA'S NETWORK

132/11 kV ESKAN YALAYIS SUBSTATION, UAE

Power Transmission & Distribution IC



In Dubai's rapidly expanding power distribution landscape, timely addition of new substations is often critical to meeting urban development needs. The 132/11 kV ESKAN YALAYIS (ESKNYLYS) Substation, executed by PT&D IC for the Dubai Electricity and Water Authority (DEWA), stands out as an example of how careful planning, engineering discipline, and close coordination can enable delivery even under stringent timelines.

The substation was energised ahead of its contractual schedule, supporting the power requirements of the National Housing Project at Al Yalayis Fifth Community – a key aspect that won the project team the Timely Delivery Award for 2025.

A project defined by firsts

"The ESKNYLYS Substation is one of a kind, incorporating DEWA's Digitally Optimised Substation (DOSS) concept with an integrated building layout," informs Ramakrishnan Selvaraj, Project Manager. "It was among the first projects in the DEWA network to adopt a BIM-based design review process." The stringent contractual duration of 22 months, attempted for the first time for such a configuration, was a tough challenge to conquer.

The project scope included engineering, supply, installation, testing, and commissioning of eight 132 kV GIS bays, three power transformers, one 15 MVAr reactor, and 71 bays of 11 kV switchgear, along with associated protection panels, civil works, HVAC, and lightning protection & fire protection systems.

VOICES FROM **GROUND ZERO**

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Ramakrishnan Selvaraj
Project Manager



Managing logistics and site access

"Located in a remote desert area, approximately 2.5 km from the nearest established road, we faced significant logistics challenges," says Shawar Asghar, Planning Manager. Construction activities relied entirely on a temporary access road, which was itself under development by another contractor. Transporting heavy equipment such as power transformers, reactors, and precast panels over this evolving access posed execution and safety risks that needed careful control.

With permanent access infrastructure unavailable, safe transportation of equipment was a key concern. The project team planned movements of transformers, reactors, and large

VOICES FROM
GROUND ZERO



> We leveraged the BIM design review process to streamline approvals, while the Overall Equipment Layout (OEL) was strategically submitted in two stages, segregating architectural elements from equipment layouts and cable orientations. This allowed us to submit civil drawings and begin initial site activities without waiting for full design finalisation.

Shawar Asghar
Planning Manager

precast panels in detail, factoring in access road conditions, escort requirements, and time windows to minimise risk.

Despite these constraints, equipment mobilisation and erection activities proceeded without disruption to the overall schedule, thanks to disciplined planning and close monitoring of logistics interfaces.

Engineering sequencing that saved time

From the outset, the project team identified engineering certainty as critical to maintaining schedule momentum. "We leveraged the BIM design review process to streamline approvals, while the Overall Equipment Layout (OEL) was strategically submitted in two stages, segregating architectural elements from equipment layouts and cable orientations," elaborates Shawar. "This allowed us to submit civil drawings and begin initial site activities without waiting for full design finalisation."

In another departure from conventional sequencing, the team submitted the entire set of civil and MEP drawings – over 150 in total – in four bulk packages, rather than following sequential submissions. This approach accelerated approvals and reduced cumulative waiting time across disciplines, directly supporting downstream execution.

Lean practices to manage interfaces

The project team adopted Lean construction practices, most notably through the implementation of daily SCRUM meetings. These meetings brought together all critical stakeholders, from engineering & construction to planning & coordinationteams, to review constraints, resolve bottlenecks, and align daily priorities.

"This structured, highfrequency coordination helped us manage multiple interfaces simultaneously, particularly between civil construction, electromechanical installation, and logistics activities," relates Ramakrishnan. Issues that could have resulted in delays were identified early and resolved collaboratively, keeping the project on its delivery path.





Collaboration at the core

A defining feature of the project was the collaborative approach across functions and stakeholders. "Strategic planning and close coordination with the client were key factors in achieving our project milestones," remarks Shawar. "By improving collaboration among the respective disciplines, we were able to minimise time lost due to miscoordination and optimise the overall project duration."

Regular engagement with DEWA played a significant role in supporting timely delivery. Inspection schedules, documentation reviews, and approvals were aligned early to avoid lastminute interruptions. This proactive coordination ensured that commissioning activities progressed smoothly, culminating in early energisation of the substation.

The result was recognition not only through the Timely Delivery Award at the Performers League but also through DEWA's appreciation of the team's performance, along with a RoSPA Gold. The project also won PT&D IC's Early Completion Award and the Quality Award (Special Mention).

Delivered ahead of schedule, the 132/11 kV ESKNYLYS Substation has demonstrated how structured engineering, lean coordination, and disciplined execution can translate ambitious timelines into achievable outcomes. For PT&D IC, Ramakrishnan and team have added another example of timely delivery achieved through clarity of purpose and teamwork, principles that continue to define their execution across complex power infrastructure projects. ■

CONQUERING THE DUNES UNDER COMPRESSED TIMELINES

132/11 kV BADIYA SUBSTATION, UAE

Power Transmission & Distribution IC



Delivering a high-voltage substation within a compressed contractual duration is a test of planning precision, execution sequencing, and on-site adaptability. PT&D IC's 132/11 kV BADIYA Substation Project, executed for the Dubai Electricity and Water Authority (DEWA), exemplifies how structured planning and disciplined execution enabled early completion within one of the shortest timelines awarded in the DEWA network.

Executed to support the National Housing Project at Al Yalayis Fifth Community, the BADIYA substation was completed within a final contract duration of 23 months, culminating in early energisation and recognition at the Performers League 2025 with the Timely Delivery Award.

Engineering momentum from the start

"We established momentum early," informs Ramakrishnan Selvaraj, Project Manager. "Through decisive engineering closure, we secured approval for the Overall Equipment Layout (OEL) within 58 days from the Letter of Award, enabling downstream civil and interface activities to commence without delay."

The subsequent introduction of DEWA's Digitally Optimised Substation (DOSS) concept required a fundamental reworking of conventional design approaches. But the team didn't allow this change to disrupt the schedule. "Our engineering team recalibrated documentation workflows and achieved approval for all major designs within 10 months, maintaining alignment with the critical path," Ramakrishnan explains.

Managing site constraints in a remote desert location

The project site posed logistical and geotechnical challenges. "Located approximately 3.9 km from the nearest road, we had to arrange temporary access through shifting desert terrain," recalls Manikandan V, Planning In-charge. "Working in coordination with Dubai Municipality and other stakeholders,

VOICES FROM GROUND ZERO

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Ramakrishnan Selvaraj
Project Manager



VOICES FROM
GROUND ZERO

> For the installation of the earthing transformer, we used a hanging platform methodology to install it directly on the plinth while surrounding civil works continued in parallel. This approach compressed what would normally be a multi-week activity into a single operational day.
>
> **Manikandan**
> Planning In-charge



we developed flexible access routes that supported uninterrupted material movement."

Excavation works encountered hard rock at shallow depths of around 2 metres, necessitating revisions to foundation and excavation strategies. These adaptations were implemented without impacting overall progress, allowing civil works to continue along planned timelines.

Sequencing work to protect the schedule

The project's record-breaking pace was fuelled by a culture of meticulous synchronisation. From the initial OEL approval to the final moment of energisation, every milestone was met ahead of schedule with proactive planning.

Rigorous weekly coordination meetings ensured that every stakeholder was aligned, every bottleneck was identified early, and every endeavour had a clear path to success. Timely delivery was driven by careful sequencing of construction activities to eliminate idle time between trades and work fronts.

"For the installation of the earthing transformer, we used a hanging platform methodology to install it directly on the plinth while surrounding civil works continued in parallel," elaborates Manikandan. "This approach compressed what would normally be a multi-week activity into a single operational day."

Similarly, the team adopted a skidding methodology for transformer erection. Roofing and fire-protection systems were completed in advance, allowing three power transformers to





be positioned and installed within 15 days of arrival, rather than waiting for conventional building completion.

Advancing critical activities ahead of arrivals

To further safeguard the schedule, the team progressed 132 kV and 11 kV cabling works in advance of equipment deliveries. This proactive sequencing reduced dependency risks linked to supply timelines and ensured that commissioning activities could proceed immediately upon equipment installation.

The Installation, Testing, and Commissioning (ITC) phase is often where the most significant pressure lies. Led by the expertise of Ariharasenthil Balakrishnan, ITC Lead Manager, and Arun Murugan, Site Manager (Elec), the team achieved what was previously thought improbable: completing the total ITC scope within just 6 months.

By identifying and advancing such activities early, the project avoided last-mile congestion and preserved schedule flexibility throughout the execution phase.

Coordinated execution and Lean practices

Across engineering, construction, and planning teams, the project adopted Lean and SCRUM-based coordination practices, enabling rapid resolution of bottlenecks and clear accountability across interfaces. Regular coordination meetings and short-interval planning helped the team respond swiftly to evolving site conditions while maintaining focus on the committed delivery date.

Outcome and recognition

Through early engineering closure, adaptive execution strategies, and disciplined sequencing, the BADIYA team energised the substation ahead of schedule. The project received recognition not only at the Performers League but also through PT&D IC's Early Completion Award, a Special Mention for Quality, and formal appreciation from DEWA for setting a new benchmark in compressed-timeline execution.

"Our relentless drive helped us complete the project in under 21 months," notes Ramakrishnan. "The success of BADIYA has resonated far beyond the site boundaries; setting a new benchmark, the project has significantly bolstered L&T's standing with DEWA, who issued a special appreciation for the entire team, including the Engineering team."

The BADIYA project demonstrates how timely delivery, when anchored in planning clarity and execution discipline, remains achievable even under constrained durations and changing requirements – a lesson that continues to shape PT&D's delivery approach across its portfolio in the region. ■

CERTAINTY DELIVERED THROUGH COMMISSIONING DISCIPLINE

1,425 MW AL KAHFAH SOLAR PV IPP, KSA

Renewables IC



Constructing a 1,425 MW solar plant and delivering it as per contracted milestones demands more than construction speed; it requires absolute certainty at the interfaces between completion, commissioning, and energisation. At Al Kahfah, the project team achieved this certainty through a rigorously structured, system-led approach that enabled on-time delivery without compromise, bagging them the Timely Delivery Award at the Performers League 2025.

A system-led route to readiness

From the word go, the Al Kahfah team anchored execution around a clearly defined completion and commissioning framework. Instead of treating commissioning as an end-stage activity, the team embedded readiness checks into construction itself.

"Our milestone-driven methodology, using Mechanical Completion Certificates (MCCs) and Cold Commissioning Certificates (CCCs), established precise system boundaries," informs Abdul Hanif Khan, Project Director. "Each subsystem progressed forward only after teams confirmed installation completeness, inspection clearance, and quality compliance, eliminating ambiguity at handover points and ensuring seamless transition into commissioning."

VOICES FROM GROUND ZERO

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Abdul Hanif Khan
Project Director



Cold commissioning without surprises

"During the cold commissioning phase, we followed detailed checklists, systematic punch-point closure, and early involvement of commissioning personnel working in close coordination with construction teams," says Amit Sundriyal, Project Manager. "This integration significantly reduced late-stage rework and ensured functional readiness well before we began energisation activities."

Rather than compressing timelines at the end of execution, the team used cold commissioning to front-load risk elimination, allowing final energisation to proceed with confidence.

Energising with precision

The discipline invested upstream translated directly into record-time energisation. Through meticulous planning, readiness verification, and strict adherence to safety and quality protocols, the entire 1,425 MW plant was hot-commissioned and energised within just 15 days.

Key milestones

Energisation of both 33/132 kV pooling substations and corresponding OHTLs within 24 hours

100% energisation and synchronisation of all inverters within 14 days

Achievement of ICOD-1, ICOD-2, and PCOD* exactly as per contractual timelines

** ICOD – initial commercial operation date; PCOD – provisional commercial operation date*





VOICES FROM GROUND ZERO

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Amit Sundriyal
Project Manager



This tightly sequenced approach ensured that energisation never became the critical path risk typically associated with projects of this scale.

Quality and safety embedded into delivery

Throughout the process, quality controls remained integral, combining construction-stage quality checks with certificate-based completion gates. This integrated model also contributed to the project's strong safety performance, with 14.9 million safe working hours recorded, full HSE compliance during energisation, and external recognition including the coveted Sword of Honour from the British Safety Council.

Meeting commitments at giga-scale

The Al Kahfah Solar PV project team has demonstrated how structured completion logic, early commissioning engagement, and disciplined energisation planning can deliver certainty even at giga-scale.

By treating commissioning as a planned system rather than a last-mile challenge, Abdul & team met every contractual milestone as committed, reinforcing that timely delivery is not the result of speed alone but of clarity, control, and execution discipline. ■

DELIVERED AT SCALE, ON SCHEDULE

2,000 MW AR RASS 2 SOLAR PV IPP, KSA

Renewables IC



Delivering a 2,000 MW solar power project within a committed schedule in a remote desert location demands disciplined planning, continuous monitoring, and control over thousands of interdependent activities. The Ar Rass 2 Solar PV Project stands out for achieving its full planned capacity on schedule and within budget, earning recognition at L&T Construction's Performers League 2025 with the Timely Delivery Award.

As of 30 May 2025, the project successfully reached its targeted generation capacity, validating an execution strategy anchored firmly in schedule certainty.

Fast-tracked execution through digital control

"From the outset, we structured execution around digital construction monitoring and Lean planning practices, enabling early visibility into risks and dependencies," notes Avesh Kumar Verma, Project Director. Rather than managing progress through periodic reviews alone, the project team relied on real-time performance dashboards to track daily productivity against planned asking rates across all major work fronts.

"Central to our approach was the use of Oracle Primavera P6 with predictive scheduling, through which more than 15,000 activities were monitored continuously," Avesh continues. "Schedule intelligence from P6 enabled dynamic identification of bottlenecks, allowing planners to intervene before deviations affected the critical path." Weekly and monthly progress reviews, look-ahead planning, and plan-versus-actual analysis ensured that execution remained tightly aligned with the Planned Commercial Operation Date (PCOD).

Tech like AI-based drones for daily progress monitoring and documenting construction milestones using time-lapse cameras. Further, the project team used Microsoft SharePoint for digital data storage and transfer to both internal and

VOICES FROM GROUND ZERO

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Avesh Kumar Verma
Project Director





VOICES FROM
GROUND ZERO



> We adopted work-front zoning and parallel sequencing, eliminating idle time between activities and reducing interdependence risks. By mechanising key activities we could stabilise productivity during peak execution phases.

S N H Prasad
Project Controls Manager

external stakeholders. Other digital applications developed for the project like RFID cards for workers and visitor gate passes were integrated to the SharePoint Cloud to enable collaborative data transfer, ensuring transparency.

Maintaining momentum across a vast work front

With a scope that included more than 554,000 vertical posts, 41,000+ trackers, 3.6 million PV modules, 248 MVPS stations, and three 132/33 kV pooling substations, the scale of work at Ar Rass 2 required precise coordination across civil, mechanical, and electrical teams operating simultaneously over a large, dispersed site.

"We adopted work-front zoning and parallel sequencing, eliminating idle time between activities and reducing interdependence risks," reveals S N H Prasad, Project Controls Manager. "By mechanising key activities – including ramming of vertical posts, tracker installation, and module mounting – we could stabilise productivity during peak execution phases. Reducing manual variability and standardising processes helped ensure predictable outputs under challenging site conditions."

Phased commissioning to protect timelines

One of the decisive enablers for timely delivery was the project's ability to commission systems in phases rather than waiting for full site completion. "Pre-integrated inverter skids enabled off-grid hot commissioning, allowing electrical systems to be energised early and tested independently," notes Aathikesavan Thangavelu, Project Manager. "This strategy separated commissioning from late-stage civil works, maintaining the flexibility of our schedule and significantly reducing the risk of last-mile delays."

Synchronised procurement and resource planning

Timely delivery at Ar Rass 2 also depended on close synchronisation between procurement, logistics, and execution teams. Early vendor finalisation, structured follow-ups, and planned material arrival windows ensured that critical components reached site precisely when required, avoiding both congestion and shortages.

VOICES FROM
GROUND ZERO

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Aathikesavan Thangavelu
Project Manager



Manpower planning followed the same principle, with trained crews mobilised in line with forecast activity peaks, ensuring continuity across all work fronts.

Delivering what was committed

By integrating digital schedule control, Lean execution practices, and early commissioning readiness, Avesh & team sustained execution momentum throughout the project lifecycle. Rather than relying on recovery towards the end, the team focused on preventing slippage at source.

The Timely Delivery Award recognises this disciplined, system-driven approach, demonstrating that even at the scale of 2,000 MW, certainty of delivery is achievable through rigorous planning and continuous control. ■





NDCT Rajasthan Atomic Power Plant, Units 7 & 8
Heavy Civil Infrastructure IC



Bhogapuram International Airport Project (MVIAL), Andhra Pradesh
RBF SBG, Transportation Infrastructure IC



Madras Peripheral Ring Road Project, EPC-02
RBF SBG, Transportation Infrastructure IC



132-11 kV SAIH SHUAIB Substation, UAE
Power Transmission & Distribution IC



RDSS Valsad, Gujarat
Power Transmission & Distribution IC



120 MW Ground-Mounted and 56 MW Floating Solar PV Project, NTPC Ramagundam
Renewables IC



Chittorgarh Water Supply Project, Rajasthan, Package 01
Domestic Water & Effluent Treatment SBG



5.1 LTPA Fertilizer Complex – Process Plant at HZL Chanderiya, Rajasthan
Minerals & Metals IC



Augmentation of Slipway No. 4 at HSL, Visakhapatnam
L&T GeoStructure

BUILT RIGHT, DELIVERED 8 MONTHS EARLY

BHOGAPURAM INTERNATIONAL AIRPORT PROJECT (MVIAL), ANDHRA PRADESH

RBF SBG, Transportation Infrastructure IC



A landmark infrastructure project delivered ahead of time, setting benchmarks in speed, planning, technology adoption, and cost optimisation.

The scope of RBF SBG's New Greenfield International Airport Project at Bhogapuram, Andhra Pradesh, encompassed a comprehensive range of engineering, procurement, and construction (EPC) tasks, covering both airside and landside infrastructure works. The contract was executed for GMR Visakhapatnam International Airport Limited and focused on delivering critical aviation infrastructure within a tight schedule. Notably, the project was completed eight months ahead of the contractual timeline, with the entire physical progress achieving 100% completion by 31 December 2025.

Bhogapuram was always a project defined by scale: 3.8 km of runway, a 3.0 km parallel taxiway, aprons for 16 aircraft, 31 km of road, 50 km of stormwater drainage, and 233 km of airfield ground lighting – on a tight schedule, at a site that presented challenges at every turn.

"The commercial validation flight landed with the Minister of Civil Aviation aboard within 24 months of commencement, marking the first instance where the Minister was on board the validation flight," remarks Jeeva David J, Project Director. "It was not a fortunate outcome but a natural consequence of decisions made every single day, from the moment work began."

VOICES FROM **GROUND ZERO**

The commercial validation flight landed with the Minister of Civil Aviation aboard within 24 months of commencement, reinforcing the team's focus on the metric that mattered most to us: a first-attempt approval rate of 91%, up from 65%, representing thousands of work packages prepared correctly, reviewed confidently, and passed without rework.

Jeeva David J
Project Director



Quality as a way of working

At Bhogapuram, quality is embedded into the work itself, into how activities are planned, teams briefed, deviations caught and corrected before they became problems. "We are committed to building a culture of doing it right the first time, with customer satisfaction always at the forefront," says a proud Jeeva.

The instrument that made this philosophy measurable was a digital tool called DRIFT: Do It Right in First Time. Built on a Power BI platform, it gave every team real-time visibility into work readiness, specification compliance, and early-stage deviations.

"As a result of DRIFT, first-attempt approval rates improved from 65% to 91%," says Souptik Sarkar, Planning In-charge. "This improvement reflects better preparedness on site and stronger adherence to specifications. With fewer rejections and less rework, we spent more time building and less time fixing."

VOICES FROM
GROUND ZERO

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Souptik Sarkar
Planning In-charge



Data tracked goals, while training reinforced them. "Focusing on root causes brings out the inquisitive nature of engineers, and that leads to continuous learning," says N Venu Babu, Quality In-charge. "Stress-testing every method before the first move and building work plans along with the teams created a proactive environment where we tracked and handled every small problem before it could become serious."

Moving earth

The scale of earthwork alone warranted focused planning and dedicated execution strategies. To build a runway to Federal Aviation Administration (FAA) standards, 1.5 crore cubic metres of material had to be moved, shaped, and compacted, complicated by the absence of uniform-quality soil and restrictions on borewell access for the water that compaction demands.

The team's response was methodical. "We performed detailed California Bearing Ratio (CBR)–based soil testing across the site, which allowed strategic demarcation with each zone mapped to its structural purpose," Souptik informs. A cut-and-fill methodology eliminated rehandling, keeping material flowing directly from excavation to placement. Where natural soil could not meet the required CBR value of 40, advanced stabilisation techniques closed the gap.

Water constraints were solved from within. Internal temporary ponds were developed and rainwater captured, creating an independent supply that kept compaction running without interruption. By integrating 3D machine control technology into graders and excavators, the team achieved satellite-guided precision that boosted productivity by 23%, improved accuracy by 50%, and significantly reduced the workforce hours required.

The fleet deployed was vast: 50 excavators, 40 graders, 20 dozers, 55 soil compactors, 200 dumpers, 75 water tankers, and 4 soil stabilizers. The result: 1crore cubic metres of earthwork completed in seven months, setting the pace for everything that followed.

Solve before the stall

The aggregate requirement for sub-base and base layers amounted to 15 lakh metric tonnes of boulder; when the project started, the quarries that needed to supply it were still nine months from receiving regulatory clearances to mine.

To address this early, the team analysed site-specific soil data. "Soil borings revealed a rocky stratum 5 m down, suitable for processing into granular sub-base (GSB) and cement-treated sub-base (CTSB). We set up a crusher on the spot," reveals Krishnamoorthi S, Project Manager. "While external quarries were still preparing their first blast, we had already extracted 3.5 lakh tonnes of aggregate from our own site."

In parallel, the team secured access to private quarries nearby, setting up a second crushing operation to build further supply. By the time the originally identified quarries became fully operational, a significant portion of the project's aggregate demand had already been met.

VOICES FROM
GROUND ZERO

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N Venu Babu
Quality In-charge









Commercial flight validation on 4 January 2026

All crushing activities were completed within ten months, eliminating a critical material bottleneck and ensuring that pavement and earthwork operations progressed without interruption.

Procurement planning to keep pace

Coordination extended beyond the site to include global supply chains. The airfield ground lighting network required components sourced from international markets. With long lead times, the margin for delay was essentially zero.

Demonstrating early action, the procurement team finalised vendors well ahead, following up in a structured fashion rather than reactively. "In cases where delivery windows were at risk, we expedited the components," says Krishnamoorthi. "This helped us install the entire network on schedule."

Material selection also played a role in meeting long-term performance requirements. "For the runway surface, we introduced 82E-10 grade Polymer Modified Bitumen to enhance durability under aircraft loading and the coastal climate," he adds. "This was supported by continuous monitoring during laying and compaction to ensure that performance parameters were achieved."

VOICES FROM
GROUND ZERO

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Krishnamoorthi S
Project Manager



Waste into value

Quarrying at that scale generates overburden, material too coarse or inconsistent for direct use, which then must be disposed. This project disposed of the disposal problem instead.

The team systematically screened and re-engineered 1 lakh metric tonnes of overburden. Finer fractions, tested and proven to meet required CBR parameters, were deployed as CTSB, eliminating the need for approximately 1,000 metric tonnes of cement. Sound boulders recovered from the screening were crushed down to GSB and consumed entirely in road pavement works. "The direct cost saving was commendable," Jeeva adds. "The carbon saving, from cement not manufactured, was a quieter but equally meaningful number. A waste liability had become a construction asset."

"We strictly adhered to the 3R concept of Reduce, Reuse, and Recycle, ensuring that all waste materials were meticulously collected, segregated, and effectively reused," notes Chandra Sekhara Rao, EHS Head. "We re-crushed concrete debris to generate 10,000 MT of aggregates, reducing fresh procurement." Such initiatives demonstrated the project's commitment to creating wealth from waste, setting a benchmark in sustainability by winning TI IC's Waste Management Award.

Sustaining workforce continuity

Multiple large projects running simultaneously in the region meant workers had options. The site team countered attrition by providing them with a fully equipped workmen colony with canteen, medical services, and RO drinking water, which made staying on site an attractive choice for the 3,500-strong workforce. A dedicated grievance cell was set up within the camp to resolve concerns quickly, and a bonus incentive for those who stayed beyond 90 days put a tangible value on continuity.

Training and induction were managed through a structured framework, enabling rapid skill-based deployment and early productivity from new workers. Where design allowed, the team reduced dependence on labour by introducing precast construction technologies, further stabilising manpower requirements and maintaining execution momentum.

A framework, not just a finish line

When the commercial validation flight touched down at Bhogapuram, the moment reflected the efforts of hundreds of people who spent 24 months resolving issues before they escalated, measuring quality early, and building systems capable of holding steady even as conditions shifted around them.

In addition to the Quality Award at the Performers League, the project has received recognition from the Indian Concrete Institute for Outstanding Concrete Structure and from EPC World Awards for Outstanding Contribution to Airport Projects. "These recognitions have reinforced the team's focus on the metric that mattered most to us: a first-attempt approval rate of 91%, up from 65%, representing thousands of work packages prepared correctly, reviewed confidently, and passed without rework," relates Jeeva.

This systematic approach enabled the team to achieve contractual milestones well ahead of schedule while maintaining quality standards. As Bhogapuram moves towards full operations, the project demonstrates how planning work right from the outset translates into delivery speed without compromise. ■

PAVING THE ROAD TO EXCELLENCE

MADRAS PERIPHERAL RING ROAD, PACKAGE-2

RBF SBG, Transportation Infrastructure IC



The Madras Peripheral Ring Road Project (MPRRP) is not just an engineering feat but a showcase of how technology adoption can redefine infrastructure. Spanning 132 km from Ennore Port to Mahabalipuram, this corridor stands as Chennai's second outer ring road, transforming regional connectivity through digital innovation and smart construction practices.

The highway component covers a total road length of 12.8 km, complemented by 25.6 km of service roads. The main carriageway is designed for a speed of 100 km/hr, while the service roads support a 40 km/hr speed. The road configuration includes a six-lane greenfield stretch from Punnapakkam to Thiruvallur Bypass and service roads, with a median width of 8.5 m. The terrain is predominantly plain, and the right of way is 60 m, featuring wider curves and entry/exit ramps. The pavement structure is flexible, designed to accommodate varying traffic loads and ensure longevity. The project encompasses major and minor junctions, bus bays, drainage systems, and safety barriers. Notably, the project does not include a toll plaza.

VOICES FROM **GROUND ZERO**

As the project took shape, digital monitoring and data-driven decision-making became the backbone of our operations. Doing the work safely and doing it right the first time ensures a quality product, cuts off unwanted costs, enhances the brand image, and is a service to the nation.

Sathyamurthy Rengarajan
Project Manager



The structural scope includes one major bridge each for the main carriageway and service road, one minor bridge each, three vehicular underpasses (VUPs), two light vehicular underpasses (LVUPs), and two small vehicular underpasses (SVUPs). In total, there are 61 structures, which also comprise 50 box culverts.

Delivery of this package was not merely about physical construction but about pioneering new benchmarks in digital preparedness, real-time quality assurance, and process excellence powered by technology.

Within the first three months of receiving the Notice to Proceed, the project team harnessed advanced digital tools for rapid execution; drone-based topographical surveys replaced traditional total station methods, significantly speeding up data collection and design finalisation. Nearly 80% of the designs and drawings were digitally completed and submitted to the Authority Engineer, setting a swift, technology-driven pace for the entire project.

Tech-powered quality

The team embraced a philosophy that set them apart: quality is not just a destination but a continuous discipline enabled by technology. This belief drove every process, every decision, and every milestone, earning them the Quality Award at the Performers League 2025.

"As the project took shape, digital monitoring and data-driven decision-making became the backbone of our operations," says Project Manager Sathyamurthy Rengarajan. "Doing the work safely and doing it right the first time ensures a quality product, cuts off unwanted costs, enhances the brand image, and is a service to the nation" – a mantra that was not merely spoken but lived through digital safety checks and automated quality controls.

The integration of the POWER app marked a major technological leap in the project, transforming traditional site management into a digitally empowered process. This robust platform became central to daily operations, enabling the team to leverage technology as an active ally for quality and compliance. Through the POWER app, several innovative practices were institutionalised:

- Daily digital monitoring of pep talks on new and critical activities ensured that every team member was aligned with the latest procedures and safety guidelines. This real-time engagement fostered a culture of continuous improvement and knowledge sharing.
- Real-time tracking of process control measures through mobile devices provided instant visibility into operational status. This allowed for rapid identification of deviations, swift corrective action, and seamless coordination across teams, reinforcing process discipline.
- Structured digital communication of quality checkpoints enabled immediate corrective action. By digitally documenting and sharing these checkpoints, the team could proactively address issues, uphold compliance, and elevate the standard of execution throughout the project lifecycle.



VOICES FROM **GROUND ZERO**



> If the process is followed properly, the product will automatically achieve its quality standards. We operationalised this through structured digital training, meticulous documentation, and regular performance audits.

Sakthivel S
Quality In-charge

"Technology did not just reinforce process discipline; it made it possible for every team member to see the impact of their work," mentions Sakthivel S, Quality In-charge. "If the process is followed properly, the product will automatically achieve its quality standards. We operationalised this through structured digital training, meticulous documentation, and regular performance audits." Engineers received digital training at every stage, ensuring that execution procedures and limitations were accessible and understood before work began. Monthly quality audits, led by the Project Manager, were tracked on digital dashboards, leaving no room for ambiguity.

Ahead of every challenge

The true test of any infrastructure project is not its blueprint but its response when challenges come in the way.

- **Borrow earth scarcity:** Early recognition of limited borrow earth along the project corridor led to proactive approval of multiple borrow areas and assignment of a dedicated coordinator for end-to-end management. Scarcity of fill material was addressed by using pond ash from thermal power plants as a replacement for reinforced earth, which was a quality-compliant substitute and kept progress steady. When suitable subgrade soil was unavailable nearby, the team sourced 3.5 lakh cum. from locations near the Tamil Nadu–Andhra Pradesh border and from within Andhra Pradesh, nearly 60 km away, with careful logistics and planning to ensure timely delivery and no schedule delays.
- **Workmen retention:** Proximity to Chennai created a persistent pull; skilled workers were regularly drawn away to nearby urban projects, threatening manpower stability. Rather than accepting attrition as an unavoidable reality, the team responded with structure and intent. Targeted welfare initiatives and well-designed incentive schemes were introduced, addressing the root causes of migration. The result was measurably improved retention and a stabilized workforce that could sustain the pace of execution.

- **Transportation of aggregate from Andhra Pradesh:** Material supply from the crusher location in Andhra Pradesh faced repeated disruption due to delays in transit pass approvals. Through persistent coordination and proactive follow- ups with the relevant authorities, approvals were secured and material flow was kept uninterrupted, protecting the supply chain and preventing downstream slippages.

What began as a complex, challenge-laden project ended as a benchmark delivery, completed ahead of schedule, built on proactive planning, resilient execution, and a quality culture that ran from leadership to the last worker on site. The team earned high appreciation from the client and government authorities.

Always on

When deadlines are relentless and quality is paramount, genuine innovation often emerges from simple, practical ideas. Such was the case with the Night Roster System, a transformative initiative championed by Ekambaram Mohanraj, Head – Operations, South Segment, RBF SBG.

"With the understanding that construction sites rarely sleep, we sought to infuse the same dynamism and discipline at night as seen during the day," says Ekambaram. "Under this initiative, senior team members from all departments were assigned, in rotation, to observe and participate in nighttime operations. The goal was not just supervision but active involvement, sharing real-time insights on safety, quality, labour welfare, and even the aesthetics of the site, all on a common group platform."

VOICES FROM
GROUND ZERO

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>
> **Ekambaram Mohanraj**
> Head – Operations, South Segment, RBF SBG





The Night Roster System not only set a new benchmark for vigilance and quality but also fostered humility and collaboration. By encouraging open dialogue, the initiative deepened the sense of ownership among all team members, reminding everyone that excellence is a round-the-clock commitment. In Ekambaram's words, "This simple, yet profound, practice transformed night shifts into opportunities for inspiration and continuous improvement, standing as a shining example of teamwork and leadership that others in the industry can aspire to."



Recognition that ran the full mile

To celebrate what was achieved and honour those who achieved it, the Ashram of Appreciation was born. Part physical space, part digital archive, it brought together tokens of achievement and a curated record of milestones in a form accessible to every member of the team, on site and virtually. In doing so, it did something quietly and powerfully; it turned recognition into a culture and learning into a habit.

Today, the Chennai Peripheral Ring Road Package-2 stands as the story of a team that showed up every day, held the standard, and built something that will outlast every challenge. ■

DELIVERING QUALITY THROUGH DISCIPLINE

132/11 kV SAIH SHUAIB SUBSTATION, UAE

Power Transmission & Distribution IC



The SAIH SHUAIB Substation Project began like a typical substation – with drawings, timelines, and technical specifications. As planning unfolded, it became evident that this project was far more than a collection of engineering tasks, with many challenges to overcome.

From the outset, the SAIH SHUAIB project team, with clarity of purpose and a steady, methodical approach, demonstrated that quality is not an act but a way of working –earning themselves a well-deserved place among the Quality Award winners at the Performers League 2025.

Planning that set the tone

"Given the sharply constrained contractual timeframe, there was zero tolerance for error, rework, or second chances," says Sajith Abdul Azeez, Operations Head – UAE, PT&D IC. "Every action had to be flawless on the first execution; this uncompromising standard was not just an expectation but the driving force behind our success."

At the initiation stage, the team came together to evaluate risks, identify opportunities, and define how quality and safety would guide every stage of work. "Our discussions went beyond productivity targets," recalls Selvam N, Head – QEHS, UAE. "They centred on reducing rework, maintaining compliance, and protecting the workforce. As a result, the project moved into execution with clear strategies for design coordination, OEM engagement,equipment installation sequencing, and verification activities."

Civil, electrical, and MEP teams worked in alignment from day one, ensuring that interfaces were resolved early and that downstream activities were not disrupted. This consistent, disciplined planning helped prevent issues that typically surface late in substation projects.

VOICES FROM **GROUND ZERO**

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Sajith Abdul Azeez
Operations Head – UAE, PT&D IC



Responding to challenges with precision

Managing flooding at the raft stage: An early challenge emerged when heavy rains flooded the reinforcement area during raft foundation works. "We quickly assessed natural stormwater paths, built soil bunds over unstable terrain, and diverted runoff to protect work zones," elaborates Jimmy John, Planning In-charge. This proactive mitigation prevented delays and allowed activities to resume efficiently once conditions improved.

VOICES FROM
GROUND ZERO

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Selvam N
Head – QEHS, UAE





Operating in a limited space: With boundary walls on three sides, the project had minimal room for storage, equipment access, and crane positioning. The project team responded by creating an off-site laydown yard nearly a kilometre away, where materials were stored, labelled, and preassembled. Only the day's required materials were brought to site, reducing congestion and maintaining safe access to work fronts.

For handling large equipment and precast elements, the team secured temporary access to adjacent land owned by a neighbouring property. Each lift was planned individually, including ground readiness, temporary access routes, and detailed lift studies. "We restored the borrowed land once our activities were completed," adds Jimmy.

Maintaining concrete supply: Citywide concrete shortages posed risks during critical casting sequences. "To mitigate this, we engaged two approved vendors closest to the site and prepared detailed pour schedules," Jimmy explains. "Our civil, quality, and HSE teams supervised extended shifts to maintain continuity. Strict compliance with method statements, ITPs, testing procedures, and curing requirements ensured that quality remained uncompromised despite supply challenges."

Coordinating with external contractors: Excavation activities by external agencies posed risks to access and emergency routes. The project team addressed these collaboratively, engaging in dialogue, reaching mutual agreements, and constructing temporary bridges to maintain continuous and safe movement.

Strengthening security at a remote site: With the substation located in a sparsely populated area, the team enhanced perimeter security by installing cameras, improving lighting, and deploying additional guards.

Managing heat stress: Given the intense climate, the project implemented a full heat-stress management system, including hydration routines, shaded rest areas, job rotation, buddy systems, and continuous worker health monitoring.

VOICES FROM
GROUND ZERO

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Jimmy John
Planning In-charge



Digital tools strengthening quality

Digital platforms not only streamlined processes but also improved transparency and communication. Workers, supervisors, and engineers gained greater clarity over daily requirements, strengthening engagement and ownership.

"The QIR app significantly strengthened the site team's quality performance," relates Shripad Hegde, Head – Quality, PT&D IC, "enabling realtime capture of observations and faster closure of corrective actions. Routine review of observations in internal meetings reinforced learning and prevented

recurrence. This approach reduced rework and improved communication, helping us deliver the highquality final product expected of us."

On the safety front, the SHEILD app allowed the team to identify and report hazards instantly, improving response times and ensuring consistent adherence to EHS protocols. This contributed significantly to the project's achievement of completing works without any Lost Time Injuries (LTIs).

Client coordination done right

The team handled client inspections with preparation and efficiency. Documentation was kept ready, method statements were approved early, and inspection schedules were fixed well in advance. Workers received external training to strengthen competence, and equipment underwent both internal and third-party inspections to ensure readiness. This streamlined approach improved transparency and reduced the time taken for approvals.

A controlled, well-sequenced ITC phase

As the substation moved into the installation, testing, and commissioning (ITC) phase, the team maintained the same precision that guided the earlier stages. "We began equipment erection only after civil clearances," notes Sajith. Civil, electrical, and MEP teams coordinated closely to avoid operational overlaps. Regular interface meetings ensured that installation and testing progressed without interruptions.

OEM representatives worked alongside site engineers to address issues on the spot, while progressive testing and verification ensured readiness for commissioning.





VOICES FROM
GROUND ZERO

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Shripad Hegde
Head – Quality, PT&D IC



"We maintained continuous communication with the client, which helped finalise revised schedules and paved the way for early completion," he adds.

A team effort

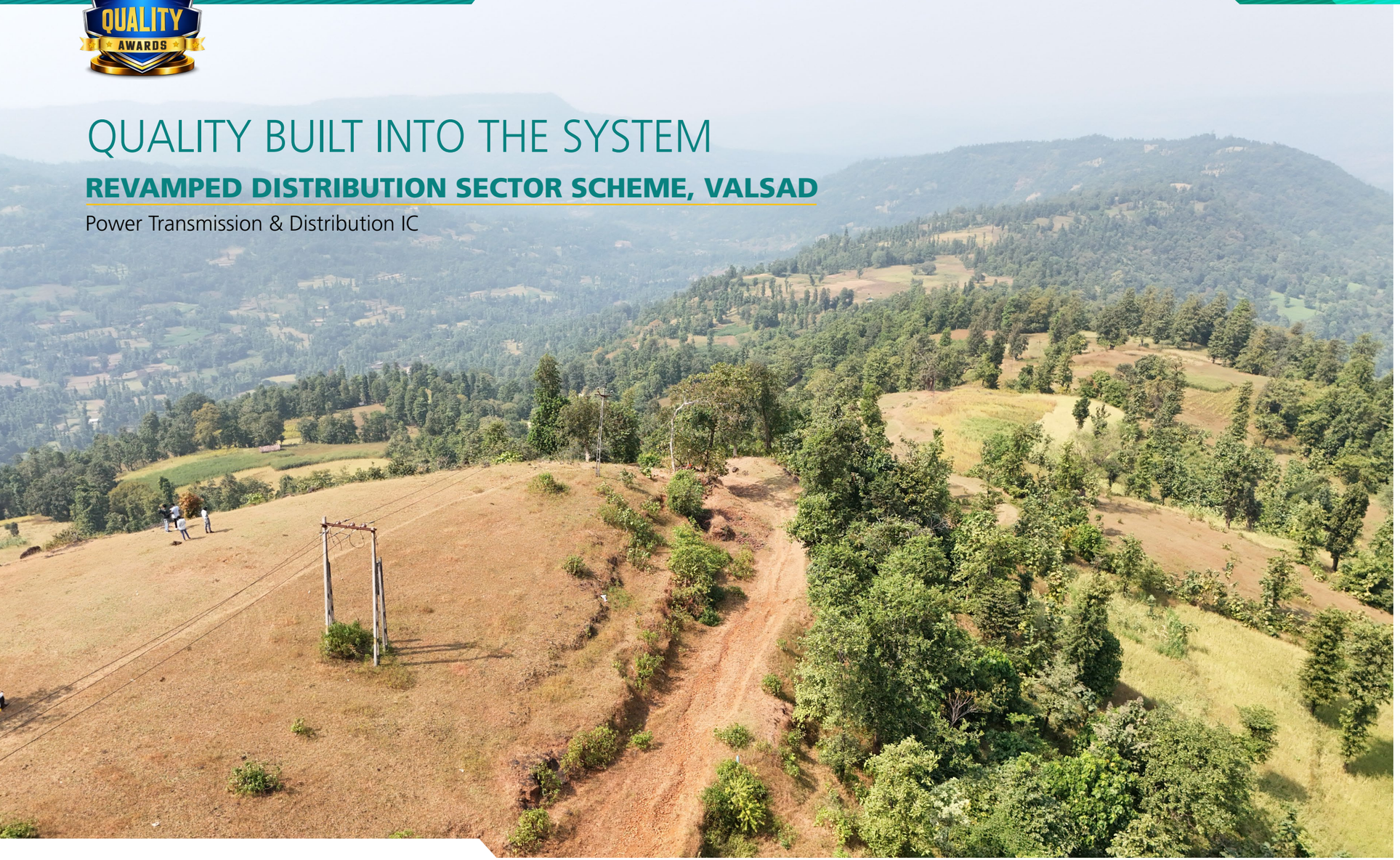
"Every individual, from senior leaders to frontline workers, played a part in the project's successful delivery," remarks Sajith. "We completed the SAIH SHUAIB Substation ahead of schedule, but the achievement goes deeper than timelines. It reflects resilience in the face of challenges, discipline in execution, and a shared commitment to doing things correctly, consistently."

The substation stands today as a symbol of this collective effort, built through planning, precision, and a work ethic rooted in responsibility. ■

QUALITY BUILT INTO THE SYSTEM

REVAMPED DISTRIBUTION SECTOR SCHEME, VALSAD

Power Transmission & Distribution IC



Strengthening power distribution networks across large and varied geographies demands more than execution speed; it calls for consistency, discipline, and quality that can be sustained over time. The Revamped Distribution Sector Scheme (RDSS) Project in Valsad District exemplifies this approach, having earned the Quality Award for its structured, system-driven quality control across an exceptionally demanding scope.

Executed on a turnkey basis for Dakshin Gujarat Vij Company Limited (DGVCL), the project covered end-to-end activities ranging from survey and planning to installation, commissioning, and handover. The RDSS scheme aims to modernise and strengthen the existing distribution network, reduce aggregate technical & commercial losses, and enhance the reliability of electrical supply across the district.

Scale, spread, and execution constraints

The RDSS Valsad Project spans nearly 2,950 sq. km, with approximately 76% of overhead works located in hilly and remote terrain. The scope included replacement of 2,400 km of LT bare conductors with low-tension aerial bunched (LT AB) cables, upgradation of 3,250 km of HT networks using 11 kV high-tension aerial bunched (HT AB) cables and medium-voltage covered conductors, replacement of 600 km of deteriorated conductors, and extensive feeder bifurcation and transformer augmentation.

"A critical component of the project involved the conversion of 902 km of overhead networks into underground cabling, particularly in AMRUT* towns and coastal areas," explains Chiranjit Nag Choudhury, Project Manager. "These works brought added complexity: rocky strata, narrow urban roads, continuous public movement, and restricted working spaces, making quality control both technically and operationally challenging."

Quality control, designed as a system

Given the geographic spread and difficult site conditions, the project team anchored quality not in endstage inspections but in a systemised control framework covering manpower, materials, methods, and monitoring.

VOICES FROM **GROUND ZERO**

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Chiranjit Nag Choudhury
Project Manager



**Atal Mission for Rejuvenation and Urban Transformation*



Spanning 2,950 sq. km

Upgradation of 3,250 km of HT networks

~76% of overhead works in hilly & remote terrain

Replacement of 600 km of deteriorated conductors

Replacement of 2,400 km of LT bare conductors with LT AB cables

Conversion of 902 km of overhead networks into UG cabling

Quality planning began at the supply stage. "All critical materials, ranging from 11 kV HT AB cables to distribution transformers, underwent Factory Acceptance Tests (FATs) against DGVCL-approved specifications before dispatch," says Sourav Mondal, Planning In-charge. "Upon receipt at the Valsad stores, our teams conducted secondary inspections to identify transit damage and specification deviations. In coastal and high-humidity zones, we introduced specialised material preservation protocols to prevent corrosion or insulation degradation before field deployment."

standardised operating procedures, with supervision adapted to terrain risk.

"In hilly and hazardous locations, we implemented a dual-supervision model, requiring sign-offs from both quality and safety personnel before proceeding," notes Pantham Naga Satya Prasanna Kumar, Quality Engineer. "This ensured that constrained access or difficult ground conditions did not result in compromised workmanship."

Regular toolbox talks (TBTs) translated technical requirements into practical, actionable steps for field crews. To ensure execution consistency across remote locations, the team strengthened training and induction processes. "No worker was deployed without passing a quality & safety induction to ensure they understood the L&T standard," Prasanna adds. "We conducted periodic on-site physical demos for tasks. To bridge geographical gaps in hilly terrains, we used virtual demos to standardise excellence across the project."

Digitising quality oversight

A defining feature of the RDSS Valsad quality framework was the digitalisation of field monitoring through the QIR application.

"Our supervisors used the platform to upload geo-tagged, time-stamped photographs of work-in-progress, creating a verifiable digital record of execution," notes Prasanna, adding that each observation raised through the app carried a defined severity level and resolution timeline. The system allowed closure of activities only after verification of corrective actions with documentary evidence.

The team also analysed QIR data at weekly intervals to identify recurring patterns. These insights fed directly into targeted TBTs and corrective measures, ensuring that field learning remained dynamic and preventive rather than reactive.

Once in the field, Sourav & team relied on strict supervision and SOP-driven execution. Every activity – pole grouting, cable stringing, trenching, and transformer installation – followed

VOICES FROM GROUND ZERO

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Sourav Mondal
Planning In-charge







VOICES FROM
GROUND ZERO

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>
> **Pantham Naga Satya Prasanna Kumar**
> Quality Engineer



Human ownership of quality

While systems and tools provided structure, people ensured adherence. "We introduced a 'Quality Champion' model to instil quality ownership, recognising individuals who demonstrated consistent field discipline, technical accuracy, and proactive use of digital monitoring tools," reveals Chiranjit.

These champions shared their learnings during review forums, converting individual best practices into collective standards. The team also ensured role-fit deployment: "We vetted each technician and engineer for their specific role, ensuring that high-precision tasks, like the installation of the medium-voltage covered conductor, were handled by subject-matter experts," he adds.

Importantly, the project culture empowered every team member – from store personnel to site supervisors – to pause work in the event of a quality deviation, reinforcing accountability across the hierarchy.

Challenges running underground

Underground cabling in rocky and congested areas required significant adaptation of methods. "Although the original design proposed horizontal directional drilling, geological conditions rendered it impractical across large sections," explains Geetha B, Head – Quality (T&D Domestic). "We had detailed technical evaluations and discussions with the client, and we adopted manual trenching methods with their approval."

VOICES FROM
GROUND ZERO



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>
> **Geetha B**
> Head – Quality (T&D Domestic)

To protect cable integrity, teams paid close attention to trench uniformity, bedding preparation, bending radius, and mechanical protection. Even in restricted urban corridors, they maintained compliance with design requirements and installation standards.

Results rooted in discipline

All works adhered to applicable standards and specifications, resulting in a reliable and durable distribution network. "We achieved steady progress despite hilly terrain and rocky strata," notes Chiranjit. "Strong execution practices and close monitoring ensured that we achieved key milestones without compromising quality and safety."

As RDSS Valsad continues towards full handover, the project is an example of how quality, when designed as a system rather than enforced through inspection, becomes sustainable – even under the most demanding conditions. ■

MAINTAINING QUALITY ACROSS LAND AND WATER

120 MW GROUND-MOUNTED & 56 MW FLOATING SOLAR PV PROJECT, NTPC RAMAGUNDAM

Renewables IC

Spanning nearly 400 acres within the NTPC Ramagundam premises, the solar PV project comprising a 120 MW groundmounted plant and a 56 MW floating solar installation presented a rare combination of scale, complexity, and operational constraints. Executed by Renewables IC on an EPC basis, the project involves meticulous planning, rigorous quality systems, and sustained coordination across civil, electrical, and commissioning teams to meet NTPC's exacting standards.

Planning for quality across a complex footprint

With close to 450,000 solar modules to be installed in the midst of geographical, logistical, and operational challenges, it was imperative that the Renewables project team execute with precision right from day one. "From the outset, we recognised that maintaining consistent quality across a geographically dispersed site – executing groundmounted and floating solar works in parallel – would be critical to success," reflects S Balakrishnan, Project Manager. "During the planning stage, we defined clear quality objectives aligned to NTPC's specifications and contract requirements. Our teams prepared method statements, Inspection & Test Plans (ITPs), & activitywise checklists and implemented them early to ensure standardised execution across all work fronts."

Strong coordination between quality, execution, planning, and procurement functions helped identify potential risks early and minimise rework. This upfront alignment proved vital as the project progressed into largescale piling, civil foundations, and extensive electrical installations.



During the planning stage, we defined clear quality objectives aligned to NTPC's specifications and contract requirements. Our teams prepared method statements, Inspection & Test Plans (ITPs), & activity-wise checklists and implemented them early to ensure standardised execution across all work fronts.

S Balakrishnan
Project Manager



VOICES FROM **GROUND ZERO**





Thin-film modules installed at site

VOICES FROM
GROUND ZERO

> We raised and closed more than 1,258 RFIs within stipulated timelines, ensuring that no activity progressed without due inspection and approval. After securing approvals from railway authorities, we executed the crossing over a 42 m stretch using approved methodologies, completing the activity safely and within schedule.

Sunanda Krishna Babu S
Project Quality Head



Executing under operational and logistical constraints

The project site, located within an operational NTPC thermal power plant, brought with it strict Central Industrial Security Force (CISF) security protocols that affected material movement and workforce mobilisation. In addition, the solar plant layout required execution across multiple blocks, with key installations like the switchyard located nearly 10 km away from the Central Monitoring & Control Station (CMCS) building. In the absence of transmission lines, the team executed an extensive 242 km of high-tension (HT) cablelaying scope to connect the generation areas to the switchyard.

Quality control in such conditions demanded tight inspection discipline. "We raised and closed more than 1,258 RFIs within stipulated timelines, ensuring that no activity progressed without due inspection and approval," notes Sunanda Krishna Babu S, Project Quality Head. All inspections and test results were verified in the presence of NTPC representatives, reinforcing transparency at every stage.

A particularly sensitive activity involved HT cable laying beneath a railway crossing. "After securing approvals from railway authorities, we executed the crossing over a 42 m stretch using approved methodologies, completing the activity safely and within schedule," he adds.

VOICES FROM
GROUND ZERO

> More than 1,370 tests – including soil compaction, concrete cube compressive strength, slump tests, piling tests, and material testing – were conducted against an executed concrete quantity of over 11,200 m^3, all in the presence of the client.

Wagdevi Kulkarni
Head – Quality, Renewables India



Quality in control

Comprehensive testing formed the backbone of quality assurance at site. "On the civil side, more than 1,370 tests – including soil compaction, concrete cube compressive strength, slump tests, piling tests, and material testing – were conducted against an executed concrete quantity of over 11,200 m^3, all in the presence of the client," informs Wagdevi Kulkarni, Head – Quality, Renewables India.

Electrical works were subjected to equally rigorous scrutiny. "Continuity, insulation resistance, high-voltage, earth resistance, transformer, and cable tests were carried out as per approved procedures," notes Vidya Bhaskar Pandey, Senior Engineer (Civil) – QA/QC. "With progressive testing, we ensured early identification of issues and smooth transition into precommissioning and commissioning activities."



Despite the scale and pace of execution, the project achieved zero NCRs or observations from the client, reflecting the robustness of its quality systems.

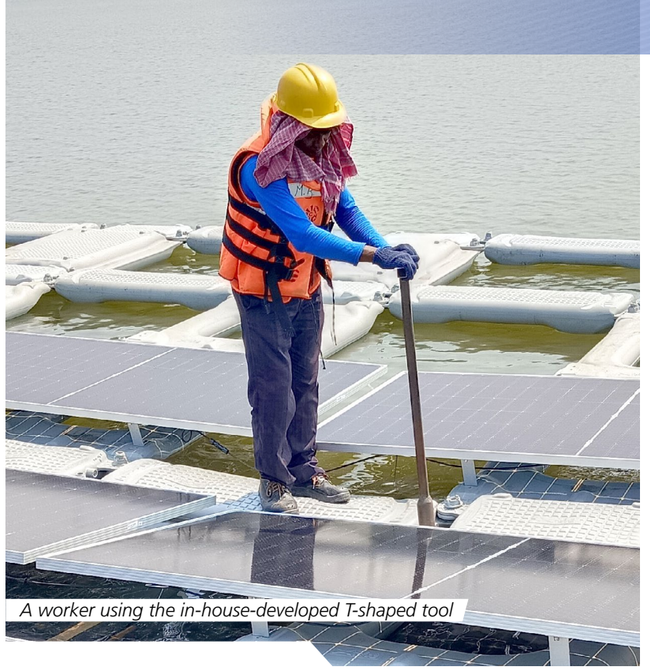
Thin-film technology – A first

A significant technical milestone for the team was the deployment of thin-film solar modules. "Though these modules are lightweight and cost-effective, they pose challenges in handling and installation because of their flexibility, separate MC4 connections, and stricter alignment requirements," explains Vidya. "Through structured supervision and controlled handling practices, we successfully installed 67,536 thin-film modules, achieving the required torque and alignment without compromising quality."

First Time Right

Structured induction and training programmes reinforced quality awareness at site. "We held over 2,121 Quality Training and Behavioural Training (QTBT) sessions, covering 11,732.5 training hours across workers, supervisors, and staff," elaborates Sunanda. These sessions were supplemented by case studies, lessons learned, and mockup demonstrations aimed at preventing recurrence of errors.

Regular joint site walkdowns with construction managers and client representatives helped identify potential quality issues early and enabled immediate corrective actions at site.



A worker using the in-house-developed T-shaped tool

"Mockups played a key role in avoiding rework and improving product quality," says Sunanda. The team developed several mock-ups for different activities, such as a handmade T-shaped tool to tighten the floats with connectors. "This simple in-house tool ensured uniform tightening, improved accessibility in confined areas, and reduced the risk of loose connections. We deployed 30 such tools across the 9 arrays of the site, which helped save costs & time and improved the overall quality and reliability of the float installation."

For the module mounting structure (MMS), the team made prototype tables to train workers on the right alignment, correct nut–bolt–washer selection and fixing, and torque tightening. New gangs were able to prevent misalignment, missing fasteners, and improper torque, reducing MMS-related rework and thus saving both time and cost.

VOICES FROM GROUND ZERO

> Through structured supervision and controlled handling practices, we successfully installed 67,536 thin-film modules, achieving the required torque and alignment without compromising quality.

Vidya Bhaskar Pandey
Senior Engineer (Civil) – QA/QC



Digital driving quality

The site team used digital platforms extensively to support quality monitoring and documentation, leveraging Quality Sanyog and QIR for managing deviations, inspections, and corrective actions, significantly reducing paperwork while improving traceability.

"The site team managed 968 potential incident reports (PIRs) and 24 quality incident reports (QIRs) digitally, supported by more than 2,800 activitywise checklists and 1,368 test reports, all maintained with complete traceability and client endorsement," relates Wagdevi.

Client satisfaction as a quality benchmark

The project has achieved a 97.5% customer satisfaction score and received 12 quality certifications from NTPC, along with multiple appreciation certificates and commendations for quality performance. These outcomes reflect not only adherence to specifications but also the team's responsiveness, transparency, and collaborative engagement with the client.

Reflecting on the journey, Balakrishnan notes that maintaining quality across such a diverse scope required unwavering discipline in planning and execution: "From largescale piling and civil works to floating solar installations and longdistance HT cable networks, every activity was governed by the same principle: build it right the first time."

The NTPC Ramagundam Project is a demonstration of how structured planning, consistent training, and disciplined quality systems can deliver dependable outcomes. ■



DELIVERING QUALITY AGAINST ALL ODDS

CHITTORGARH WATER SUPPLY PROJECT, RAJASTHAN, PACKAGE 01

Domestic Water & Effluent Treatment SBG



170 MLD water treatment plant

When Package 01 of the Chittorgarh Water Supply Project, Rajasthan, was awarded to L&T Construction, the mandate was clear: build a reliable water infrastructure for thousands of households, with quality as a non-negotiable priority. The project includes construction of intake systems, water treatment plants of varying capacities, clear water reservoirs, elevated service reservoirs, pump houses, and an extensive pipeline network covering raw water, clear water, and distribution systems across regions.

The Quality Award at the Performers League 2025 reflected not just engineering capability but a disciplined approach to planning, execution, and teamwork anchored in a simple principle: Get it right the first time. At Chittorgarh, quality did not begin at execution. It began at preparation. The team adopted a Zero Rework philosophy, focusing on preventing defects rather than correcting them later. Every major activity was preceded by detailed method statements, activity-specific risk assessments, and physical mock-ups that established benchmarks before actual work began.

VOICES FROM **GROUND ZERO**

We invested time upfront in planning and mock-ups. It helped us remove ambiguity at site and align every team member on what good quality looks like before execution started.

Ankit Bansal
Project Manager



This approach proved especially effective in repetitive structures. Precast shuttering panels and standardised inspection checkpoints ensured consistency across assets such as clear water reservoirs and treatment plant slabs. “We invested time upfront in planning and mock-ups,” explains Project Manager Ankit Bansal. “It helped us remove ambiguity at site and align every team member on what good quality looks like before execution started.”

Digital tools driving daily decisions

The project integrated digital practices into routine site management, using them not as add-ons but as essential tools. Daily dashboards tracked baseline versus actual progress, while geo-tagged photographs supported site approvals and documentation. This enabled faster decision making and immediate visibility of deviations. “Digital tracking allowed us to identify issues on the same day,” shares Quality Head Ravi Shankar Ray. “That immediacy helped us respond quickly



221 MLD intake well



and maintain consistency across all work fronts. The outcome was a stable execution cycle with zero major non-conformance reports."

Workforce ownership of quality

A key differentiator at Chittorgarh was the role of the workforce in maintaining quality standards. Weekly quality toolbox talks (TBTs) were conducted to explain not only procedures but also the reasoning behind them. Workers were trained to understand common issues such as honeycombing in concrete and improper jointing in pipelines.

Over time, this created a shift. Workers began identifying and reporting potential defects themselves. "It was important for us to move quality beyond supervision," says Ankit. "When workers take ownership, the entire system becomes more reliable."

VOICES FROM
GROUND ZERO

> Digital tracking allowed us to identify issues on the same day. That immediacy helped us respond quickly and maintain consistency across all work fronts. The outcome was a stable execution cycle with zero major non-conformance reports.

Ravi Shankar Ray
Quality Head



Managing scale and dispersion

One of the defining challenges of the project was its geographical spread across a 150 km diameter, combined with cross-state pipeline execution extending into Madhya Pradesh. Managing quality across such dispersed locations required more than conventional supervision; the team responded with a structured and system-driven approach. Decentralised quality control teams were deployed across locations, each responsible for maintaining uniform standards. Every activity was backed by a Request for Inspection, ensuring that work began only after due verification. Frequent site visits, continuous monitoring, and regular progress reviews helped maintain oversight despite the distances involved. Standardised procedures ensured that the same technical specifications and quality benchmarks were followed across all sites, while clearly defined communication channels kept central leadership updated in real time.

"Consistency across dispersed locations required strong systems," relates Ankit. "Standard processes and continuous monitoring helped us maintain the same quality benchmarks everywhere." Despite logistical constraints, the project maintained consistent output quality across all work fronts.

The cross-country pipeline component brought its own set of challenges, including terrain variations, local sensitivities, and regulatory coordination across Rajasthan and Madhya Pradesh. The team addressed these through close liaison with government authorities and proactive engagement with local communities, enabling smooth execution of pipeline works across state boundaries.

Practical innovations at site

The project team introduced several practical innovations to improve efficiency and outcomes. In pipeline works, Progressive Joint Testing replaced conventional long-stretch testing. By dividing testing into smaller sections, the team could identify leaks early, reduce rework, and accelerate readiness for commissioning.

For civil structures, a staged dewatering system was installed ahead of the monsoon season, ensuring continuity of work and protection of structural integrity.

The team also rethought conventional practices. GI plate formwork was replaced with plywood panels, resulting in improved finish quality, better handling, and enhanced safety.



MS pipeline laying & weld jointing work

"For the 19,400 KL clear water reservoir, we adopted a hybrid concrete construction approach, combining precast and cast-in-situ methods to strike the right balance between speed and flexibility," says Naushad Ali, WTP In-charge.

Further improvements were achieved through monolithic concreting of ESR columns and braces. By adopting tremie pipe methods and monolithic shuttering, the team was able to cast full column heights in a single pour. This reduced construction joints, improved alignment, and enhanced finish quality. The approach also delivered measurable gains, including significant savings in working hours and reduction in construction time.

In pipeline works, a weld joint automation trial was carried out for large-diameter MS pipelines in collaboration with technology partners. The trial focused on improving weld quality and productivity, with performance parameters closely monitored for future adoption.

Across all activities, a 100% Request for Inspection system reinforced the First Time Right approach, ensuring that quality checks preceded execution rather than followed it.

Safety and quality working together

At Chittorgarh, safety and quality were treated as interconnected priorities. Mandatory hold points were introduced for critical activities, requiring joint clearance from quality and safety teams. Whether it was rebar work at height or pipeline handling, each step followed clearly defined protocols. This approach contributed to a safe work environment with zero major accidents, while reinforcing discipline across operations.

Reflecting on the journey, Ankit says, "Quality is not a separate activity. It is built into every decision we take, from planning to execution."

For the team at Chittorgarh, the philosophy remains straightforward. Doing the job right the first time saves time, builds trust, and sustains progress. ■

VOICES FROM GROUND ZERO

> For the 19,400 KL clear water reservoir, we adopted a hybrid concrete construction approach, combining precast and cast-in-situ methods to strike the right balance between speed and flexibility.

Naushad Ali
WTP In-charge



RACING TO THE FINISH LINE

5.1 LTPA FERTILIZER COMPLEX – PROCESS PLANT AT HZL CHANDERIYA, RAJASTHAN

Minerals & Metals IC



Di Ammonium Phosphate (DAP) Plant

M&M IC's Fertilizer Complex Project in Chanderiya is rapidly approaching completion, marking a significant achievement for Hindustan Zinc Limited (HZL). Designed to produce 180,000 tonnes per annum (TPA) of phosphoric acid, the facility will enable the manufacture of 510,000 TPA of di-ammonium phosphate (DAP). This substantial output will support India's agricultural sector and lessen the nation's reliance on imported fertilisers.

The multiplier effect

Awarded to L&T in February 2023 on an EPC contract, the project encompasses extensive construction activities: 37,000 cum. of concrete, 11,500 MT of structural and technological works, 5,500 MT of equipment erection, and over 250,000 inch-metres of piping. Advanced engineering solutions have been developed in collaboration with JESA Technologies, USA, optimising raw material utilisation, energy efficiency, and emissions control across the plant's systems. Currently, approximately 85% of major civil works are completed, with structural, mechanical, electrical, and instrumentation tasks progressing towards scheduled completion by July 2026.

The facility is designed to produce 1.8 lakh tonnes per annum of phosphoric acid, which will feed the manufacture of 5.1 lakh tonnes of DAP every year. DAP is one of the most widely used fertilisers in India, and the country has long depended on imports to meet demand. This plant is meant to change that.

"This project is a testament to teamwork, innovation, and our collective commitment to delivering excellence," says Mukesh Kumar, Project Director. "Receiving the L&T Construction Quality Award marks an important milestone for us, but more significantly, it validates our approach of integrating planning precision with digital execution." For M&M IC, this project

VOICES FROM **GROUND ZERO**

Periodic quality audits, backed by a structured feedback mechanism, have reinforced the quality culture across every team and every package. With minimised rework, the outcome has been consistent. We have maintained an 'Excellent' customer rating throughout our tenure.

Mukesh Kumar
Project Director



37,000 cum.
of concrete

11,500 MT
of structural and technological works

5,500 MT
of equipment erection

250,000+
inch-metres of piping

represents a deliberate and successful expansion into an entirely new domain.

Building inside a running plant

Constructing an entirely new industrial facility within its active perimeter meant that every decision, every lift, every excavation had to be planned with awareness of the facility operating right next door.

The challenges were numerous and relentless. Deep excavations exceeding 20 m had to be carried out in hard rock strata. Heavy lifting operations had to be executed in confined spaces with limited clearance. Strict SOPs governed every activity near the running plant. Construction crews worked through arid climatic extremes – blistering summers and cold winters – while coordinating multiple specialised streams of work simultaneously.



Hemihydrate & Dehydrate Filter Building



Phosphoric Acid Storage Tanks

VOICES FROM
GROUND ZERO



> The Construction Methods & Planning Cell (CMPC) extended support for deep excavation works exceeding 20 m in rocky strata by proposing specialised ground protection measures such as soil nailing, controlled rock splitting, and optimised rock-breaking methodologies. Through these interventions, we completed the underground works within schedule without incidents.
>
> **Abishek Gupta**
> Project Manager (Civil)

"Our team tackled the most daunting of civil challenges," Abishek Gupta, Project Manager (Civil), states proudly states. "The Construction Methods & Planning Cell (CMPC) extended support for deep excavation works exceeding 20 m in rocky strata by proposing specialised ground protection measures such as soil nailing, controlled rock splitting, and optimised rock-breaking methodologies. Through these interventions, we completed the underground works within schedule without incidents." Approximately 30,000 cum. of concrete have been poured to date, with structural works now at their final stage across various structures.

On the mechanical side, the problem was one of space and method. The plant requires specialised equipment like truck tipplers, bucket elevators, crushers, agitators, granulators, dryers, scrubbers, clarifiers, cooling towers, and reactors to be installed. "Using conventional techniques simply wasn't feasible, given the constraints of the site," says Muthuraj P, Project Manager (Mechanical). "With CMPC's support, we developed meticulous lifting plans that significantly enhanced work progress. The adoption of modular erection methods, which are two to three times faster than conventional segmental construction, provided a significant advantage and helped maintain schedule."

Building the team from the ground up

At Chanderiya, assembling the workforce turned out to be one of the project's most complex undertakings.

The original plan was to mobilise experienced and specialised manpower from across India. Local influences, however,

VOICES FROM
GROUND ZERO



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Muthuraj P
Project Manager (Mechanical)

made it difficult to bring in skilled external resources, forcing the team to pivot towards locally available talent, who, while willing and capable, needed to be brought up to L&T's standards of quality and safety.

The response was methodical. Skilled workers from other states were engaged to work alongside local hires, enabling on-the-job mentoring and knowledge transfer. Multiple structured training programmes upgraded the skills of local workers and aligned them with L&T's systems and quality requirements.

By drawing on local talent and investing in their development, the team cultivated a workforce that took genuine ownership of their tasks. This sense of responsibility was reflected in their commitment to meeting execution standards. The approach not only ensured adherence to quality and safety protocols but also fostered a culture of accountability and pride among workers, driving consistent performance throughout the project.

Today, more than 4,000 personnel from various parts of the country are engaged in delivering this project. Special incentive schemes have been introduced, along with continuous improvement of facilities at both the worksite and the workers' habitat, which has been designed to withstand Rajasthan's extreme summer heat as well as its cold winters. Good practices are recognised publicly. Workers receive monthly awards for performance. The culture that has emerged is one of pride, ownership, and camaraderie.

Quality as a way of working

Molla Barkat Hussain, Quality In-charge, outlines the approach clearly: "To simplify construction activities and ensure adherence to desired quality standards, we prepared detailed construction methodologies at the outset, establishing clear work procedures and comprehensive quality plans prior to commencement of each activity. We placed strong emphasis on aligning the team's understanding with customer requirements, ensuring all efforts were directed towards delivering expected outcomes."

Every major activity was preceded by a mock-up. Job-specific training was conducted at regular intervals. "Periodic quality audits, backed by a structured feedback mechanism, have reinforced the quality culture across every team and every package," says Mukesh. "With minimised rework, the outcome has been consistent. We have maintained an 'Excellent' customer rating throughout our tenure."

VOICES FROM
GROUND ZERO

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Molla Barkat Hussain
Quality In-charge





TT-3 cum Screen & Crusher House



Scrubber & Granulation Building of DAP Plant



Flash Cooler & Entrainment Separator Structure

Planning that keeps the machine moving

On any EPC project, especially on a lump-sum turnkey (LSTK) contract, planning is not just a support function; it is the centre of the whole operation.

"We undertook meticulous strategic planning to maximise all available work fronts by ensuring advance mobilisation of materials and manpower," Ananda Panigrahi, Planning In-charge, describes the approach. "Our proactive preparedness enabled uninterrupted execution while maintaining steady physical and financial progress, helping us achieve timely procurement through fast-tracking proposal approvals and close coordination with stakeholders."

The results speak directly to the discipline that was followed. The team has achieved more than 90% invoicing against material deliveries, strengthening project cash flow. Despite the inherent financial pressures of an LSTK contract, where payment terms can be stringent and margins challenging, the planning and commercial teams navigated the constraints through structured financial management and proactive follow-ups, ensuring subcontractors were paid on time.

Tech powering the push

From design & planning to construction & commissioning, technology has been embedded at every layer.

Scheduling and milestone tracking run through Primavera P6, enabling the team to proactively identify critical activities before they become problems. A comprehensive 3D Building Information Model of the entire project helps detect clashes and resolve design conflicts, eliminating delays and rework. The Wrench app ensures timely receipt of design drawings from EDRC, strengthening coordination between designers, consultants, and the client for faster approvals.

On the workforce side, nearly 15,000 workers have been onboarded through the Workforce Management System, a biometric-based platform that tracks attendance, deployment, and subcontractor engagement data in real time, improving manpower planning and ensuring transparency. For materials, the CONQUER app has managed approximately 35,000 cum. of concrete, streamlining monitoring of production & dispatch and enabling quality inspections, RFI tracking, pour card generation, and NCR management.



Phosphoric Acid Plant

Equipment is monitored through IoT devices deployed across the site, tracking materials and operational efficiency through real-time data. "A Fuel Dispensing Management System keeps resource consumption visible and anomalies detectable immediately," adds Ananda. "The GPS-based Spotrack system monitors the productivity and operational status of major equipment in real time, enabling sharper asset utilisation decisions."

The SHEILD app manages the entire safety ecosystem. With more than 8.25 million safe working hours logged and zero Lost Time Injuries recorded, the project's safety culture has earned multiple customer appreciations and the International Safety Award from the British Safety Council with a distinction rating, a recognition that reflects systemic commitment.

The plant has also been designed with its environmental footprint firmly in mind. Water recycling is enabled through an effluent treatment plant, while robust emission management systems and advanced pollution control measurs ensure compliance with environmental norms. Water conservation technologies minimise ecological impact, especially important in a region where water scarcity is a reality.

The final push

With the structural & mechanical works in their final stage and electrical & instrumentation activities progressing in parallel, the project remains firmly on course for delivery by July 2026. The implementation of modular erection methods, specialised ground protection, and an integrated digital coordination framework has allowed the team to absorb and overcome challenges.

The finish line is close. Everything that Mukesh & team have done to get here makes it clear that when they cross it, the project they hand over will be something to be genuinely proud of. ■

VOICES FROM
GROUND ZERO



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Ananda Panigrahi
Planning In-charge

LAYING THE FOUNDATIONS FOR QUALITY DELIVERY

AUGMENTATION OF SLIPWAY NO. 4 AT HSL, VISAKHAPATNAM

L&T GeoStructure



At the Hindustan Shipyard in Vizag, the Augmentation of Slipway No. 4 is a proof of the team's strong focus on quality, discipline, and working together. Throughout the execution, the team continuously sought to uphold high standards, demonstrating both diligence and a proactive mindset in their daily operations.

The scope involved constructing a sprawling crane track, installing MEP services, gas utilities, a robust firefighting system, and erecting the mighty Goliath crane. "This defence infrastructure, executed under stringent inspection regimes, is a feather in our cap," says a proud Sunil Kumar Dabre, Project Manager. The team's efforts were further validated by three major client recognitions and the prestigious Best Vendor Award of the Year 2025 from Hindustan Shipyard Limited (HSL).

The 300 T Made-In-India Goliath crane, manufactured by Minerals & Metals (M&M) IC, stands as a testament to L&T's strong technical competence and its manufacturing & execution capability to deliver mega-tonnage yet milli-precise machinery.

The Goliath crane has been purpose-built to handle extremely heavy and oversized ship modules, significantly enhancing productivity and operational efficiency at the shipyard. With a span of 85 m, lifting height of 65 m, and a capacity of 300 T, the crane is engineered to seamlessly handle complex lifting operations with high reliability and safety.

"Quality and timeliness go hand in hand," Sunil adds. "Our approach was clear: plan precisely, supervise closely, and execute responsibly. Every milestone we achieved was through disciplined coordination and a shared commitment to delivering without compromise, and winning the Quality Award is a testament to this."

VOICES FROM **GROUND ZERO**

This defence infrastructure, executed under stringent inspection regimes, is a feather in our cap. Our approach was clear: plan precisely, supervise closely, and execute responsibly. Every milestone we achieved was through disciplined coordination and a shared commitment to delivering without compromise.

Sunil Kumar Dabre
Project Manager



VOICES FROM
GROUND ZERO

> Land and marine piling, as well as dismantling the cofferdam, required close supervision and a structured approach. For steady progress under varying site conditions, we needed to function at peak efficiency, and that's precisely what we did.

Shashanka Pakreh
Construction Manager



Laying foundations

Beneath the surface, the project's foundation system took shape with 1,222 land piles and 36 marine piles. Systematic planning and continuous monitoring enabled land piling productivity of roughly six piles per day. "Land and marine piling, as well as dismantling the cofferdam, required close supervision and a structured approach," explained Shashanka Pakreh, Construction Manager. "For steady progress under varying site conditions, we needed to function at peak efficiency, and that's precisely what we did."

Marine piling progressed at a rate of two piles per month, overcoming challenges posed by tidal influences and strict safety requirements. Persistent coordination and resource management kept progress steady, even when the sea tried to slow them down.



Racing against time

"One of the most demanding tasks was the execution of the Slipway No. 4 Deck Slab," recalls Suman Nag, Construction Manager. "Its sheer size – 37.5 m wide, 236 m long, and 0.9 m deep – required about 700–750 cum. of concrete within a single 24-hour cycle, pouring at a rate of 30 cum. per hour."

"To achieve this, three batching plants worked in tandem, supplying concrete without pause," he elaborates. Security constraints, site access challenges, and movement restrictions during peak hours added to the complexity. "Through advance scheduling, meticulous dispatch planning, and structured communication, we ensured a continuous supply. The slab was completed on schedule, meeting all quality standards."

"We carried out the works with careful planning, coordination, and clear responsibilities," adds Shashanka. "The commitment of the team to timely delivery and quality compliance made it possible to integrate multiple work fronts and finish within the committed timeline."

Monitoring and maintaining timelines

Nunna Sameer Guptha, Planning In-charge, describes their planning methodology as proactive and meticulous: "Detailed activity sequencing and continuous monitoring kept the momentum going. By anticipating constraints and aligning resources, we ensured critical activities were completed within committed timelines while upholding quality standards."

Critical tasks, such as land and marine piling and the deck slab execution, were broken down into achievable daily targets, with progress reviewed each day and cross-functional coordination meetings held regularly. Adopting a 'First Time Right' philosophy, the team integrated quality checks within the execution, rather than as post-activity inspections. This approach, coupled with interface management between civil, mechanical, and allied services, kept workflow uninterrupted and reduced rework.

The defence nature of the project demanded rigorous approvals and inspection protocols; documentation,

VOICES FROM
GROUND ZERO

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Suman Nag
Construction Manager



VOICES FROM
GROUND ZERO



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Nunna Sameer Guptha
Planning In-charge





Sanjay Kumar Pradhan
Project Manager,
300 T Goliath Crane Package, HSL Vizag
Minerals & Metals IC

The erection's complexity demanded meticulous planning and flawless execution. From managing tight space constraints to handling suspended loads in high winds, every stage required careful sequencing and coordination. A structured approach, breaking down activities, tracking progress, and aligning engineering, manufacturing, and site teams, ensured risks were mitigated and the lift completed safely and successfully.

VOICES FROM GROUND ZERO

In a defence project, precision and compliance are paramount. Through supervision, preventive inspections, and continuous engagement with the workforce, we built quality into every stage of execution rather than inspecting afterwards.

Batna Devi
Quality In-charge



procedural adherence, and proactive inspections became routine. "In a defence project, precision and compliance are paramount," Batna Devi, Quality In-charge, sums up. "Through supervision, preventive inspections, and continuous engagement with the workforce, we built quality into every stage of execution rather than inspecting afterwards."

Upskilling the workforce

During peak construction phases, skilled manpower was in short supply. Structured training sessions upgraded new workers' skills, while experienced supervisors and engineers mentored crews, demonstrating correct techniques and safety practices. Performance monitoring and feedback ensured continuous improvement, transforming a resource challenge into an opportunity for workforce development.

Each milestone achieved reinforced confidence and strengthened inter-team coordination. With all civil works completed, the Slipway No. 4 team's story demonstrates what can be achieved by a determined team aiming to set higher standards. ■

DIGITAL AWARDS



Innovative Digital Solution

SPTrack,
L&T Energy – Hydrocarbon



Innovative Digital Solution

Flood Risk and Reservoir Optimization,
Domestic WET SBG



Best Manufacturing Plant

L&T Shipbuilding, Kattupalli
L&T Precision Engineering & Systems



Best Manufacturing Plant

Transmission Line Tower Manufacturing Unit, Pithampur
Power Transmission & Distribution IC



Best Digitally Enabled Project

2,000 MW Al Muwayh Solar PV IPP, KSA
Renewables IC



Best Digitally Enabled Project

Bhogapuram International Airport Project (MVIAL), Andhra Pradesh
Buildings & Factories IC



Influential Digital Ambassador

Rahul Chauhan
Heavy Civil Infrastructure IC

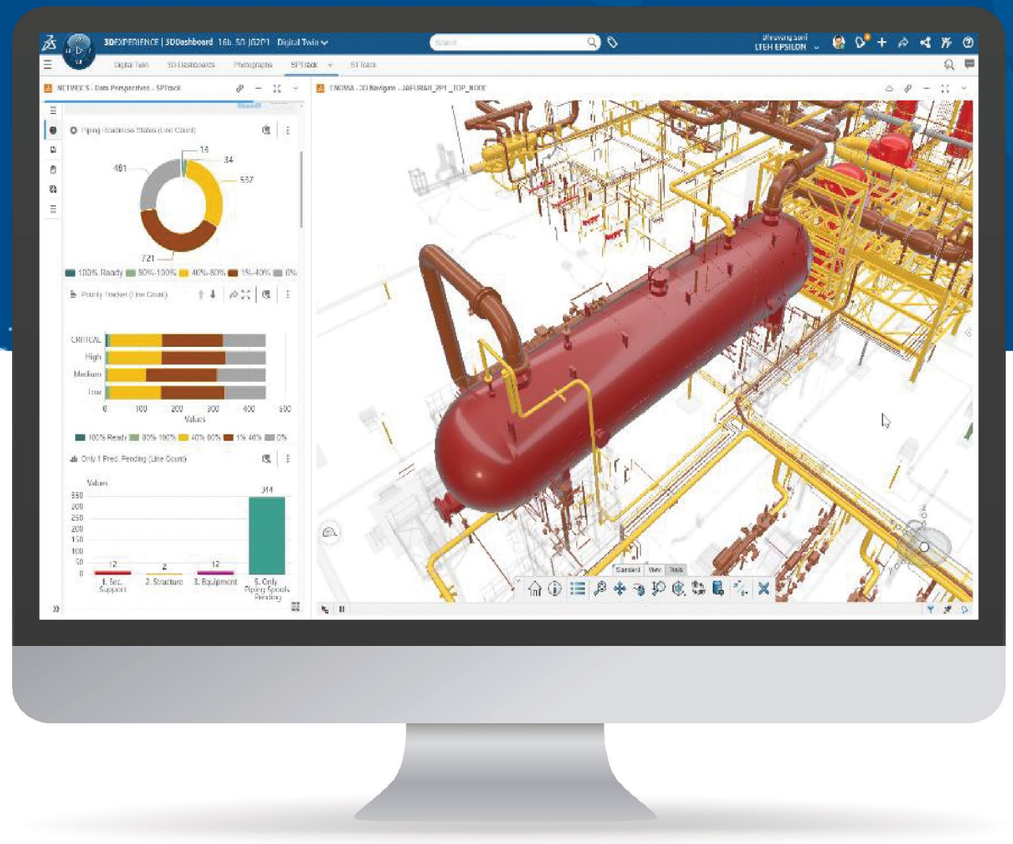
Celebrating
the best performers in
digital innovation

Innovative Digital Solution

SPTrack

L&T Energy – Hydrocarbon

A unified digital platform designed to ensure continuous erectable piping work fronts for onshore EPC projects by integrating planning, material readiness, fabrication status, and erection dependencies into a single execution view. SPTrack enables line-level planning and predecessor-readiness forecasting, addressing one of the most persistent schedule risks in hydrocarbon EPC projects.



Key digital interventions

- Integrated line-level autoplanning using advanced optimisation (Gurobi Solver) with 15+ real-world readiness constraints
- 3D-enabled linkage of piping with structures, equipment, and civil interfaces using the 3DS Connector platform
- Priority-based soft allocation of materials and fabricated spools via eALPS Nxt
- Predictive forecasting of erectable fronts based on cross-functional predecessor readiness
- KPI-driven alerts to improve schedule adherence and execution reliability

Benefits & impact

- Ensured continuous availability of erectable piping fronts, significantly reducing resource idling
- Improved execution predictability through early identification of precursor constraints
- Reduced rework and expediting through full-kit readiness tracking
- Enhanced inventory handling and material utilisation efficiency
- Shift from bulk-driven execution to line-level, data-driven planning and control

Adoption & scalability

Deployed across multiple mega EPC projects, including Jafurah Phase-2 Package-1, Jafurah Package-31, and IAVL Tanks Project, with enterprise-wide rollout underway. Early implementations have demonstrated measurable gains in productivity, schedule reliability, and execution discipline.

Innovative Digital Solution

Flood Risk and Reservoir Optimisation

Domestic Water & Effluent Treatment SBG

An in-house digital engineering solution that integrates GIS automation, LiDAR data, climate inputs, and BIM-based visualisation to transform reservoir modelling and flood risk analysis into a fast, accurate, and fully automated workflow. The solution enables data-driven reservoir design, optimised Full Reservoir Level (FRL) decisions, and climate-resilient flood modelling for large-scale water infrastructure projects.

Key digital interventions

- Parametric, rule-based bund modelling enabling rapid modification of geometry with real-time impact assessment on storage, earthwork, and cost
- Dynamic FRL sensitivity analysis evaluating storage, submergence, energy demand, and earthwork variations across multiple scenarios
- High-resolution GIS-based land acquisition mapping over cadastral boundaries for accurate submergence and bund footprint estimation
- Climate-integrated IDF dashboard generating future-ready rainfall intensity inputs using climate projections
- End-to-end GIS automation for flood modelling, including watershed delineation, stream extraction, cross-section generation, and GIS-to-SWMM model export
- BIM–GIS 3D flood visualisation, overlaying flood simulations on asset and terrain models for structure-level risk assessment



Efficient reservoir design through geospatial automation


BIM–GIS-powered rainfall simulation & real-time flood visualisatio

Benefits & impact

- 15× productivity improvement in reservoir modelling; iteration time reduced from ~2 working days to under 1 hour
- 60%–70% reduction in flood modelling effort through automation; analysis turnaround reduced from 30–40 days to 5–7 days
- Improved accuracy through LiDAR-based terrain modelling and hydraulic data integration, enhancing design safety and reliability
- Optimised FRL decisions reducing pumping head, land acquisition, operational energy consumption, and long-term O&M costs
- Embedded ESG and climate-resilient design principles into reservoir planning and flood risk assessment

Capability & scalability

Flood risk analysis executed inhouse for 53 structures, with reservoir modelling completed for three reservoirs involving 50+ design iterations. The solution marks a shift from consultant-driven, manual processes to a standardised, scalable, and climate-ready digital engineering ecosystem within Domestic WET SBG.

Best Manufacturing Plant

L&T Shipbuilding, Kattupalli

L&T Precision Engineering & Systems

One of India's most advanced greenfield shipyards, L&T Shipbuilding at Kattupalli has transformed into a model-based, data-driven smart manufacturing facility by embedding digital technologies across engineering, production, quality, safety, and customer engagement. The plant integrates modular shipbuilding and repair operations within a large-scale marine complex supporting strategic defence and commercial platforms.

Key digital interventions

- Model-Based Enterprise (MBE) framework with 3D immersive model reviews and digital walkthroughs
- Automated production drawing extraction and 4D planning integrating design, planning, and ERP
- Real-time, model-based issue resolution between engineering and yard operations
- Smart automation including COBOT welding, H-beam automation, laser scanning, and tracer systems
- IoT-enabled monitoring of energy, fuel, temperature, humidity, and machine utilisation
- End-to-end digital traceability for materials, cables, spools, and assets across stores and shop floor
- Digital EHS systems including AI-based helmet detection, VR safety training, and online work permits
- Integrated quality dashboards covering cost of poor quality (COPQ), first time right (FTR), non-destructive evaluation (NDE), calibration, and warranty metrics
- Customer-facing digital platforms for 3D reviews, digital inspections, and online observation management

Benefits & impact

- Over 80% reduction in drawing preparation effort through automated extraction
- ~30% reduction in welding defects via automation and precision monitoring
- Improved schedule adherence and higher equipment utilisation through connected manufacturing
- Reduced rework and improved FTR performance across production stages
- Shift from experience-based decision-making to predictive, data-driven governance
- Enhanced safety, quality compliance, and audit readiness through proactive digital controls

Strategic value

The digital transformation at Kattupalli has enabled a scalable, Industry 4.0–aligned manufacturing ecosystem, strengthening competitiveness in complex shipbuilding and defence programmes. This recognition reflects measurable value creation, operational excellence, and sustained cultural change driven by digital integration.





Best Manufacturing Plant

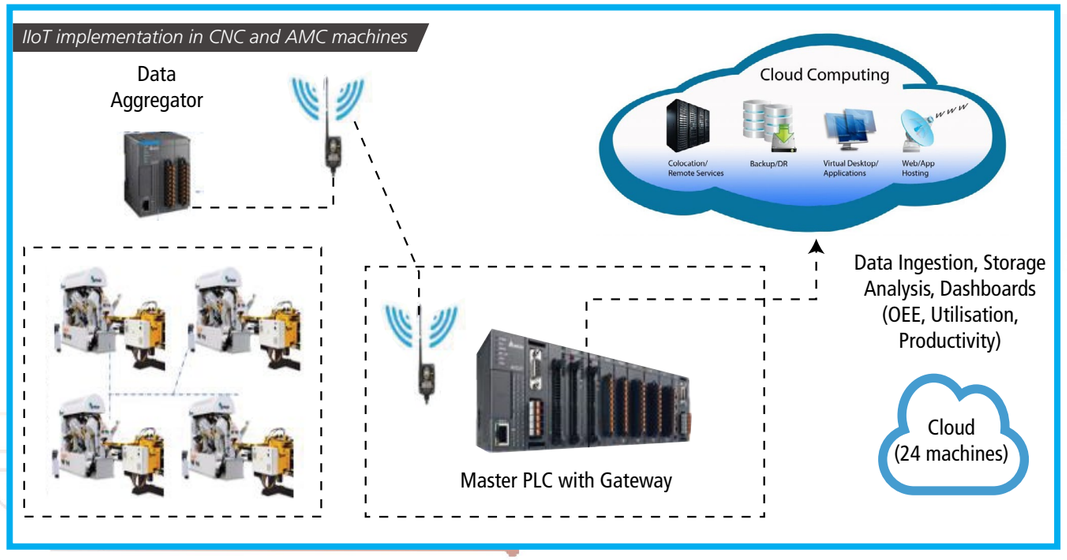
Transmission Line Tower Manufacturing Unit, Pithampur

Power Transmission & Distribution IC

The Transmission Line Tower (TLT) Manufacturing Unit at Pithampur has implemented a comprehensive digital transformation across fabrication and galvanising operations, integrating Industrial IoT (IIoT), process automation, and real-time analytics to enhance productivity, energy efficiency, and operational control in a high-volume, cost-sensitive manufacturing environment.

Key digital interventions

- IIoT integration and online programming for Computer Numerical Control (CNC) and Advanced Machining Centre (AMC) machines to improve productivity and reduce rework
- Programmable logic controller (PLC)–based digital timers for galvanising processes to optimise zinc consumption
- Online energy monitoring and power-factor correction systems for electrical optimisation
- Digitally enabled compressed biogas (CBG) integration for galvanising operations to reduce carbon footprint
- Power BI dashboards for real-time raw-material stock monitoring and finished-goods visibility
- RFID-enabled finished-goods dispatch for enhanced traceability and live tracking
- Distributed transformer monitoring system (DTMS) providing predictive alerts through trend analysis





Benefits & impact

- ₹0.75 crore annual savings through IIoT-enabled productivity improvements and rework reduction
- Rework rate reduced from 0.11% to 0.04%
- 5% reduction in zinc consumption through digital galvanising controls, delivering ₹1.5 crore in recurring savings
- 3% reduction in energy consumption through transformer health monitoring
- Power factor maintained at 1.0, resulting in incentives of ₹0.17 crore
- Eliminated manual monitoring of equipment health and improved uptime reliability
- Reduced carbon footprint through fuel substitution and real-time process parameter control

Operational & strategic value

Digital adoption at TLT Pithampur has strengthened manufacturing discipline, improved cost control, and enabled data-driven decision-making across production, quality, EHS, and plant operations. This recognition reflects the unit's ability to translate digital initiatives into sustained financial, operational, and environmental gains.

Best Digitally Enabled Project

2,000 MW Al Muwayh Solar PV IPP, KSA

Renewables IC

The Al Muwayh Solar PV Project has integrated advanced digital platforms, AI, IoT, and automation across the project lifecycle, spanning planning, workforce management, construction execution, safety, and asset monitoring. This integrated approach has enabled improved productivity, enhanced safety performance, and reliable execution at giga-scale under challenging desert conditions.

Key digital interventions

- Integrated digital project controls using Primavera P6 and Wrench IPMS for real-time tracking of engineering, procurement, construction, and commissioning activities
- AI-enabled smart wearables and workforce monitoring systems for real-time tracking of productivity, movement, and health parameters
- Fully digitised safety and permit-to-work ecosystem with paperless workflows, observations tracking, and digital HSE passports
- Deployment of automation and robotics, including module-mounting robots and autonomous survey systems for improved execution efficiency
- IoT-enabled fleet, equipment, and asset monitoring systems for real-time utilisation tracking and operational planning
- Centralised digital attendance and workforce management platforms for accurate reporting and multi-site scalability
- Supporting tools for execution control, including time-lapse monitoring, digital quality systems, material inspection portals, and QR-based certification systems

Benefits & impact

- ~31% improvement in manpower productivity through real-time monitoring and optimised deployment
- Significant reduction in idle time, resource inefficiencies, and dependency on peak manpower and visa availability
- Improved schedule reliability and faster decision-making through real-time progress visibility and early risk identification
- Enhanced safety performance with 11+ million safe working hours, real-time permit monitoring, and traceable digital safety records
- Improved construction productivity and precision through robotic deployment and automated survey systems
- Reduced operational waste and improved equipment utilisation through IoT-based tracking

Strategic value

The Al Muwayh project demonstrates how a fully integrated digital ecosystem can enhance productivity, strengthen execution control, and enable reliable delivery at giga-scale. This recognition reflects the project's shift toward a scalable, data-driven execution model suitable for large-scale renewable infrastructure in challenging environments.





Best Digitally Enabled Project

Bhogapuram International Airport Project (MVIAL), Andhra Pradesh

Buildings & Factories IC

The MVIAL Project has adopted a comprehensive digital-first execution framework, embedding BIM, reality capture, cloud platforms, and field applications across design coordination, construction management, quality assurance, and decision-making. Digital tools have been deployed as integral execution enablers, supporting delivery under a compressed 33-month timeline.

Key digital interventions

- Advanced BIM adoption, including 3D coordination and 5D integration for subcontractor billing
- BIM with Virtual Reality (VR) and Augmented Reality (AR) for design validation, mock-ups, and client approvals
- Autodesk Construction Cloud for centralised drawing access, version control, and collaboration
- Trimble 3D Laser Scanning integrated with BIM to validate as-built works against design models in real time
- Drone-based monitoring for monthly progress tracking and site-wide visualisation
- Site applications for safety, quality, workmen induction (WISA), Asset Insight, and concrete management





Mock-up approval of skylight design by I Prabhakar Rao, DMD of GMR, using VR

Benefits & impact

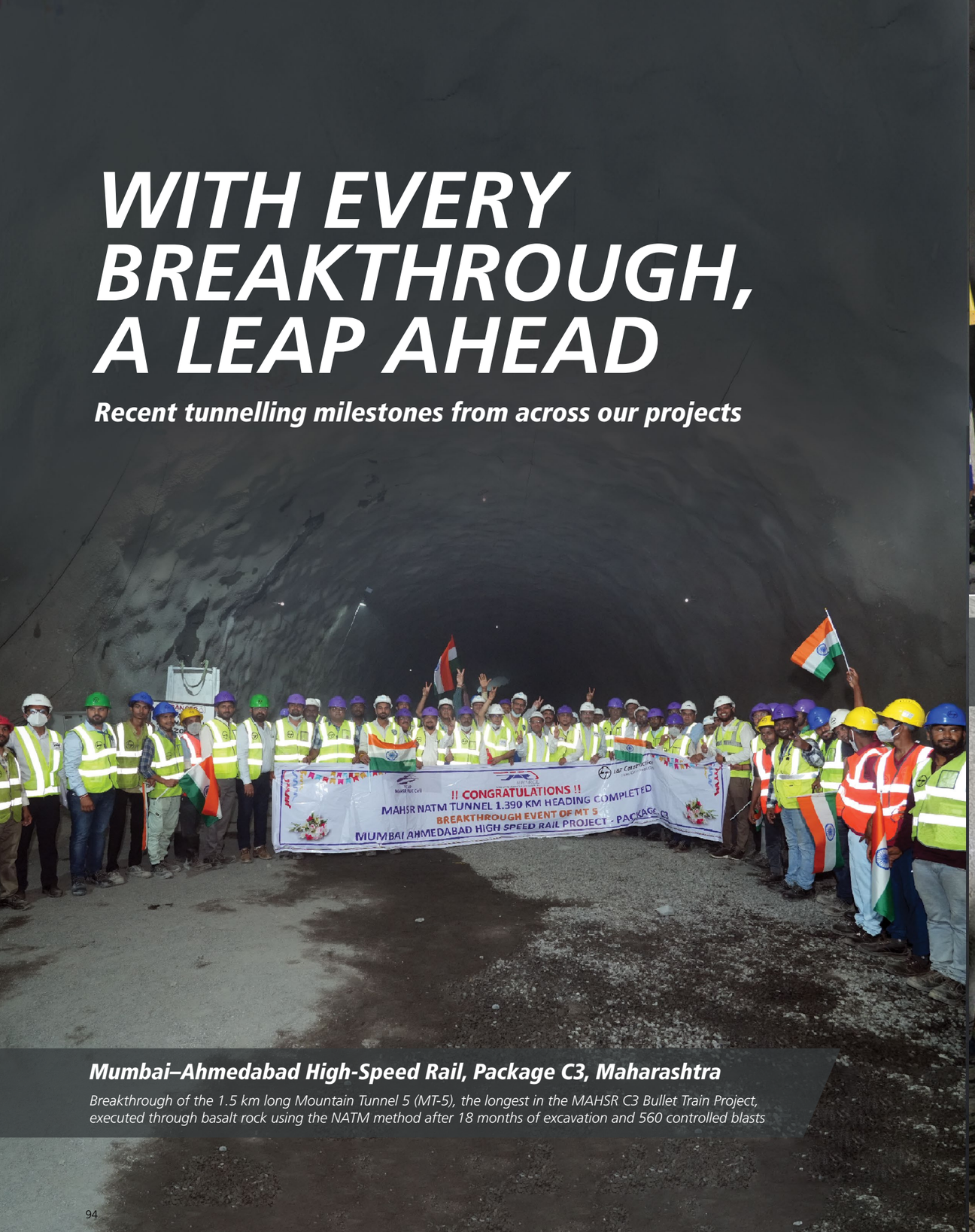
- Early identification of dimensional deviations through laser scanning, significantly reducing rework and corrective effort
- Faster and more informed decision-making through real-time comparison of executed works with BIM models
- Improved coordination across civil, finishes, and MEP works through centralised digital workflows
- Enhanced accuracy in quantity measurement and subcontractor billing through 5D BIM integration
- Greater transparency and faster approvals enabled by VR-/AR-based reviews with stakeholders
- Strengthened schedule control and execution reliability through data-driven monitoring

Recognition & strategic value

The structured use of digital tools has earned the MVIAL Project the BIM Excellence Award for two consecutive years at the B&F Annual Awards. Recognition as Best Digitally Enabled Project reflects how digital integration at Bhogapuram has moved beyond visualisation to become a core driver of execution accuracy, efficiency, and timely delivery in large-scale airport infrastructure.

WITH EVERY BREAKTHROUGH, A LEAP AHEAD

Recent tunnelling milestones from across our projects



Mumbai–Ahmedabad High-Speed Rail, Package C3, Maharashtra

Breakthrough of the 1.5 km long Mountain Tunnel 5 (MT-5), the longest in the MAHSR C3 Bullet Train Project, executed through basalt rock using the NATM method after 18 months of excavation and 560 controlled blasts

Dibang Multipurpose Project (Lot-02), Arunachal Pradesh

Breakthrough of Diversion Tunnel 3 in February 2026, followed by the simultaneous breakthrough of Diversion Tunnels 4 & 5 in April, marking sustained progress across the diversion tunnel network under challenging geological and environmental conditions



Gandhi Sagar Pumped Storage Project, Madhya Pradesh

Final breakthrough of Bottom Horizontal Pressure Tunnel 9 at Gandhi Sagar PSP, completing a network of nine parallel tunnels linking powerhouse units to vertical pressure shafts with precise alignment control



A NEW ALLIANCE FOR WATER INNOVATION

WTC's Centre of Excellence, with CSIR as knowledge partner



COLLABORATIVE RESEARCH

INNOVATION ECOSYSTEM

SUSTAINABLE WATER SOLUTIONS

In a landmark step towards strengthening India's water security, L&T's Water Technology Centre has partnered with the Council of Scientific and Industrial Research (CSIR) to establish a Centre of Excellence at Kanchipuram.

Bringing together L&T's expertise in large-scale water solutions and CSIR's research capabilities, the collaboration will drive next-generation technologies across industrial and municipal water systems, while advancing capacity building and innovation ecosystems.



#JUSTLEAP

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