

CII National Award for Environmental Best Practices - 2023



Reducing Carbon Footprint through Fuel Monitoring and Asset Management using Digital

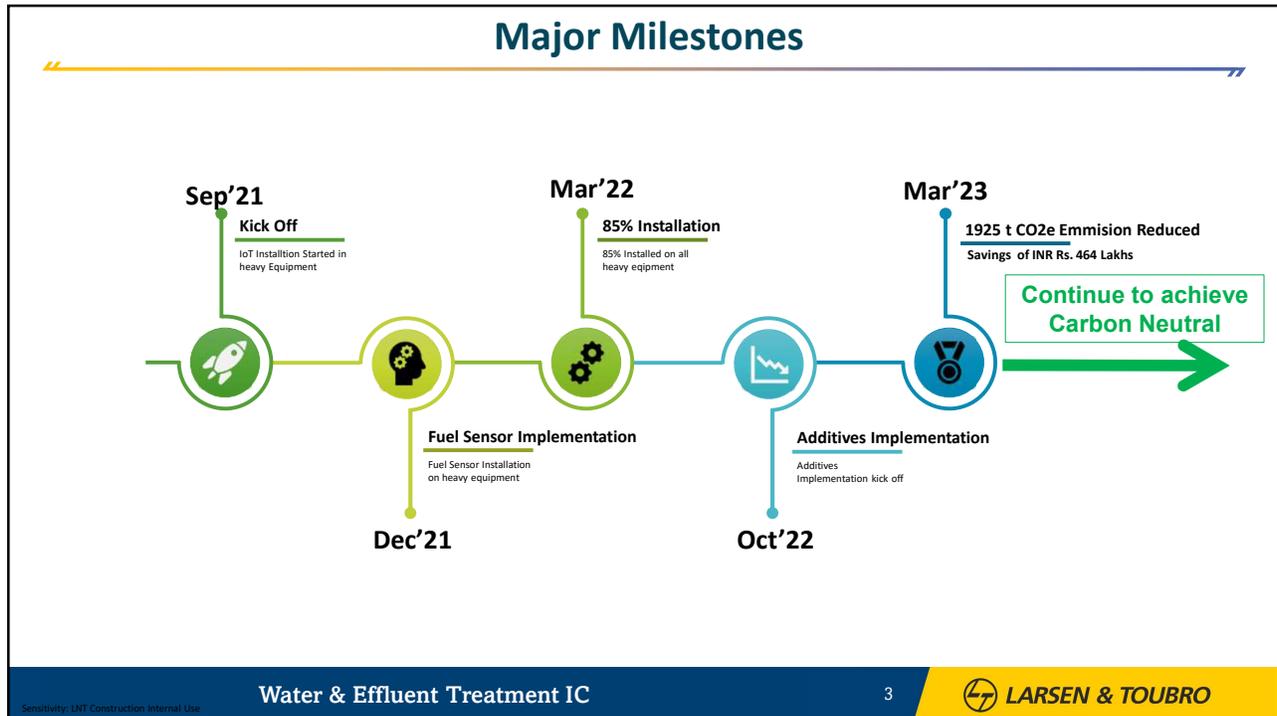
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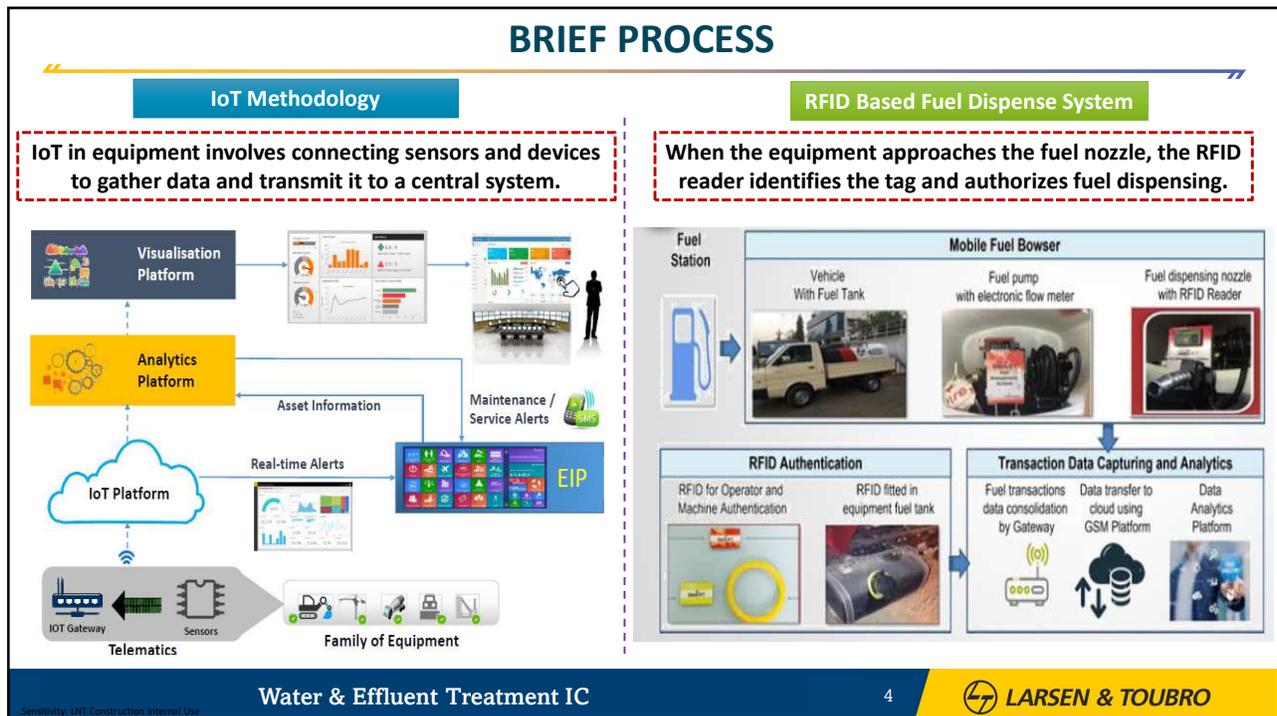
<h2>Project Details</h2>	
Project Title	Reducing Carbon Footprint through Fuel Monitoring and Asset Management using Digital
Trigger of the Projects	<p>Construction industry is one of the major user of fossil fuel. The Fossil fuel consumption in construction industry is widely spreader over and sometimes it is being hidden under other industry . Integration of total consumption it is giving huge impact on increase of carbon emission.</p> <p>Digital fuel monitoring and asset management is one of the trigger for long run sustainable efficient environment policy to reduce carbon footprint.</p>
Uniqueness of the Projects	<ul style="list-style-type: none"> Construction activities like irrigation pipeline projects, it is widely spread over districts to districts Bringing full awareness among all the teams involved for line project sites. Bringing awareness of new technology among all working level starting from operators and drivers. Digital monitoring became now new normal and habit for fossil fuel consumption monitoring and carbon footprint reduction.
Date of Commencement	Sep'21

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BRIEF PROCESS

Replacement of Diesel Assets with Electrical / Hybrid

- ❑ Construction equipment are powered by diesel engines, which emit pollutants and contribute to air pollution. Electric or hybrid alternatives emit fewer pollutants and have a higher fuel efficiency than their diesel counterparts.
- ❑ This shift towards electric or hybrid construction equipment resulting in long-term cost savings through reduced fuel consumption, maintenance costs, and improved energy efficiency which result towards carbon emission reduction.

Additives for Fuel Efficiency

- Fuel Additives are Biodegradable Fuel Economy Enhancer, non-toxic, environment-friendly and has no Chemicals, Alcohols, Spirits and Solvents.
- It is designed to address today's competitive requirements for engine performance, fuel saving, maintenance and protection of combustion engines as well as fulfilling social responsibility of keeping a greener earth by reducing carbon emission.
- Additives Proposition – **1:2000** (Additives: Diesel)

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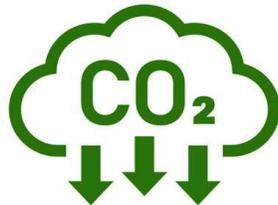
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Tangible Benefit

Emission Reduction



1925 t CO₂e
(FY'23)

Total Investment
INR 611 Lakhs

Return On Investment for
FY'23
INR 464 Lakhs

Payback Period
3-8 Years

ROI for total
payback period
INR 2131 Lakhs

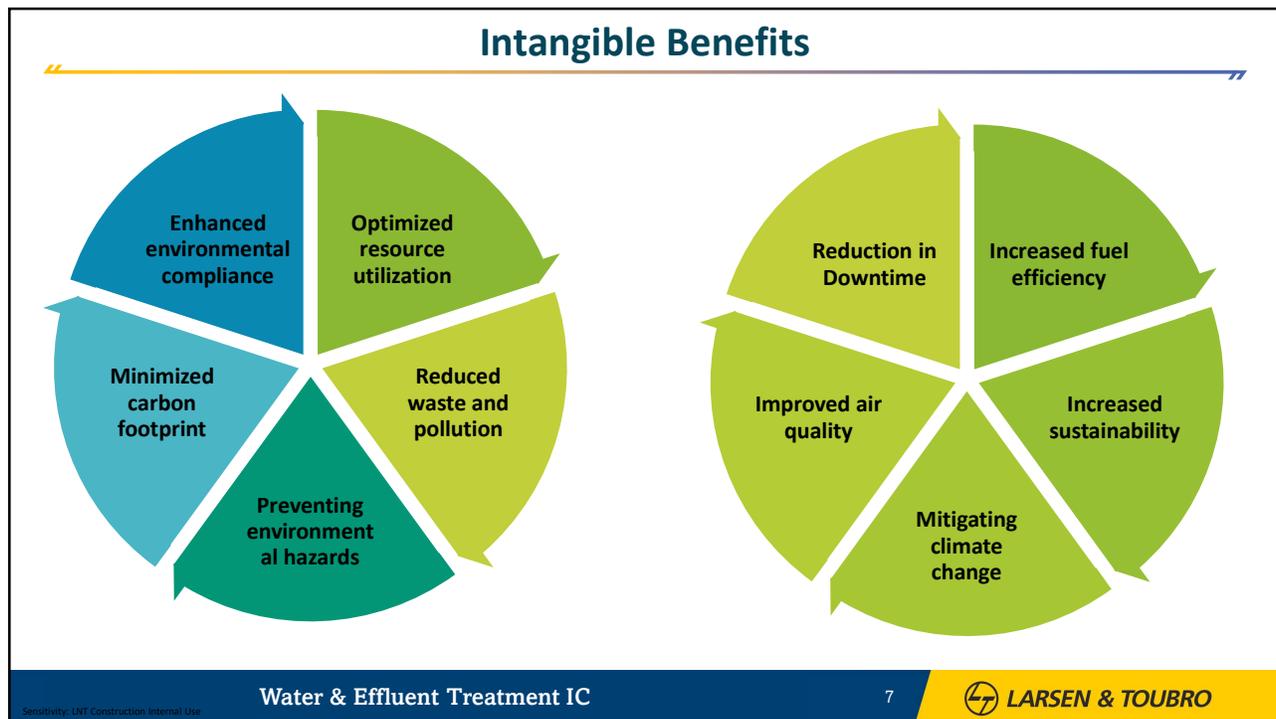
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Replication potential of the Project within Group Company

- ✓ Carbon footprint reduction by fossil fuel consumption is having huge potential to become carbon neutral company.
- ✓ L&T overall target is to become **carbon neutral** by **2040**. These initiatives also will help to achieve the target very easily.
- ✓ Transition to a zero-carbon could bring a range of near- and long-term gains, including health benefits, which provide an additional impetus for action on climate change.
- ✓ As of March,'23 over 3000+ construction Equipment and 100+ Construction project sites within the company are connected & group companies are replicated the same technology and methodology which is helping to achieve the goal of carbon emission reduction at Company level.

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What next for Spreading Benefits?

Documentation and communication: Comprehensive documentation outlining the initiative objectives, processes, and benefits. Sharing this information with relevant stakeholders and teams, ensuring clarity and transparency. This is published in our websites to increase visibility of external interested parties.

Internal presentations: Conducting a presentations or workshops to inform and engage employees about the initiative. Highlighting the positive impact of carbon footprint reduction on individuals, teams, and the organization. Encouraging a questions and discussions to address concerns and gather feedback.

Training and knowledge transfer: Providing the training sessions to employees with the skills and knowledge required to leverage the initiative benefits. This could involve conducting workshops, organizing webinars, or arranging one-on-one mentoring sessions.

Incentives and recognition: Implementation of incentives or recognition to motivate and reward employees who actively implement the initiative as part of Environmental Social and Governance (ESG) best initiatives.

Continuous improvement and feedback : Establishing mechanisms to gather feedback and monitor the impact of the project over time. Using this feedback to make necessary adjustments, identify areas for improvement, and iterate on the project's implementation.

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Replication potential of the project within sector

Steps Initiated – Published in Company Website



[Circulation of Internal Monthly P&M Bulletin.](#)

<https://www.larsentoubro.com/corporate/about-it-group/technology-for-growth/connected-machines/>

When thousands of machines deployed across hundreds of project sites start talking, amazing things happen. Productivity goes up and costs come down. Machines can communicate, and our unique solution 'Asset Insight' listens, by 'hooking up' equipment of various asset types across hundreds of projects sites, remotely monitoring and providing insights into various performance parameters of equipment using the Internet of Things (IoT) technology. We have installed multiple sensors and an intelligent gateway on equipment enabling the streaming of real-time operational, production and condition data without human intervention. Data on location, movement, switch on/switch off time, idling time, number of hours worked, quantity of work done, pressure, temperature and fuel consumption can be a gold mine. Armed with this information, planners can evolve strategies to improve production and enhance productivity.

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Challenges & Mitigation during Implementation

Challenges	Mitigation
<ul style="list-style-type: none"> ❑ Complex technical challenges ❑ Limited wireless communication on site ❑ Seamless connectivity ❑ Operator adoption to technology ❑ Disconnection of the device by operator/Technician ❑ Data mismatch / Re-calibrations. 	<ul style="list-style-type: none"> ❑ Evaluated the site and potential solutions to improve wireless communication, such as installing additional antennas or signal boosters were implemented ❑ Training and support provided to users to ensure they understand how to use the system effectively. ❑ Development of dedicated technical team for Digital implementations. ❑ Provided training and support to help operators become comfortable with the technology. ❑ Implemented appropriate hardware and software which safeguards to prevent accidental or intentional disconnection of devices. Monitored the system for disconnections and alerts sent when a device is disconnected. This is done through Mobile App/Web. ❑ Developed robust calibration procedures to ensure accurate data.

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Priority Plan + 1/ +2 Year & Resource requirement

Continuous Assessment
Continuous assessment, evaluation and monitoring the effectiveness of the ongoing implementation of digital tools and technologies in construction machineries for carbon emission reduction.

Continuous Scaling up
Scale up the digital tools / technology to a larger number of machineries across the organization for emission control.

Continuous Improvement
Establish a feedback loop and continuous improvement process by analyzing the performance and impact of digitalization on machineries and adaptation of new digital technologies towards carbon emission reduction. Allocate resources for ongoing monitoring, analysis, and optimization to ensure the technology delivers the desired outcomes and benefits.

Resources Requirement

- Budget allocation for hardware & software requirement
- Personnel with expertise in digital tools & technology.
- Collaboration with external vendors or consultants.
- Training programs to upskill employees in digital technologies and practices for effective carbon footprint reduction.
- Dedicated coordination resources to oversee the implementations.

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Best Practices

- ❖ IoT Implementation
- ❖ RFID based Fuel dispensing
- ❖ Optimum use of Fossil Fuel & waste reduction
- ❖ Emission Reduction
- ❖ Conversion of Fossil Fuel Driven equipment to electric/hybrid/Solar Equipment
- ❖ Clean Environment
- ❖ Better Environment Social and Governance (ESG) controls.
- ❖ Remote monitoring through Mobile App/Web

National Standard / Benchmark

- ❖ It is one of the best low-cost new sustainable technology to provide greener environment.
- ❖ Implementation across the construction industry will bring nation towards huge carbon footprint reduction.
- ❖ It has increased Corporate Social Responsibility (CSR) towards creation of Green Earth.
- ❖ Construction Industry can play major role in carbon footprint reduction and can become leader with respect to ESG compared to another industry/sector.

Major Learnings

- ❖ Implementation of Digital technologies/tools increased corporate exposure towards environment protection and carbon footprint reduction.
- ❖ Reducing carbon footprint through modern technology to safeguard mother earth.
- ❖ First time re-orientation of such new technology in Construction Industry to show lenience towards carbon emission reduction.
- ❖ Best Practices towards ESG implementation at Construction Industry.
- ❖ Digital Tools like **Mobile App** based **Carbon Emission** Monitoring and make best use of digital technique for Carbon **Emission Reduction**.



Thank you