



L&T-Chiyoda Limited, India

Key Facts:

Company: L&T-Chiyoda Limited

Description: L&T-Chiyoda Limited (LTC) is a joint venture between L&T Hydrocarbon Engineering Limited, India and Chiyoda Corporation, Japan. LTC has executed several world class projects in the Oil & Gas, Refineries, Petrochemicals and Fertilizer sectors with its foot-print in many countries across the globe, over the past twenty five years.

Employees: 1000+

Industry: Oil & Gas, Petrochemicals, Chemicals

Country: India

Products Used:

- Intergraph Smart® 3D
- Intergraph Smart P&ID
- Intergraph Smart Instrumentation
- Intergraph Smart Electrical with Import Manager
- Intergraph Smart Review with additional models
- SmartPlant® Foundation
- SmartSketch
- CAESAR II®
- PV Elite®

L&T-Chiyoda Limited Enhances Global Engineering Project Delivery with Hexagon Solutions

Identifying Goals

L&T-Chiyoda Limited (LTC) is an internationally recognized design and engineering consultancy organization. It is a joint venture between L&T Hydrocarbon Engineering Limited, India and Chiyoda Corporation, Japan.

LTC needed an overarching engineering solution suite that would enable a data-centric approach to engineering. The key goals for LTC were to:

- Ensure project schedules are achieved while producing high-quality deliverables
- Reducing rework by enabling real-time clash-checking
- Cost optimization

LTC has executed several refineries, petrochemicals and oil & gas complexes in many countries across the globe. This case study discusses the Indian refinery project as well as the international oil refinery project in the Middle East.

Overcoming Challenges

Key to successful project execution in both cases was the ability to optimize cost and engineering design efficiency, while ensuring that the projects would meet the strict deadlines mandated by the facility owners.



With the help of Hexagon solutions, LTC was able to create P&IDs and 3D models intelligently and use the models across the different sites globally*.

LTC searched for a solution provider that could help them to:

- Generate intelligent and robust P&IDs
- Standardize and centralize engineering data management across different sites globally
- Enhance revision control when generating intelligent 3D models
- Allow for real-time clash-checking of designs to avoid rework
- Reuse designs between different departments and projects

These capabilities were key for LTC when executing the detailed engineering for the greenfield project for an oil company in India.

During this project, LTC generated the required documents based on the basic engineering, including documentation for civil, mechanical, process, and electrical engineering. Hexagon solutions were used to facilitate data reusability across different disciplines, as the various engineering departments collaborated throughout the project, having access to a centralized data repository.

Another example of Hexagon tools in action is the global oil refinery extension LTC executed for an O&G onshore facility located in the Middle East. For this project, LTC worked with project teams located in the Middle East and India. LTC performed the detailed design for the project, using Hexagon solutions across the different sites. This was one of the first experiences LTC had in such a large multinational project execution having interoperability and integration as key challenges.

With the help of Hexagon solutions, LTC was able to create P&IDs and 3D models intelligently and use the models across the different sites globally. The experience of global work sharing was successful, as the ability to share data while maintaining consistent version control and real-time clash-checking helped LTC to save time across the different sites significantly.

The detailed design phase was carried out smoothly with the support of Hexagon's Hyderabad and global development teams, who provided real-time support.

Realizing Results

LTC has 25+ years of experience in executing projects—from the very first 3D design suite to the latest versions of 3D analytics, schematics, as well as data management and integration solutions. Hexagon solutions were chosen for some of these projects due to the software suite's outstanding capabilities, including data-centricity, ability for real-time clash-checking, and overall efficiency improvements. LTC used the following solutions:

- **Intergraph Smart P&ID:** LTC used the solution to create intelligent piping and instrumentation diagrams across different sites. The solution is the preferred choice for LTC due to its capabilities: customizable and logical naming philosophy and control, the ability for global work-sharing, and creating a single source of truth for P&ID data. It generates various reports which are useful for project execution for downstream activities.
- **Intergraph Smart 3D:** S3D enables global work-sharing across different sites, enabling LTC to improve design safety and efficiency. Global work-sharing makes information available at



The ability to exchange data efficiently and without errors between different solutions has improved LTC's engineering efficiency across projects*.

different locations nearly at the same time, while ensuring necessary security and control. LTC was also especially impressed with the software's fast modeling capabilities, automated to-do-lists, and ability to do real-time clash checking.

- **SmartPlant Foundation:** LTC uses SPF as a centralized data warehouse, enabling a single source of truth for engineering information. This has enabled the company to improve data consistency and efficiency as no time is lost locating information.
- **CAESAR II & PV Elite:** LTC uses CAESAR II as a standardized tool and best practice solution for stress analysis. The company also uses PV ELITE for pressure vessel design.
- **Intergraph Smart Instrumentation:** LTC uses Smart Instrumentation to generate, for example, instrument indexes, loop diagrams, and process data updates. The software's enhanced features of importing data in Excel, as well as the reporting functionality, are key features for the company.
- **Intergraph Smart Review:** LTC uses Smart Review for interactively reviewing and analyzing large, complex 3D models of their projects. The ease-of-use and tag reporting capabilities, clash checks help to reduce risk and increase efficiency.

The ability to exchange data efficiently and without errors between different solutions has improved LTC's engineering efficiency across different projects.

Moving Forward

During the collaboration of more than twenty years, LTC and Hexagon have worked together to improve the solution offering. For example, during these initial global projects, LTC noticed some issues with the reporting capabilities in Intergraph Smart 3D's Material Take Off reports. Based on LTC's feedback, Hexagon's development team worked on debugging the reporting issue and derived a solution which could cut down the average report extraction time to less than an hour per report. In the future, LTC is also looking into how they can benefit from Hexagon's and AspenTech's latest collaborative solution offering.

LTC and Hexagon will look forward to collaborate both globally and locally for upcoming projects. Mr. Samirkumar Patel, AGM-IT at LTC, said : "We have a long history with Hexagon: Over 20+ years of experience using the wide range of Hexagon PPM's software, including engineering, design, analysis and information management solutions. This shows that Hexagon products have abundant potential to serve the needs of the engineering industry when it comes to generating quality output with maximized efficiency, while saving time and cost."



We have a long history with Hexagon: Over 20+ years of experience using the wide range of Hexagon PPM's software, including engineering, design, analysis and information management solutions. This shows that Hexagon products have abundant potential to serve the needs of the engineering industry when it comes to generating quality output with maximized efficiency, while saving time and cost."

Key Benefits

- Reduced the amount of rework needed due to the ability to do real-time clash-checks and having a single source of truth for engineering data.
- Ability to reuse design data and models across different sites enabling efficient worksharing in large, global engineering projects.
- Ensuring cost optimization by improving design efficiency.
- Creation of a digital project library helps to quantify upcoming projects and drive cost optimization during the bidding process.



Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 21,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at hexagon.com and follow us @HexagonAB.

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