

Engineering Consultancy

Domestic. Resilient. Efficient.

Implementing Make in India Wi-Fi I
nfrastructure at EIL Gurugram



Background

Engineers India Limited (EIL) is a prominent Indian engineering consultancy and EPC (Engineering, Procurement, and Construction) company established in 1965. Holding the prestigious title of "Navratna PSU" (Public Sector Undertaking), EIL significantly contributes to India's industrial development, especially within the hydrocarbon sector. Under the ownership of the Government of India, EIL provides design, engineering, procurement, construction, and integrated project management services across diverse sectors including oil and gas, petrochemicals, refineries, pipelines, metallurgy, and infrastructure.

EIL is known as a one-stop shop for engineering consultancy services in India. They offer a unique "Concept to Commissioning" approach, ensuring the highest quality and safety standards throughout all project stages. With over five decades of experience, EIL has successfully executed projects in over 100 countries, solidifying its reputation as a global player in the engineering consultancy domain. The company's commitment to quality, innovation, and sustainable development has earned it numerous accolades and certifications, including ISO 9001, ISO 14001, and OHSAS 18001.

Headquartered in New Delhi, EIL maintains a robust network across India and internationally which includes an R&D complex in Gurugram, Haryana. Established in 2009, the Gurugram R&D complex serves as a hub for cutting-edge research, technological exploration, and knowledge dissemination. The complex houses advanced laboratories, pilot plants, and testing facilities, enabling researchers and engineers to conduct comprehensive studies, develop new processes, and test innovative solutions. Their Gurugram R&D complex spearheads technology development, collaborating with other prominent organizations for continuous innovation.

The global engineering services outsourcing market size was estimated at USD 1.81 trillion in 2023 and it is expected to hit around USD 10.2 trillion by 2033 with a registered CAGR of 18.9% from 2024 to 2033.¹

The EPC (engineering, procurement, and construction) consulting market size is expected to reach US\$ 20.32 Bn by 2030, from US\$ 11.40 Bn in 2023, exhibiting a compound annual growth rate (CAGR) of 8.6% during the forecast period.²

Overview

Our team successfully deployed a tailored Wi-Fi solution at Engineers India Limited's Gurugram R&D complex, aligning with the Make in India initiative. By implementing Access Points, Managed Switches, and On-Premise Controllers, we enabled seamless connectivity, enhanced security, and centralized management. We are pleased to have supported EIL's mission of technological excellence and look forward to continuing our partnership in their journey towards self-reliance and growth.

Anand Kumar
(Associate Vice President, Communications)

At EIL's cutting-edge Gurugram R&D complex, seamless and secure wireless connectivity is paramount for enabling the core research, testing, and collaborative activities that drive innovation. With multiple advanced laboratories, pilot plants, and diverse teams working concurrently, the requirement of high-performance Wi-Fi network infrastructure that could meet the critical requirements is undeniable. EIL engineers rely heavily on online collaboration tools and real-time communication platforms to share ideas, exchange data, and work on projects remotely. A reliable Wi-Fi network ensures seamless roaming, smooth video conferencing, efficient file transfer, and uninterrupted access to cloud-based applications. Additionally, researchers require high-speed internet access for tasks like downloading large datasets, conducting simulations, and accessing online research databases. A robust Wi-Fi network facilitates efficient research and development processes. For the smooth execution of these tasks a robust Wi-Fi network is highly critical. EIL deals with sensitive data in the oil & gas and other sectors. A secure Wi-Fi network with robust access controls and encryption safeguards confidential information from unauthorized access. This is critical for adhering to industry regulations and maintaining data integrity. The absence of a strong Wi-Fi network can create bottlenecks in communication, hinder research efforts, expose sensitive data to breaches, and create operational inefficiencies. Therefore, implementing a robust and secure Wi-Fi infrastructure was paramount for EIL Gurugram to maintain its operational efficiency and foster a collaborative environment for innovation.

With a large, distributed deployment spanning multiple buildings and outdoor areas, centralized visibility and control over the Wi-Fi infrastructure is essential for efficient administration, performance monitoring and issue resolution. Continuity of operations is non-negotiable, necessitating a wireless solution with redundancy, failover capabilities and maximum uptime to prevent productivity losses from network disruptions.

The Engineering Services Market size is estimated at USD 1.67 trillion in 2024, and is expected to reach USD 2.04 trillion by 2029, growing at a CAGR of 4.20% during the forecast period (2024-2029).³

It was estimated that in the year of 2025, the market size of engineering, research and development (ER&D) in India would reach 63 billion U.S. dollars, more than doubled from 31 billion dollars in 2019.⁴

Challenge

EIL had the challenge of complying with India's Make in India initiative: replacing foreign network infrastructure with Make in India alternatives while addressing several critical challenges including seamless roaming across the premises, robust user authentication and controlled guest access mechanisms and optimized performance for diverse applications on devices. Additionally, the network overhaul had to be executed within a stipulated time frame, ensuring minimal disruption to ongoing operations and preventing any productivity losses due to network downtime or performance degradation.

Solution

To address these challenges HFCL deployed a comprehensive Wi-Fi solution after a precise planning considering all the critical components. The deployment was executed within the designated time frame, enabling a seamless transition from the existing Non Make In India OEM infrastructure. The team identified 104 key hotspot areas where they decided to deploy the latest generation Wi-Fi 6 indoor Access Points to provide seamless Wi-Fi connectivity. Additionally, two Wi-Fi 6 outdoor Access Points were deployed to offer 360 degree coverage across the premises. The presence of Wi-Fi 6 Access Points ensured seamless roaming, uninterrupted connectivity and smooth functioning of day-to-day tasks. To enable centralized management and control of the network infrastructure two On-Premise Controllers were deployed, allowing efficient administration, monitoring, and troubleshooting. The integration of AAA (Authentication, Authorization, and Accounting) and a Captive Portal ensured secure user authentication, Role-Based Access Control (RBAC), and controlled guest access within defined parameters. Advanced security features, including WPA3 encryption, rogue AP detection, and wireless intrusion prevention, were implemented to safeguard sensitive data and maintain regulatory compliance.

The deployed solution leveraged advanced technologies like Band Steering, Beam Forming, and MU-MIMO to ensure seamless roaming, optimal throughput, and low latency connectivity across the entire EIL premises. Supporting the latest wireless standards, including Wi-Fi 6 and IoT protocols, the new infrastructure provided enhanced compatibility and future-proofed the network for emerging technologies and devices. Furthermore the deployed solution consisted of forty 8-Port Layer 2 Managed Switches and two 24-Port Layer 2 Managed Switches. The key role of these Power over Ethernet (PoE) switches was to interconnect various segments, Providing Power to Wireless Access Points, enabling seamless communication and data transfer across the entire facility. These PoE Managed Switches not only met the current requirement but at the same time enabled easy expansion and integration of additional network components. Many devices used in the EIL environments, such as IP cameras, Access Points and IoT sensors, require power delivery through network cables. The support of PoE technology enables seamless power distribution and eliminates the need for separate power sources for these devices.

Access Points

Wi-Fi 6 Access Points



Wi-Fi 6 Access Points



L2 Managed Switches

8-Port PoE Switches



24-Port PoE Switches



Result

- 01** With a robust and reliable Wi-Fi network, researchers and engineers can seamlessly collaborate, share data, and leverage cloud-based tools, fostering an environment conducive to accelerated innovation.
- 02** Advanced security features and access controls ensure the protection of sensitive data, intellectual property, and adherence to industry regulations, providing peace of mind for EIL and its clients.
- 03** Seamless roaming, optimized performance, and centralized management have streamlined operations, reduced downtime, and improved overall productivity within the premises.
- 04** By embracing a domestically produced solution, EIL has showcased its dedication to the government's 'Make in India' initiative, promoting self-reliance and domestic industry.
- 05** Switches act as the backbone, interconnecting various buildings, laboratories, pilot plants, and office spaces, enabling seamless communication and data transfer across the entire facility.
- 06** The integrated on-premises controller provides a unified management platform, enabling EIL's IT team to configure, monitor, and troubleshoot the entire network infrastructure from a central location.

Conclusion

In conclusion, Engineers India Limited (EIL) successfully addressed the challenges of upgrading its Wi-Fi infrastructure at the Gurugram R&D complex while aligning with India's Make in India initiative. Through the deployment of a comprehensive Wi-Fi solution by HFCL, EIL ensured seamless connectivity, enhanced security, and centralized management. This advancement facilitated uninterrupted collaboration, optimized performance, and strengthened data protection measures, ultimately driving innovation and productivity within the organization. Through the deployed solution EIL has not only met its immediate operational needs but also demonstrated its commitment to fostering self-reliance and supporting domestic industries.



References

1. <https://www.precedenceresearch.com/engineering-services-outsourcing-market>
2. <https://www.coherentmarketinsights.com/industry-reports/epc-consulting-market#:~:text=The%20EPC%20>
3. Engineering Services Market - Size, Trends & Industry Overview (mordorintelligence.com)
4. India: market size of engineering, research and development 2025 | Statista

Disclaimer

Copyright © 2024 HFCL Limited. All rights reserved. No part of this content may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation, or adaptation) without written permission from HFCL Limited ("HFCL"). HFCL reserves the right to revise or change this content from time to time without obligation on the part of HFCL to provide notification of such revision or change.

Not all offerings are available in every country in which HFCL operates. The data used in this report may be derived from third-party sources and HFCL does not independently verify, validate, or audit such data. The information in this document is provided "as is" without any warranty, express or implied, including without any warranties of merchantability, fitness for a particular purpose and any warranty or condition of noninfringement This report is intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. HFCL shall not be responsible for any loss whatsoever sustained by any organization or person who relies on this publication.



For further information about this document,
contact our sales team iosales@hfcl.com

visit our website: io.hfcl.com | hfcl.com