Building and Plant Audits

## **Our Services**

* [Mechanical & Electrical Audits](/blog/mep)
* [Energy Audit](/blog/energy)
* [Road and Bridge Condition Inspection](/blog/roadbridge)
* [Reinforced Concrete (RC) Compressive Test and Cracking Prediction](/blog/rcstructure)

## **The Benefits of Auditing**

Regular audits of building and engineering systems help managers and operators of the systems to

* Understand the condition and operational states of their assets.
* Establish a rich set of time series and panel data for future reference.
* Capture deterioration speed through modelling and analysis on time series data.
* Determine level of services and reliability at the time of inspection and future points.
* Prepare positive and preventive intervention plan, including conceptual and detailed design.
* Prepare immediate action plan for compliance purpose.
* Determine whether the systems and the assets have been working in optimal operation scheme.
* Perform Benchmarking for overall improvement of management system based on Key Performance Indicators.
* Ensure the compliance with standards and codes.
* Guarantee the maximum performance of assets for generating more benefits (e.g. revenue) for stakeholders.

### [Mechanical & Electrical Audits](/blog/mep)

Our auditing services include Visual Inspection, Desktop study on historical records, physical testing and measurement for Mechanical and Electrical assets (e.g. HAVC, transformers, GENSETs, Pumps, Chillers, Fire Protection and FDAS devices) of

* Cleanrooms
* Bio-chem facilities
* Food and Medical facilities
* Oil & Gas stations
* Chemical and Process Plants and Chillers systems
* Water Distribution Networks and Utilities (e.g. Water Treatment Plants, Waste Water Treatment Plants, Pump Stations and Reservoirs, Pipelines)
* Retail and Shopping Malls
* Commercial, BPOs, Real Estate properties

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### [Energy Audit](/business/energy)

Energy audit forms as an integral part of the Integrated Asset Management System (ISO 50002). The audit’s scope varies from buildings to industrial plants as energy generated assets are different. For building systems, energy audit might involve energy modelling aside from analyzing historical energy consumption data and operational scheme of mechanical and electrical systems. For industrial plants, energy audit is linked directly to operation scheme, reliability, availability, maintainability, and efficiency of machines and equipment.

Through the energy audit, we will recommend Clients on Benchmarking strategies for long-term operation and management as well as a number of opportunities to save more energy while still providing adequate level of services.

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### [Road and Bridge Condition Inspection](/blog/roadbridge)

Road and Bridge condition and distresses (e.g. cracking, roughness, unevenness, potholes) can be conveniently captured, thanks to the utilization of high definition camera and drone technology. Our team has developed an advanced image recognition algorithm and a structured dataset to record great amount of data on distresses, which will be later used for deterioration prediction and determination of optimal preventive intervention strategies.

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### [Reinforced Concrete (RC) Compressive Test and Cracking Prediction](/blog/rcstructure)

RC structures deteriorate overtime as their conditions and level of services are affected by various factors (e.g. loadings, temperature, working environments). Particularly, some typical RC structures in maritime settings (e.g. ports, jetties) need special attention and require regular auditing with tests to estimate deterioration process and to determine appropriate preventive intervention strategies.

Our team utilizes a combination of Non-Destructive Tests (e.g. Rebound Hammer, Ultrasonic Pulse Velocity, Core Extraction and Compressive Strength Test, Chloride Penetration) for specific sites to collect data and then use frontier modelling technique (e.g. Fick’s Second Law of Diffusion or stochastic models) to predict the deterioration. A complete Life Cycle Cost will then be formulated based on proposed intervention strategies

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