



SMART ASSET MANAGEMENT SYSTEM – THE SMART APPROACH TO MANAGING EPC ASSETS

The traditional engineering, procurement, and construction (EPC) industry is accustomed to executing projects using a human-centric approach – reliance on skills, paper-based processes, and legacy technologies. EPC enterprises need to pivot to smart and advanced technologies to complete turnkey projects on time and within budget. Our experts identify areas across the EPC value chain where smart technology can be a catalyst for industry-leading project execution while effecting a business transformation.

Smart crane monitoring

Heavy material handling equipment such as cranes play a vital role in the EPC industry. To ensure that equipment does not malfunction and stall projects, it is imperative that equipment is well maintained. Preventive and predictive maintenance, monitoring of safety alerts and operational efficiency, and crane movement tracking ensure efficient operating conditions at the worksite.

It can be achieved with a smart IoT crane solution comprising cloud data analytics and mobile applications, with inputs from hardware sensors. This suite of solutions can be easily installed on both indoor as well as outdoor cranes of all types. The benefit: the operator receives notifications via e-mail or text message on vital functions such as temperature, remaining safe design working period (SWP), and overloading without having to undertake physical checks of the equipment. Based on such critical information, the operator can plan maintenance schedules, reducing unplanned down time and spares inventory.

Remote monitoring and preventive maintenance solutions for indoor cranes

Motor voltage and current monitoring: Artificial intelligence helps identify any flaws in the motor, enabling the user to schedule preventive maintenance.

Motor temperature monitoring: This function keeps tabs on the motor's temperature to ensure that burnout does not occur by sharing alerts when the heat level crosses a safe threshold.

Hoist motor vibration: Heavy vibration in the hoist motor indicates impending failure. This AI-based monitoring solution shares alerts with the user when it senses unusual vibrations.

Crane operation usage monitoring: Data from typical movements of a crane such as up and down, left and right, north and south, is monitored along with their frequency. It offers insights into the efficiency of the crane and its remaining service life.

Other vital functions covered by the smart IoT solution include motor CDF (cyclic duration factor), motor overload and load monitoring, motor brake fault monitoring, supervisory control and data acquisition (SCADA), VFD, PLC monitoring, safe design working period (SWP) monitoring, and crane rope faults monitoring.

Outdoor cranes remote monitoring and preventive maintenance parameters

Similar to the system for indoor cranes, the solution uses sensors to collect data on various functions such as crane GPS location tracking, speed tracking, operational information safe load threshold, angle and tilt, vibration, hydraulic motor pressure. Measuring these parameters, and sharing timely alerts with the operator, enables preventive maintenance and enhances safety.

Mobile assets and construction equipment in the EPC industry:

The wheels of the EPC industry are kept turning by equipment such as excavators, forklifts, generators, and dump trucks. Monitoring these assets and their operators is a complex task. EPC companies can monitor fuel use as well as driver behavior by leveraging advanced technology and telematics platforms. This data can be viewed on mobile devices, enabling decision makers to not only control fuel expenditure but also plan scheduled maintenance, and penalize reckless drivers. It can also monitor the carbon footprint of the fleet of trucks, and devise ways to mitigate and reduce it.

Simplifying asset auditing with smart asset management system

A smart IoT-enabled asset management system (AMS) makes asset auditing very simple and efficient, and also supports calculation of asset depreciation and compliance with safety and pollution regulations.



Drones

Site survey, data gathering, and visualization

Before the introduction of drones, EPC contractors used aircraft for aerial photogrammetry. Alternatively, the low tech and cheaper option was field staff undertaking a topographic survey.

Now, unmanned aerial vehicles (UAVs) or drones gather granular data in less time, using less labor, and at a lower cost. Drone surveys are also user-friendly and easily accessible to the layman.

Photographs taken by the drone can be rapidly processed for analysis with user-friendly charts that are accessible on a cloud platform.

Stockyard monitoring and identifying materials

In EPC projects, contractors need to procure huge quantities of material such as pipes, structures, steel, electrical equipment, and process equipment. Large stockyards and warehouses are used to store these materials. When a particular material or piece of equipment is required, finding it is a time- and resource-consuming process. Also, pilferage and misplaced materials are a common occurrence in the stockyard or warehouse.

Drones are a useful tool for stockyard monitoring and material identification.

Advances in drone survey technology have made manual intervention unnecessary.

An RFID tag on material pings data from the respective ground point of the stocked material. Drones can be used to identify the exact location of the material with coordinates of the ground points - the drones receive signals from the RFID tags of the respective material, enabling immediate and accurate identification of material, saving time and effort, and improving inventory management.

Drones with GPS correction technology ensure that the flight path can be programmed into their GPS system eliminating the need to place ground control points.

A cloud-based data visualization and analytics platform enables prompt processing of a huge volume of drone data which is made available for viewing in user-friendly formats.



Conclusion

In the EPC industry, equipment needs to be in optimal working condition and available when required. IoT-enabled smart technologies ensure that connected cogs of the project function smoothly.

A comprehensive solutions suite, including predictive maintenance, safety alerts, vehicle movement tracking, enables

operators to monitor operations and take corrective action in time.

Drone and RFID technology used in conjunction with cloud platforms save time, resources, and manpower when conducting site surveys, and stock-taking exercises.

While the EPC sector is slow to adopt technology, it is time for enterprises to recognize the benefits of digital technology.



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