(Industrial IoT, Industry 4.0)

SMART FACTORY

Case Study

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SYSLOGYX
TECHNOLOGIES PRIVATE LIMITED
Client (Automotive Ancillary)

Overview

Today's Industrial manufacturing environments are increasingly characterized by connected, intelligent manufacturing through smart factories rather than the conventional industrial production. Even though most of the manufacturing companies, today, use the ERP software to its fullest capacity; they aren't able to increase the overall efficiency of the process due to the gap between the machines and the ERP systems. This gap is being filled by the revolutionary IoT technology. It will not only make the management of manufacturing more effective, but the work itself smarter. Smart manufacturing demands complete eradication of offline factory operations thus improving the visibility in manufacturing to the point where each unit of production can be seen at each step in the production process. This is possible only if we let go off the traditional manual entered data and focus on collecting the real time production data by making it possible for the machines to directly talk to the ERP software. Factories and plants that are connected to the Internet/intranet are more efficient, productive and smarter than their non-connected counterparts. Those who don’t take advantage of this connectivity would lag behind. To take the advantage of the efficiency and new business opportunities enabled by IoT, our client decided to go 'Smart'.

Our Strength

Syslogyx has got 15+ years of experience into electronics manufacturing, Research, Design, Development, IoT(Internet/intranet of things), Prototyping and Manufacturing of Embedded Systems conforming to Military/Industrial grade, We have served clients across various sectors viz. Defence, Manufacturing, Entertainment, OEM’s etc. Along with our sister company Vyako we develop mobile & web apps development and innovative enterprise solution apps.
Challenges

The manufacturing industry is experiencing an unprecedented range of challenges as they compete in globalized markets. There is a huge pressure to survive in the constantly changing environment. Also, there are a number of loopholes in the manufacturing process like difficulties in tracking, machine downtime/reason not known, genuineness in data, human errors etc that need to be addressed. The biggest challenges that companies need to overcome to enhance its productivity are,

Technological Revolution

The Problem:-

As technology, demographics, and economic climate shift, manufacturers must innovate in order to stay competitive. The increasing customer expectations, high product mix, rapid response time, ability to make intelligent decisions demand companies to either adapt or die!

The Fix:-

Industry 4.0 and Industrial Internet /intranet based solutions are therefore evolving as a response to this high level of complexity.
Manual Data Entry

The Problem:-

Manual data entry and re-entry is a slow process and leaves room for error. Our systems allow humans to incorporate their natural unreliability into processes that should be protected by systems in organizations. This can lead to a lengthy, inaccurate process when re-entering data onto ERP from paper based methods. It is critical to capture all relevant information from these documents into software applications, Excel sheets, ERP applications or cloud/local server-based applications for further processing and utilization.

The Fix:-

In an IoT based manufacturing environment where everything is connected, the machine-to-machine communication would enable network-connected devices to exchange information and initiate actions. The machine can itself communicate and share its production data with the ERP software thus leaving no room for manual data feeding leading to updating of true data for analysis. The IoT-enabled operational intelligence platform bridges real-time information coming from the machine level with transactional business intelligence that sits on top of enterprise applications.
Real Time Data

The Problem:-
With increasing operational costs, manufacturing companies need a focused approach towards the way they utilize their resources. The machines have always been the center of focus for optimum utilization and they continue to be so. The plant managers couldn't make the right decisions due to the unavailability of real time production data.

The Fix:-
IoT-driven data or real time production data helps to improve asset utilization and achieve greater efficiency. Bringing all the production data into cloud/local server will give manufacturing workers the degree of flexibility and decision-making capability. This data could also help understand the efficiency level of a man and a machine by giving key insight indicators. Operational intelligence allows them to "see" across products, materials, and back-office information.
Raw Material Management

The Problem:-
Machine operator may make mistakes while using the correct raw material required for a particular manufacturing order to be processed. What if the machine can itself tell the operator if the current raw material is not meant to be used on it and from which rack the raw material needs to be taken from?

The Fix:-
Sensors and microchips can be added to almost every product (tools, machines, and even raw material), thus making the products "smart." Data would be available from any kind of device that will be used to better analyze and control processes. The product can itself tell the operator if it is the right product for the current manufacturing order. Production will be highly responsive and organized.
Consistent Oversight

The Problem:-
In manufacturing, you are always up against the clock. Your production speed and efficiency can make or break you. Yet, even with the best machinery, you’re only as efficient as your team. It is crucial that your team keep up a productive pace. Poor management on your part can be a major problem.

The Fix:-
IoT solution can help you delegate tasks and set goals, and it holds each person accountable for his tasks. Your employees are less likely to drag their feet if they know that every minute is being logged and compared against norms. Since systems are connected to the Internet /intranet, they can be controlled and managed from a remote operations center. This allows plant managers to monitor the production process efficiency in real time. Managers can instantly find out the status of production. They are able to share that information and data with coworkers in other departments.
Machinery Maintenance Alerts

The Problem:-
Proper equipment maintenance is of critical importance. Generally, equipments are examined and its problems are fixed either on a calendar based schedule or we wait for the things to break and then fix the problem.

The Fix:-
By integrating IoT in your equipments, you can detect equipment failures before they happen, and fix them. Machines can by itself determine its condition and predict when maintenance should be performed.
Troubleshooting

The Problem:-
Each time a problem occurs in the machine, the operator needs to check every sensor to detect the actual problem. However, without an automated solution, it’s like finding a needle in an unimaginably large haystack. Moreover, it’s a time consuming process and it increases the machine downtime.

The Fix:-
With the IoT, the condition of a machine is continuously monitored by looking at pre-defined parameters of the equipment. Doing so enables the tracking of patterns that might indicate equipment failure. It maintains event logs, time- and date-stamped lists of every event that occurred on a machine. These are invaluable when you're trying to troubleshoot or find the root cause of a machine problem.
Expectations

IoT gives manufacturers the opportunity to create an "intelligent" environment that can sense, learn, and predict actions as well as interconnect with other product ecosystems. Manufacturers adapting to processes with IoT would see optimized operations at lower costs, reduced resource consumption, improved productivity, enhanced customer service, and efficient supply chain. Similarly, they would also see benefits, such as increased production, increasing machine uptime and decreasing the time the product is down for maintenance or repair and using actual performance data to drive important business decisions. In short, they'll see a merger of physical and digital world which would boost their operational efficiency. After implementing our customized IoT based solution, chances are that our client's production process efficiency would rise from current 30% to 60% without additional plant deployments.

Our Approach

We offer whole end to end solutions from idea generation, prototyping to final product realization. The approach that we follow while implementing IIoT is

- Study your processes and understand your pain points.
- Next, we’ll define the solutions that would address your pain
- Set up meetings, discuss and have your inputs on the suggested customized solutions
• The gap between machines and humans would be filled by connecting machines with a Data Interface Board which relays machine data to an HMI or/and a Server

This result in

• Process-dependent production and not human-dependent.
• Reduced man hours.
• Auto updation of data on the ERP system.
• Availability of data in your mobile/PC in the required format.
• Readily available data assists plant managers in taking right decisions.