

## IoT-connected Air compressors

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### Executive summary

An English engineer, John Smeaton, designed the first logical prototype of an air compressor. Over the course of the coming decades, there were incremental improvements which eventually led to the design of the modern industrial air compressor systems.

Constant improvements and tweakings on the success of the preceding inventions led to the modern industrial air compressors. Over a period of time, they have achieved a greater amount of efficiency and reliability. Their physical structures, performance and efficiency improve with every succeeding design, paving the way for further innovations with each new product design.

**"In God We Trust. All  
Others Must Bring Data."**

Digital Reach employs IoT (Internet of Things) to further enrich the functionality and efficiency of the compressors. We monitor the critical parameters and help you derive wisdom from the patterns and trends collected from your compressor system. Active alerts corresponding to specific parameters can help you to gauge impending maintenance needs and reduce downtime.

Data is the currency of the digital world. We help customers to aggregate the important data points. Data analytics can be further help its customers understand how to operate the compressors more energy efficiently.

### Reduce downtime and increase efficiency

Air compressors are ubiquitous in most of the modern industries. The production and manufacturing activities are to a large extent dependent on proper functioning of the air compressors. Regular servicing and replacement of worn-out parts ensures there is smooth functioning of the manufacturing premises. This ensures reduced downtime which is an integral part of any factory set-up. Air compressor service engineers are deputed to provide timely services and ready replacement of parts to ensure the output is not affected adversely by its breakdown.

What can be done better? The above mentioned examples are of preventive maintenance. The care and servicing by personnel for the purpose of maintaining equipment in satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects.

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But, preventive maintenance is solely based on regular maintenance cycles. As of now, it is not based on equipment condition data. This leads to too much or untimely preventive maintenance. What if you can keep track of equipment condition and their impending failures? This can help in determining timely intervention of equipment and replacement of worn-out parts so that downtime can be brought to nil or reduced. Production will not be affected in such a case which will result in effective continuous operation of the production facility.

The above example is of predictive maintenance. How can we make this a reality? The answer is data. There are various parameters of your machinery which can be tracked on a real-time basis. This can promptly identify the onset of equipment failure. The service engineers can be dispatched to site to address the technical issues as and when a trigger or alert is detected like machine heat-up, worn-out parts etc.

### How can Digital Reach help?

Data. Insights. Action.

Digital Reach gives you an end-to-end solution to collect valuable data metrics. Graphs and patterns pertaining to these metrics can be charted for visual display and easy identification of fault-lines so that predictive maintenance can be initiated. Timely predictive maintenance on pre-set trigger or alarm points can prevent untimely shutdown of the machinery which can lead to production loss.

At Digital Reach, we identify the customer's pain points and select the appropriate end-nodes (sensors) to monitor the parameters. The end-points collect the **data**. The IoT gateway which are optimally selected according to the data throughput and storage needs acts as a intermediary device before they get sent to the cloud. The data which is sent to the cloud is then represented in functionality-specific dashboards. These dashboards can be viewed on multiple viewing devices like desktop, tablet, and smartphone.

The trends which are collected in the cloud can then be utilized to get **insights** on the style of functioning of the equipments in the premises. The insights into these trends can further optimize the production cycle. Historian will help plan the future production output. **Action** can be taken based on robust data rather than on gut-instinct.

Unravel the hidden potential of your existing machinery by leveraging the power of data and trends.

Move towards a data-based action world:

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- Data acquisition
- Predictive maintenance
- Optimize Equipment performance
- Optimize Energy management

### Solution overview

The controller register sheet shall be programmed into the IoT gateway (firmware part) so that all the parameters can be viewed remotely on a dashboard. The following data is extracted from the controller via the gateway:

- Air flow (if available) – to determine the quantum of air usage
- Operating temperature,
- Pressure,
- Energy quality parameters (Voltage, Current, Frequency)
- Reactive power
- Scheduled maintenance time for Oil and Filter Changes
- Any alarms and critical threshold limits

### What Digital Reach does?

We provide you end-to-end IoT (internet of Things) solution. We study your application and come up with solution to retrofit your existing system with IoT (Internet of Things). Please refer the diagram in the next page to get an overview of our scope of activities in the Project.

**Make data-driven decisions.**

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