



Smart Diagnostics® Application Note Flexible and Open Integration

Publication Date: June 7, 2016

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Overview

SmartDiagnostics® is an end-to-end online condition monitoring solution that consists of equipment mounted wireless sensors, cloud or local/in-plant networking, analysis software, and an open interface to process monitoring or asset management software. SmartDiagnostics® enables users to view machine health trends and form a basis for performing maintenance. This guide gives users an overview for how SmartDiagnostics® can be integrated to existing software in their facility.



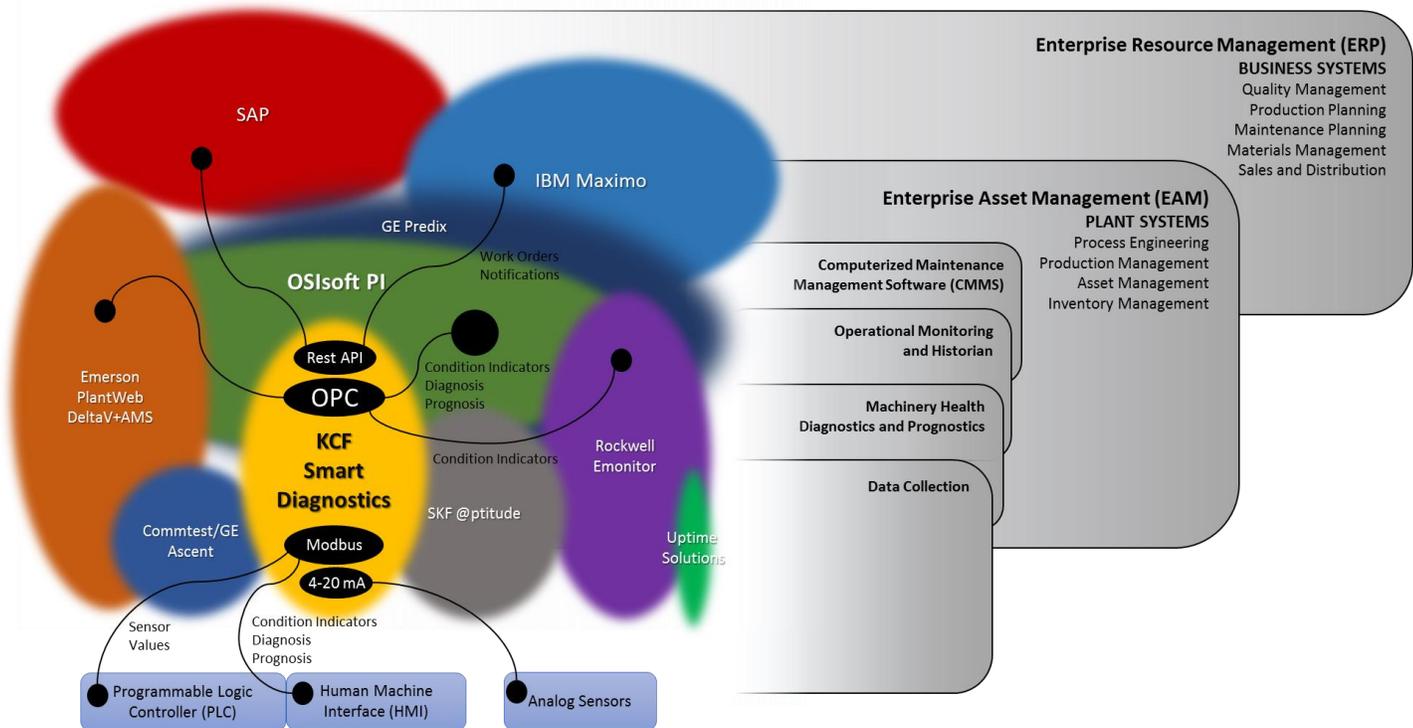
Give Your Machines a Voice



Seamlessly sharing information throughout your enterprise system enables your organization to optimize equipment operation and maintenance. SmartDiagnostics fosters a collaborative and predictive ecosystem where equipment breakdowns are avoided and maintenance is planned. SmartDiagnostics is a key part of an integrated enterprise system which enables achieving reliability and uptime improvement, operational performance targets, and cost reduction.

Managing the complexity of overlapping software and hardware solutions is a reality of most mature businesses. Certain software packages are optimized for specific tasks and legacy systems are often entrenched in business units. SmartDiagnostics makes it easy to manage these scenarios by offering

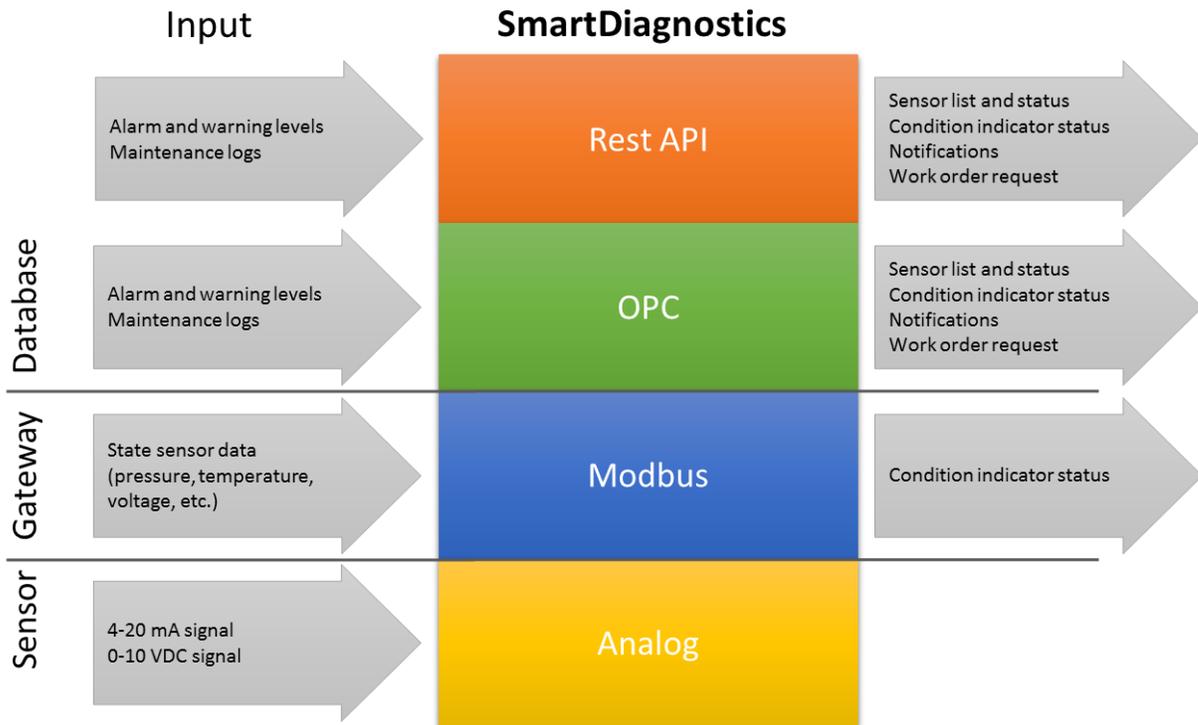
- Flexibility in how SmartDiagnostics is implemented
- Open, industry-standard interfaces for data sharing
- Easy to use and intuitive software requiring minimal training
- Hardware solutions that coexist with minimal impact on IT infrastructure
- Strong customer services and system setup support



Utilizing open and industry-standard interfaces SmartDiagnostics, shares real-time equipment health, condition, and operation status information. Alarms, condition indicators, and notifications can be integrate with virtually any asset management software enabling maintenance staff to monitor equipment and automatically generate work requests based on specific diagnosis. With the confluence of equipment operational variables and SmartDiagnostics online sensor diagnostics, complex system-level equipment behavior can be understood and corrected through holistic analysis.



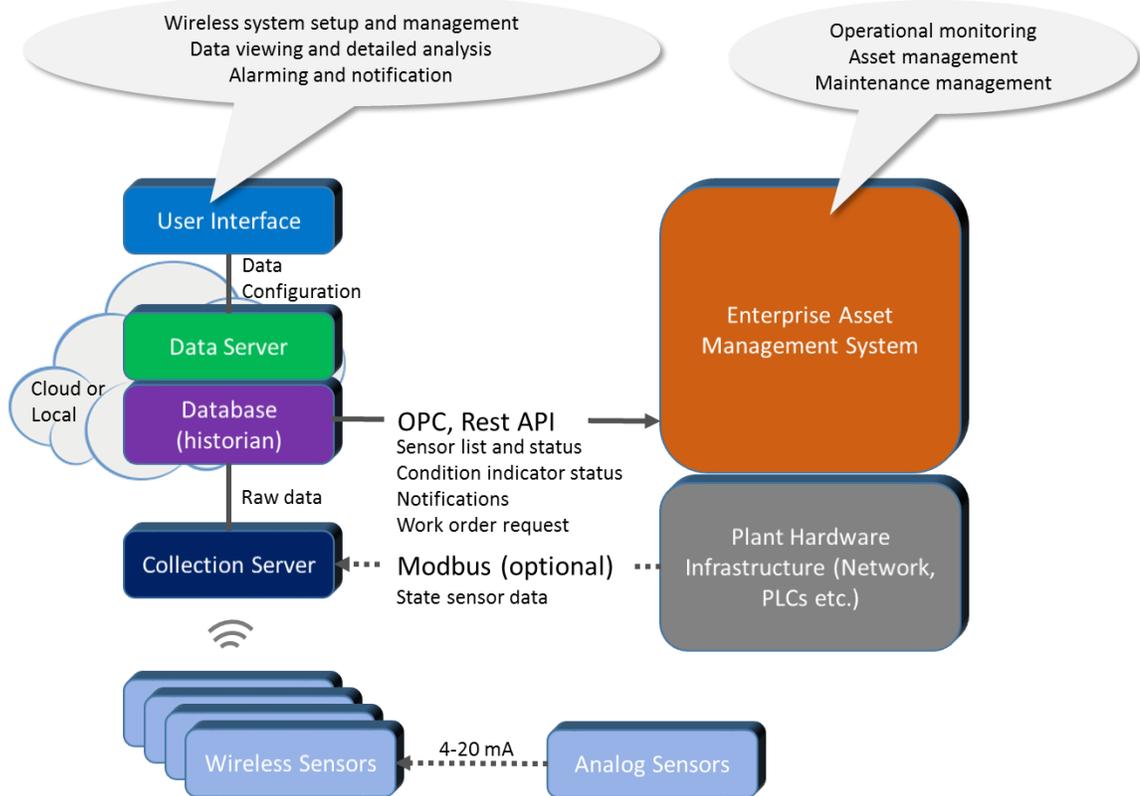
SmartDiagnostics supports multiple data sharing and interface options at the sensor, Collection Server, and database levels.



At the sensor level, state data such as pressure and speed is collected over a standard 4-20 mA or 0-10 VDC interface. The Collection Server or gateway supports sensor data sharing over a standard Modbus interface. At the database level, SmartDiagnostics primarily uses the non-proprietary OPC (OLE for Process Control) client and server modules. This interface not only allows for the gathering of data from other systems, but also for the posting of SmartDiagnostics database data to other systems.

The SmartDiagnostics product family’s flexible structure allows it to be used within an enterprise system in a number of different ways, ranging from the full stack that interfaces at the database layer to a hardware implementation that interfaces using Modbus. The full product stack offers unique value

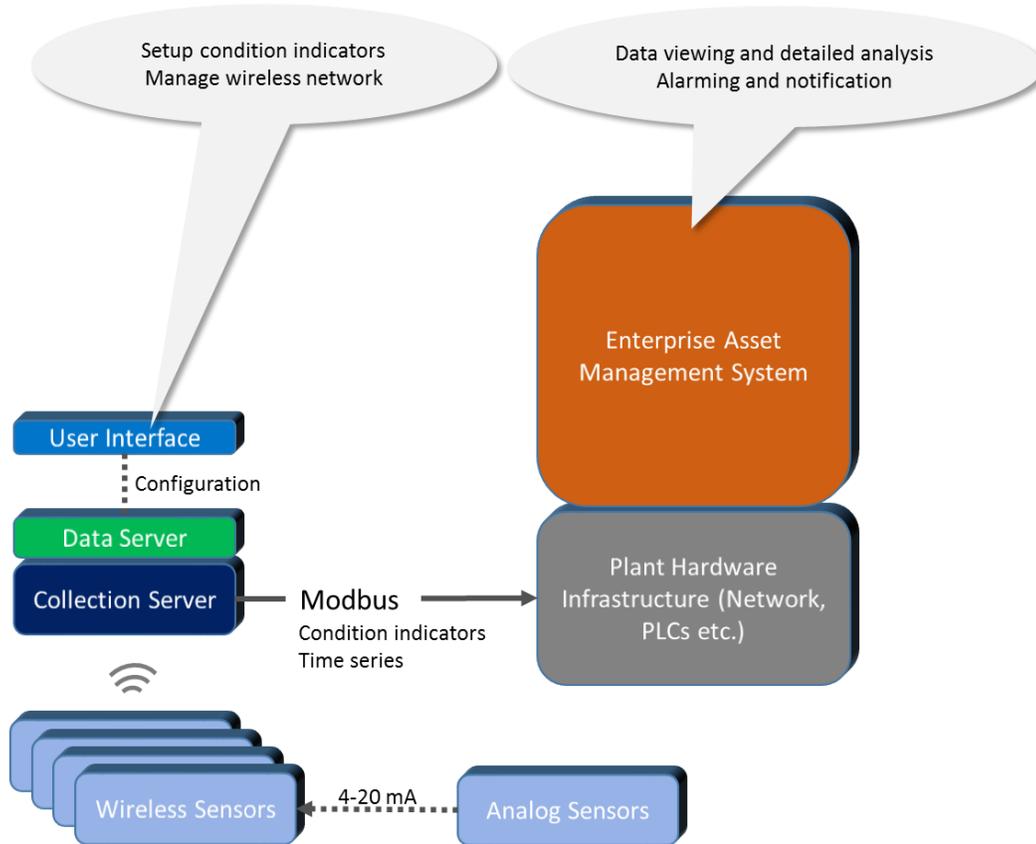
- Online wireless condition monitoring
- Advanced diagnostics and prognostic analysis
- Cloud-based data analysis services
- Easy to use software



The SmartDiagnostics software also provides outstanding capability by offering specialized and proprietary condition indicators such as Damage Accumulation. The data viewing enables equipment online monitoring for rapid historical data viewing of rich health data, statistical alert analysis, and online dashboards. In addition to local software installation options, the cloud solution enables SmartDiagnostics Sentry service team, consisting of industry leading experts, to continuously and in real-time analyze your equipment.

In cases where the SmartDiagnostics hardware solution is used as a standalone platform to supply data to legacy or existing infrastructure, time series and condition indicators are supplied over Modbus. This is implemented through connecting Collection Servers on the plant floor to PLCs or other hardware that supply data to asset management or process management software.

The SmartDiagnostics OPC server offers: Item, Item Time, Alarm, Alarm Time, and Item Unit. Each of these parameters is served up for each of the measurements mapped to the OPC interface from the SmartDiagnostics database. The OPC client allows the SmartDiagnostics software to retrieve data from any OPC-compliant server. The SmartDiagnostics OPC client is a separate application that can retrieve data on a predetermined, scheduled basis.



In this scenario SmartDiagnostics user interface is only required for configuration. This limited infrastructure offers distinguished value in

- Low cost wireless sensors
- Easy installation in difficult to reach locations
- Continuous broadband vibration measurements
- Easy integration into existing infrastructure