



## **SmartDiagnostics® Application Note** **A New Era of Wireless CBM**

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### **Overview**

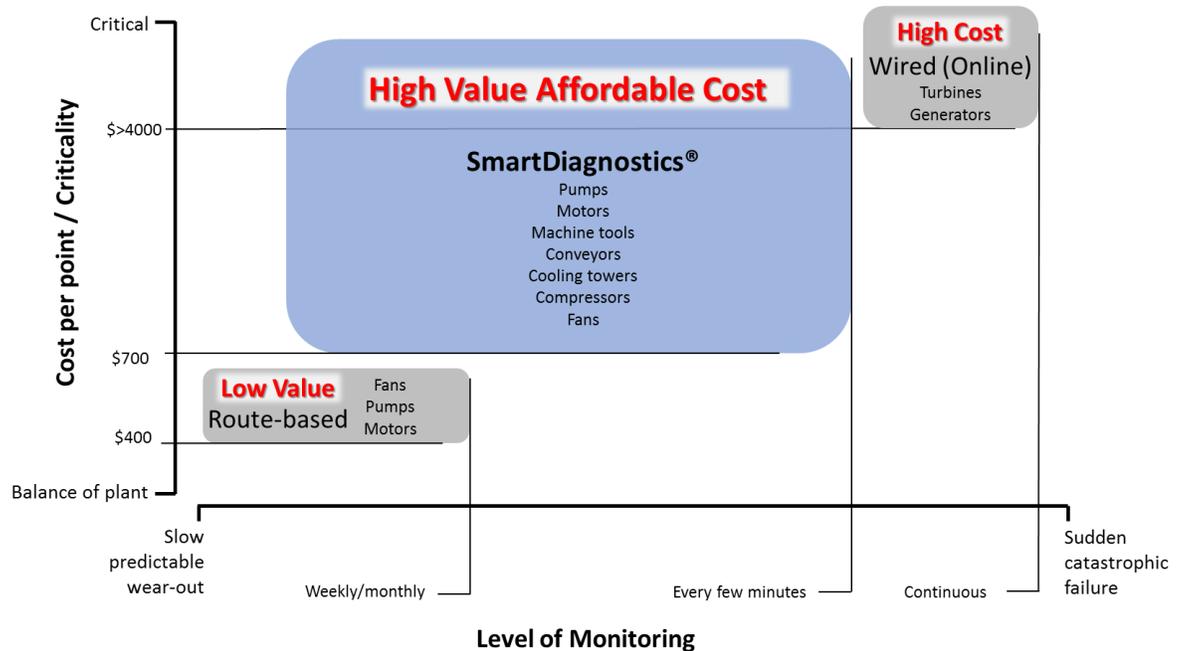
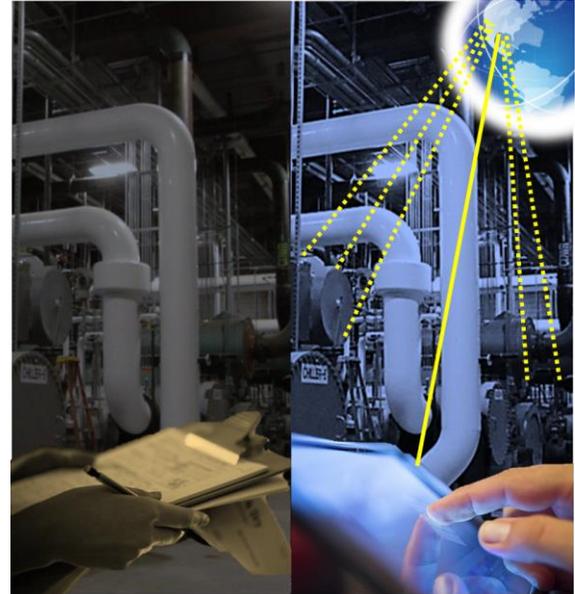
The SmartDiagnostics® wireless machine health monitoring is enabling a new era of Condition Based Maintenance. This cutting edge solution uniquely offers near real-time machine health assessments at costs that are competitive with route-based vibration monitoring. This new paradigm of monitoring opens the balance-of-plant (low criticality machinery) to a new level of predictive Condition Based Maintenance.



## New Options for Performing Condition Based Maintenance

Traditional wired condition monitoring technology has proven to be highly valuable for enabling Condition Based Maintenance (CBM) and Preventative Maintenance (PM) programs in highly critical applications such as power generation turbines. However, balance-of-plant assets such as pumps and motors have not benefited from online monitoring owing to the high capital cost—and in particular the high installation cost—of wired monitoring systems. Instead, these less critical machines are either monitored infrequently with route-based techniques or not at all, despite the fact that they account for the majority of all industrial equipment.

SmartDiagnostics® changes this quandary and enables a new paradigm of balance-of-plant continuous monitoring by lowering the cost of online monitoring by 10-20 times and delivering a few orders-of-magnitude more responsive data than a typical route-based/walk-around deployment. The ease of installation, straightforward software offerings, and flexibility in installation offered by the wire-free sensors is the key to delivering SmartDiagnostics' high value across the vast, diverse, and underserved industrial sector of balance-of-plant equipment.





### Wired Online Monitoring

SmartDiagnostics’ differentiating cost relative to wired systems is exemplified by considering that a 10 point wired continuous vibration monitoring solution, with 50 meter cable lengths, costs \$13,497 per sensor (\$134,970 total)<sup>1</sup>. SmartDiagnostics’ costs is \$780 per sensor point (\$7,800 total), including the receiver and all other networking hardware. In this case, SmartDiagnostics® is 18 times lower in cost than a wired installation.

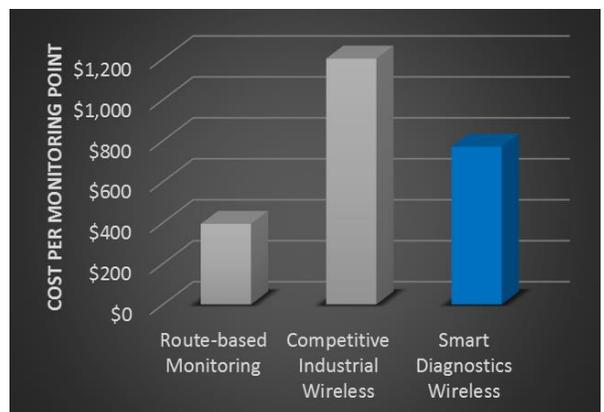
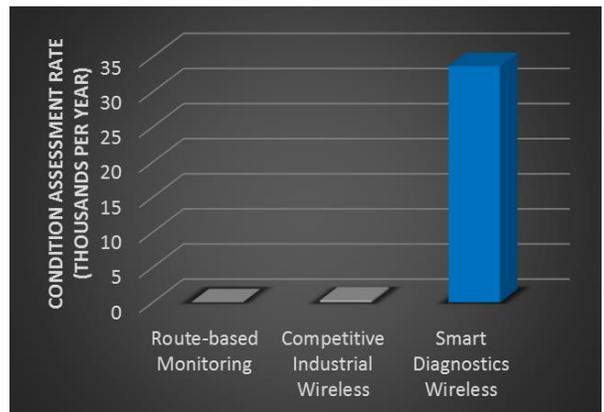
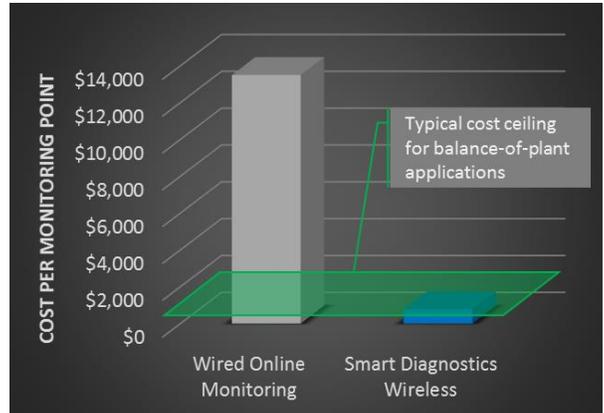
### Route-based Monitoring

In the past few decades, the high cost of wired online monitoring has motivated the use of route-based/walk-around monitoring. This type of monitoring is used where preventative maintenance is desired, but the expected reactive maintenance cost is low relative to wired sensor installation cost.

SmartDiagnostics® replaces or supplements route-based monitoring by offering comparable cost, but much higher value monitoring, which is similar to that of an expensive wired system. Considering a conservative 20 minute machine assessment/monitoring schedule, SmartDiagnostics® will provide 2000 times more information than a route-based solution. SmartDiagnostics’ high degree of monitoring radically improves upon the capability of route-based monitoring because most machine failures are unexpected and occur over short periods of time.

### Competitive Wireless

Wireless monitoring solutions are emerging as competitive solutions to SmartDiagnostics®. These alternatives lack the innovative technology that enables SmartDiagnostics® to offer full spectrum analysis every few minutes while maintaining a multi-year battery life. Rather, these competitive wireless sensors typically deliver RMS or Peak values on an hourly basis and spectrum daily, weekly, or even monthly. This lower amount of data limits their ability to provide the highly valuable diagnostic information associated with continuous monitoring such as critical running speed avoidance and best practices improvements. Many of the competitive wireless solutions also are sold at a higher cost point and offer installation complications such as limited communication range.



1. <http://www3.emersonprocess.com/rosemount/powermodulelifecalculator/default.aspx>
2. <http://www3.emersonprocess.com/rosemount/wirelessestimator/>