



## MPXCDS Central Diagnostic System

Monitor locomotive location, health status and manage fleet diagnostics in real-time with the MotivePower™ Central Diagnostics System (MPXCDS). Meeting the needs for fleets of all sizes, the CDS system can help improve on-time performance, reduce operating costs and increase revenue through improved productivity, enhanced security, proactive service management and comprehensive preventative maintenance information.

### BASE LEVEL FEATURES

<ul style="list-style-type: none"> <li>Remote monitoring of vehicle health</li> </ul>	<ul style="list-style-type: none"> <li>CDS integrated with locomotive control system, HEP Genset (where applicable) and Cab Signal System</li> <li>Captures 80 % of locomotive functions</li> <li>System provides faults real-time and display on web interface</li> <li>Over 200 messages available from control system alone</li> </ul>
<ul style="list-style-type: none"> <li>GPS location tracking for each locomotive</li> </ul>	<ul style="list-style-type: none"> <li>Always know where your locomotive's located</li> </ul>
<ul style="list-style-type: none"> <li>On site technicians available to offer support</li> </ul>	<ul style="list-style-type: none"> <li>Optional service to compliment CDS</li> </ul>
<ul style="list-style-type: none"> <li>CDS system to utilize cellular communication or 802.11 wireless</li> </ul>	<ul style="list-style-type: none"> <li>Accommodate multiple cell carriers</li> </ul>
<ul style="list-style-type: none"> <li>Secure &amp; reliable CDS data storage</li> </ul>	<ul style="list-style-type: none"> <li>Data storage and cell modem maintenance included in package</li> </ul>
<ul style="list-style-type: none"> <li>Email notification to key operations personnel</li> </ul>	<ul style="list-style-type: none"> <li>Easily understand issues for quick resolution</li> </ul>
<ul style="list-style-type: none"> <li>Easy to use web interface</li> </ul>	<ul style="list-style-type: none"> <li>Basic diagnostic instructions included for both maintainer and operating engineer</li> <li>Access individual locomotive schematics and manuals online through the CDS interface</li> </ul>
<ul style="list-style-type: none"> <li>Locomotive proven, rugged, expandable CDS hardware</li> </ul>	<ul style="list-style-type: none"> <li>Off-the-shelf industry standard Wabtec Railway Electric hardware</li> </ul>
<ul style="list-style-type: none"> <li>Ability to access portable test equipment files remotely</li> </ul>	<ul style="list-style-type: none"> <li>No need for additional specialized monitoring hardware</li> </ul>
<ul style="list-style-type: none"> <li>All CDS hardware, provisions and labor included</li> </ul>	

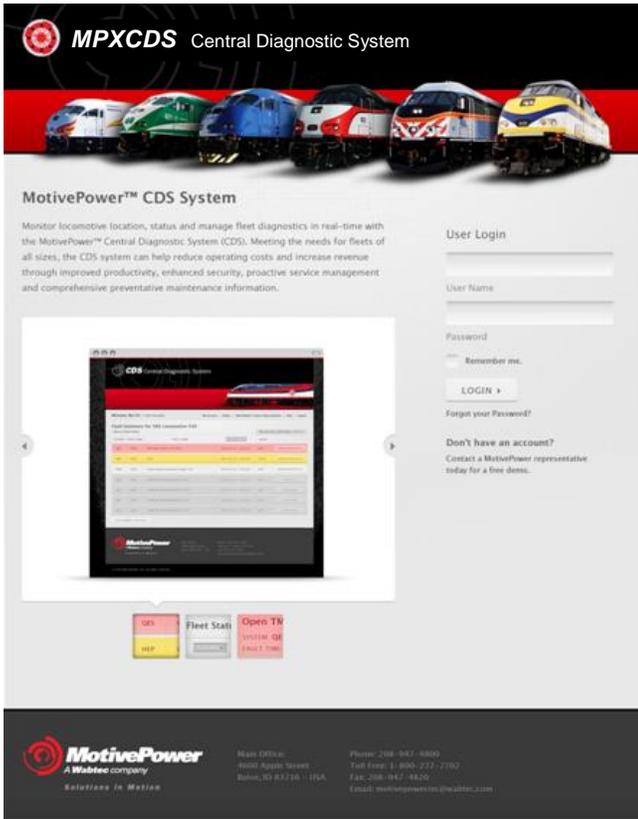


### FLEET RELIABILITY ENHANCEMENT FEATURES

<ul style="list-style-type: none"> <li>Combines MotivePower Service Expertise and the CDS system</li> </ul>	<ul style="list-style-type: none"> <li>Ability to diagnose issues remotely</li> <li>Constantly monitor locomotive performance for possible maintenance</li> </ul>
<ul style="list-style-type: none"> <li>Improves on-time performance</li> </ul>	<ul style="list-style-type: none"> <li>Enables RR maintenance team and MotivePower service to quickly troubleshoot problems</li> <li>Provide real-time health monitoring and preventative maintenance</li> </ul>

### HEALTH MONITORING FEATURES

<ul style="list-style-type: none"> <li>Prime Mover and HEP Fuel Consumption (GPH)</li> </ul>	<ul style="list-style-type: none"> <li>Traction Motor Current (Amps)</li> </ul>
<ul style="list-style-type: none"> <li>Battery Current (Amps)</li> </ul>	<ul style="list-style-type: none"> <li>Oil, H2O, Fuel Temp (0°F)</li> </ul>
<ul style="list-style-type: none"> <li>Locomotive Speed (MPH)</li> </ul>	<ul style="list-style-type: none"> <li>Trainline Monitoring</li> </ul>
<ul style="list-style-type: none"> <li>Filter Status</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance Monitoring (92-day/184-day maintenance)</li> </ul>
<ul style="list-style-type: none"> <li>HEP kW Load vs. Time</li> </ul>	



The internet portal allows authorized railroad personnel to view the status of the locomotive based on the predetermined critical monitoring features.

Once logged in, either authorized railroad or MotivePower service representatives can access information critical to ensuring increased fleet availability. Information can vary depending on the needs of the individual railroad.

Locomotive status (active or inactive), location, condition of major systems, faults and fault resolution, access to manuals, schematics and drawings are some examples of the information that can be remotely viewed and accessed via the portal.

Highly intuitive user interface can be easily learned for rapid implementation at various levels of operation.

MPXCDS utilizes infrastructure already installed on the locomotive to leverage industry proven, standard equipment.

Major systems feed fault data directly into the MPXCDS via serial or Ethernet protocol. The CDS then transmits data securely through the onboard modem directly to the server site.

