Summary Descriptions of Process Plugins™ Solutions
Appendix A

PPI-WEB-DASH-VIS: Process Plugins Dashboard

The dashboard website is installed in IIS to allow for Windows security authentication. The site leverages the Kendo UI HTML5 widgets for visualization. The site uses the OSIsoft PI Web API to call specific AF templates and then displays the values on the dashboard. Once the AF templates are loaded in the configuration the values will appear in the dashboard. No other website configuration is required for display.

PPI-CCP-CTG-PRF: Process Plugins Combustion Gas Turbine Performance Monitor & Plant Heat Rates

This module provides real-time compressor efficiencies, expected generator capacity, and expected heat rates based upon compressor inlet temperature and humidity. This information can be useful in determining loss of turbine efficiency or other problems. Curves are customizable and can be easily adjusted anytime afterward. Expected values calculations require the availability of appropriate curves (from the manufacturer or actual historical data). This tool makes it easy to identify problems with turbine performance early. This solution also provides corrected load and heat rate at base load which provides the best indication of turbine condition since all environmental factors are removed and turbine performance is measured at the same base conditions at all times so any step change in the performance is easily detected. This module also includes real-time heat rates of each gas turbine as well as both net and gross heat rates of the combined cycle plant. This information can be useful in determining loss of turbine efficiency or other problems.

PPI-CCP-CTG-FRC: Process Plugins Combustion Gas Turbine Weather-based Forecast

Process Plugins regularly reads the weather forecast, and inserts hourly forecasted ambient conditions into tables. Combustion gas turbine capacity and heat rate are forecasted using correction curves and historic performance data. The forecast report is automatically emailed at any frequency desired (usually daily). Internet access is required for at least one associated computer for weather inputs. Process Plugins supports weather feeds from weather.gov (U.S. 7-day by latitude/longitude) and wunderground.com (International 10-day by city name).

PPI-CCP-PLT-FRC: Process Plugins Combined Cycle Detailed Model with Weather-based Forecast

A separate AF database is used for a detailed plant model. Process Plugins regularly reads the weather forecast, and inserts hourly forecasted ambient conditions into the model. Any parameter may be included in the forecasted model report which is automatically emailed at any frequency desired (usually daily). Internet access is required for at least one associated computer for weather inputs. Process Plugins supports weather feeds from weather.gov (U.S. 7-day by latitude/longitude) and wunderground.com (International 10-day by city name).

PPI-CCP-SOL-FRC: Process Plugins Solar Park Model with Weather-based Forecast

A separate AF database is used for a model of the photovoltaic power station. Process Plugins regularly reads the weather forecast, and inserts hourly forecasted ambient conditions into the model. Any parameter may be included in the forecasted model report which is automatically emailed at any frequency desired (usually daily). Internet access is required for at least one associated computer for weather inputs. Process Plugins supports weather feeds from weather.gov (U.S. 7-day by latitude/longitude) and wunderground.com (International 10-day by city name).

PPI-GNL-HIS-BFL: Process Plugins Retroactive Calculation Back-Filler

This tool performs performance calculations using archived input data, and writes calculated results to corresponding timestamps retroactively. With KPIs (Key Performance Indicators) retroactively stored in PI-Tags, data retrieval is simple and robust. The Calculation Back-Filler comes with instructions including a walk-through tutorial so that future back-filling operations may be easily performed in-house. Process Innovations recommends a minimum of 4 hours of onsite training before using the Calculation Back-Filler.

PPI-CCP-CTG-ETP: Process Plugins Combustion Gas Turbine Exhaust Temperature Profile

Provides a real-time calculation and polar plot of exhaust gas temperatures, and maps to originating combustion chamber. The exhaust swirl angle will be used to correct the combustion chamber position so that each exhaust thermocouple points to the correct combustion chamber. This tool provides a visual map of exhaust temperatures, making it easy to identify uneven temperature distributions, and the source combustion chamber associated with the given downstream thermocouples.

PPI-CCP-CTG-OCA: Process Plugins Combustion Gas Turbine Operations Cost Analysis

Operational parameters are compared to expected values and corresponding effects on unit heat rate (or efficiency) and corresponding fuel costs/savings are calculated real-time and displayed. Manufacturer's design curves are customized upon installation and can be easily adjusted anytime afterward. Parameters include GT Inlet Filter Pressure Drop, GT Inlet Temperature, Compressor Section Efficiency and Cleanliness, Exhaust Temperature. This tool calculates real time financial losses or savings (in $/hour) based upon given operational parameters in comparison to the target values. This tool is extremely valuable in identifying means of immediate savings.

PPI-CCP-UNT-OCA: Process Plugins Combined Cycle Plant Operations Cost Analysis

Operational parameters are compared to expected values and corresponding effects on unit heat rate (or efficiency) and corresponding fuel costs/savings are calculated real-time and displayed. Manufacturer's design curves are customized upon installation and can be easily adjusted anytime afterward. Parameters include GT Inlet Filter Pressure Drop, GT Inlet Temperature, Compressor Section Efficiency and Cleanliness, Exhaust Temperature, HRSG Efficiency, & Condenser Pressure. This tool calculates real time financial losses or savings (in $/hour) based upon given operational parameters in comparison to the target values. This tool is extremely valuable in identifying means of immediate savings.

PPI-CCP-CTG-OWA: Process Plugins Combustion Gas Turbine Offline Wash Advisor

This tool uses financial modeling to determine the most economically advantageous time to perform an offline compressor wash. The advisor calculates this date/time using *Maximum Net Profit Analysis*.

PPI-CCP-CTG-OFA: Process Plugins Combustion Gas Turbine Air Filter Change Advisor

This tool uses financial modeling to determine the most economically advantageous time to replace the CT Compressor Air Inlet Filter. The advisor calculates this date/time using *Maximum Net Profit Analysis*.

PPI-CCP-CTG-AGA: Process Plugins Fuel Gas Orifice Metering Flowrate

This function is based upon American Gas Association (AGA) report numbers 3 & 8. The calculations defined by AGA report #8 are implemented to calculate gas compressibility (Z). The calculations defined by AGA report #3 are implemented to calculate real time fuel gas flow. The calculation yields (1) Actual Compressibility, (2) Base Compressibility, (3) Mass Flowrate, (4) Actual Volumetric Flowrate, and (5) Standard Volumetric Flowrate.

PPI-CCP-CHL-PRF: Process Plugins Chiller Performance Monitor & Advisor

This solution performs thermodynamic calculations on the chiller coils, calculating the real time chiller duty, heat exchanger effectiveness, heat transfer coefficient, and air moisture removal rate. The chiller design specs are used to model the design conditions for real time comparison. When incorporated in conjunction with PPI-CCP-CTG-PRF (Combustion Gas Turbine Performance Monitor & Plant Heat Rates), chiller advisor will determine whether or not chiller operation is beneficial under current ambient conditions. When incorporated in conjunction with PPI-CCP-CTG-FRC (Combustion Gas Turbine Weather-based Forecast), chiller advisor will recommend chiller operation based upon future ambient weather conditions.

PPI-GNL-CCR-PRF: Process Plugins Centrifugal Compressor Condition Monitor
Compressor discharge pressure, work (brake horsepower) and efficiency are calculated and plotted against the expected curves respectively. Reference curves are scalable, dynamic, and adjust with compressor speed as appropriate. Real time calculations include isentropic efficiency and polytropic efficiency. The graphic is very useful in visualizing real time compressor performance in comparison to the reference curves. This tool makes it easy to identify problems early, such as degradation in performance.

PPI-GNL-CCR-DSP: Process Plugins Centrifugal Compressor Map Display (using existing KPIs)
This is the PPI-GNL-CCR-PRF (above) with existing KPI tags provided by the client.

PPI-GNL-RCR-PRF: Process Plugins Reciprocating Compressor Condition Monitor
Compressor stage and overall pressure ratios, free air delivery (FAD), brake horsepower and efficiencies are calculated in real time. Calculated KPIs are plotted against reference curves. Real time calculations include isothermal efficiency and volumetric efficiency. Each compression stage is analyzed independently for multi-stage compressors. The graphic is very useful in visualizing real time compressor performance in comparison to the reference curves. This tool makes it easy to identify problems early, such as degradation in performance.

PPI-LNG-CTG-PRF: Process Plugins Combustion Gas Turbine Power Curves
Provides a real-time power curves display of Corrected Power vs. Air Inlet Temperature. Power is plotted against design Full Load Output as well as PCD and WF curves. All other pertinent KPIs are displayed as well as a trend of corrected and predicted power.

PPI-GNL-TDC-PRF: Process Plugins Turbine Driven Compressor Condition Monitor
Compressor discharge pressure, work (brake horsepower) and efficiency are calculated and plotted against the expected curves respectively. Reference curves are scalable, dynamic, and adjust with compressor speed as appropriate. Real time calculations include isentropic efficiency and polytropic efficiency. The graphic is very useful in visualizing real time compressor performance in comparison to the reference curves. This tool makes it easy to identify problems early, such as degradation in performance. This solution also includes condition monitoring of the driving (combustion or steam) turbine as described by PPI-CCP-CTG-PRF or PPI-GNL-STB-PRF as appropriate.

PPI-LNG-CTG-DSP: Process Plugins Combustion Gas Turbine Power Curves Display (using existing KPIs)
This is the PPI-LNG-CTG-PRF (above) with existing KPI tags provided by the client.

PPI-GNL-TEX-PRF: Process Plugins Turbo-Expander (Expansion Turbine) Condition Monitor
The Compressor Condition Monitor (above) provides calculations for the applicable shaft load. Gas inlet and outlet conditions are used to calculate the power extracted by the turbo-expander, applicable efficiencies, and shaft losses. These performance indicators are plotted real time with corresponding design curves. The display is a handy tool as it provides a visual display used to quickly identify potential problems with the rotating equipment.

PPI-CCP-HRS-PRF: Process Plugins HRSG Condition Monitor

Provides real-time Heat Recovery Steam Generator (HRSG) efficiency and effectiveness (HP and LP as applicable) and tracks these parameters. NIST-JANAF tables are used to formulate flue gas enthalpies which are used to perform the necessary gas-side energy balances. This information can be useful in determining loss of HRSG integrity due to corrosion or other problems.

PPI-RCP-BLR-EFF: Process Plugins Boiler Efficiency & Unit Heat Rates (Rankine Cycle Units)

Gross turbine cycle heat rate is provided based upon the boiler's steam-side heat input to the turbine cycle. Boiler Efficiency is calculated by the loss method, which is the most accurate way of ultimately calculating real-time coal flow and net unit heat rate.

PPI-RCP-UNT-OCA: Process Plugins Rankine Plant Operations Cost Analysis

Operational parameters are compared to expected values and corresponding effects on unit heat rate (or efficiency) and corresponding fuel costs/savings are calculated real-time and displayed. Manufacturer's design curves are customized upon installation and can be easily adjusted anytime afterward. Parameters include Main Steam Pressure & Temperature, Reheat Temperature, Condenser Pressure, Cooling Tower Outlet Temperature (when Cooling Tower Performance is included), Feedwater Temperature, Hotwell Temperature, Attemperation Spray Flows, & Auxiliary Station Service Power. This tool calculates real time financial losses or savings (in $/hour) based upon given operational parameters in comparison to the target values. This tool is extremely valuable in identifying means of immediate savings.

PPI-RCP-BAH-PRF: Process Plugins Boiler & Air Heater Condition Monitor (Rankine Cycle Units)

Boiler Losses are calculated real-time (in accordance with ASME PTC 4.1) and compared to expected losses and overall boiler efficiency. Air heater exit gas temperature (corrected to zero leakage), gas side efficiency, and x-ratio are calculated and compared to expected real-time values. This solution includes a custom display of the boiler side view and air heater when diagram is provided. Boiler Efficiencies (Actual and Expected) and Steam Temperatures are trended to provide a visual display of Boiler Key Performance Indicators.

PPI-GNL-BLR-PRF: Process Plugins Boiler Efficiency and Performance

Boiler Losses are calculated real-time (in accordance with ASME PTC 4.1) and compared to expected losses and overall boiler efficiency. When applicable, Air heater exit gas temperature (corrected to zero leakage), gas side efficiency, and x-ratio are calculated and compared to expected real-time values. This solution includes a custom display of the boiler side view and air heater when diagram is provided. Boiler Efficiencies (Actual and Expected) and Steam Temperatures are trended to provide a visual display of Boiler Key Performance Indicators.

PPI-RCP-BLR-CLN: Process Plugins Boiler Cleanliness Monitor

Each boiler section is modeled and the overall heat transfer coefficient is calculated in real time. Each section's cleanliness is calculated in real time and displayed by a bar chart. This solution includes a custom display of the boiler side view when diagram is provided.

PPI-RCP-BBM-PRF: Process Plugins Biomass Boiler Efficiency & Performance Monitor

Boiler efficiency is calculated real-time and compared to expected boiler efficiency. Performance indicators are utilized based on historical data.

PPI-RCP-BAX-PRF: Process Plugins Auxiliary Boiler Efficiency & Condition Monitor

Itemized Boiler Losses are calculated real-time (in accordance with ASME PTC 4.1) and compared to expected losses and overall boiler efficiency. This solution includes a custom display of the boiler side view when diagram is provided. Boiler Efficiencies (Actual and Expected) and Steam Temperatures are trended to provide a visual display of Boiler Key Performance Indicators.

PPI-GNL-STB-PRF: Process Plugins Steam Turbine Condition Monitor

This module provides real-time turbine section efficiencies and power output and tracks these parameters. Formulations are based upon ASME A *Method for Predicting the Performance of Steam Turbine Generators* (by R.C. Spencer, K.C. Cotton, C.N. Cannon). Real time calculations include actual and expected efficiencies of each individual steam turbine, steam power extracted from each individual turbine, and electrical and mechanical losses. All steam turbine leakages are calculated and accounted for. Calculations are in accordance with ASME PTC 6/6s and utilize properties of water and steam calculated in accordance with the ASME 1997 formulations. This information can be useful in determining loss of turbine efficiency or other problems.

PPI-GNL-GEN-RCP: Process Plugins Generator Reactive Capability

The generator reactive capability curve is displayed in a dynamic real time display. This display is unique in that the hydrogen pressure (or temperature where applicable) D-curve accurately moves real-time with actual hydrogen pressure (or temperature) and reactive/real power is plotted within. The D-curve is plotted with extreme accuracy using true polar coordinates so that the entire limit curve is displayed dynamically around the entire 180 degree plot. This tool provides a very handy visualization of real time operation compared to the limitations.

PPI-GNL-ACC-PRF: Process Plugins Air Cooled Condenser Condition Monitor

The air-cooled condenser is monitored using design specifications to predict target pressure (vacuum) and cleanliness. These parameters are compared real-time to the corresponding actual conditions which are also calculated. Differences in expected results could indicate problems with condenser operation or physical condition, which often has a substantial impact on plant heat rate.

PPI-GNL-WCC-PRF: Process Plugins Water Cooled Condenser Condition Monitor

The condenser is modeled to predict pressure, temperature difference (TTD), and cleanliness. These parameters are compared real-time to the corresponding actual conditions which are also calculated. Differences in expected results could indicate problems with condenser operation or physical condition, which often has a substantial impact on plant heat rate.

PPI-GNL-CTR-PRF: Process Plugins Cooling Tower Condition Monitor

Provides real-time expected cooling tower outlet temperature based upon wet bulb temperature and range (circ-water temperature rise). The Process Plugins™ toolset provides the calculation of wet bulb temperature from humidity or dew-point as necessary. This information can be useful in determining problems with cooling tower operation or physical condition. Curves are customized upon installation and can be easily adjusted anytime afterward. Expected values calculations require the availability of appropriate curves (from the manufacturer or actual historical data).

PPI-GNL-CWP-ADV: Process Plugins Circ Water Pump Advisor

This module provides real-time optimal Circulating Pump configuration in order to minimize the unit's (or entire plant's) net heat rate. This tool requires the Condenser Performance package in order to determine the effects of various pump configurations on condenser pressure, and resultant effects on turbine cycle heat rate. Circ water pump power consumption is considered in determining the optimal CW pump configuration for the real-time given conditions.

PPI-GNL-PMP-PRF: Process Plugins Pump Condition Monitor

Pump head and efficiency are calculated and plotted against the expected curves respectively. Reference curves are scalable, dynamic, and adjust with pump speed as appropriate. Real time calculations include driver/pump set efficiency, pump efficiency, performance factor, suction head, NPSH, discharge head, and

total head. The graphic is very useful in visualizing real time pump performance in comparison to the reference curves. This tool makes it easy to identify problems early, such as degradation in performance.

PPI-GNL-PMP-DSP: Process Plugins Pump Condition Monitor (using existing KPIs)
This is the PPI-GNL-PMP-PRF (above) with existing KPI tags provided by the client.

PPI-RCP-FWH-PRF: Process Plugins Feedwater Heater Condition Monitor
Each feedwater heater is modeled to predict the feedwater outlet temperature, terminal temperature difference (TTD), drain cooler approach (DCA), and steam extraction flow. These parameters are compared real-time to the corresponding actual conditions which are also calculated. Differences in expected results could indicate problems with heater operation or physical condition.

PPI-GNL-DEA-PRF: Process Plugins Deaerator Condition Monitor
The Deaerator is monitored to predict the feedwater outlet temperature, terminal temperature difference (TTD), and steam extraction flow. These parameters are compared real-time to the corresponding actual conditions which are also calculated. Differences in expected results could indicate problems with deaerator operation or physical condition.

PPI-GNL-HEX-PRF: Process Plugins Heat Exchanger Condition Monitor
This solution performs thermodynamic calculations on the heat exchanger tubes/fins/coils, calculating the real time duty, heat exchanger effectiveness, heat transfer coefficient, and fluid flows as appropriate. The heat exchanger design specs are used to model the design conditions for real time comparison.

PPI-GNL-BLO-PRF: Process Plugins Blower Condition Monitor
Blower efficiency and total pressure are calculated and plotted against the expected curves. Reference curves are scalable, dynamic, and adjust with blower speed as appropriate. Real time calculations include fluid power, driver/fan set efficiency, blower efficiency, and total pressure. The graphic is very useful in visualizing real time blower performance in comparison to the reference curves. This tool makes it easy to identify problems early, such as degradation in performance.

PPI-CCP-PLT-FRC: Process Plugins Detailed Thermodynamic "What If" Model
A separate AF database is used for a detailed plant model. A customized interactive PI-ProcessBook display is integrated with the model. The user may edit the value of any parameter, and the edit automatically triggers the Process Plugins model function to recalculate a new set of results. Any parameter may be included in the model input/output display. The display also includes a side-by-side real vs. model set of parameters, making it convenient to enter actual input values, and compare modeled to actual values. This is handy when tuning the model as is often needed to account for equipment degradation.

PPI-WND-WTB-PRF: Process Plugins Wind Turbine Condition and Assets Monitor
Wind asset parameters are organized by Region, Site, Turbine, and Component within PI-AF. A master display is provided with drill-down capabilities to support five levels of hierarchy: Executive, Regional, Site, Turbine, and Component screens. Calculations include Availability, Capacity Factors, and totalizing functions. Turbine status is monitored for any gear boxes, generator and overall performance issues. Real time performance of the turbine compared to expected performance is displayed within Process Book of the PI WebParts.

PPI-WND-WTB-FRC: Process Plugins Wind Turbine Site Capacity Forecast
Based upon weather forecast at the site location, wind turbine generator capacity is predicted into the future. Curves are customized upon installation and can be easily adjusted anytime afterward. Internet access is required for an associated computer or the Analysis Framework server for weather inputs. Expected values

calculations require the availability of appropriate curves (from the manufacturer or actual historical data). Process Plugins supports weather feeds from weather.gov (U.S. 7-day by latitude/longitude) and wunderground.com (International 10-day by city name).

PPI-COK-BAT-TOT: Process Plugins Coking Battery and Oven Monitor and Totalizer

This solution calculates and totalizes key parameters of the coking batteries and ovens. Calculations include, but are not limited to daily, (today and yesterday), weekly, monthly, and yearly NTE (not to exceed) event counters of high and low temperatures, damper positions, charge weights and control limits, feed rates, & emissions.

PPI-GEN-DST-PRF: Process Plugins Distillation/Evaporation/Desalination Plant Monitor

This solution monitors the performance of the distillation/evaporation/desalination plant. Fresh water production and energy consumption are analyzed to provide real time indication of plant performance compared to design values. This solution also includes real-time mass balance reconciliation of supply water, fresh water, and waste water.

PPI-PAP-PLP-PRF: Process Plugins Pulp Line Condition Monitor

This solution monitors the performance of the pulp line by comparing real-time drive motor power, water consumption, and chemical and bleaching agent consumption to design and/or expected historical values.

PPI-GNL-ACC-ADV: Process Plugins Air Cooled Condenser Fan Advisor

This module provides real-time optimal ACC Fan configuration in order to minimize the unit's (or entire plant's) net heat rate. ACC Fan power consumption is considered in determining the optimal ACC Fan configuration for the real-time given conditions.

PPI-GNL-DRM-CHM: Process Plugins Drum Chemistry Monitor

Real time chemistry indications are displayed and plotted against the expected curves. Reference curves are scalable and dynamic where appropriate. Real time visualizations include silica and cation conductivity vs. drum pressure, and pH vs phosphate. The graphic is very useful in visualizing real time chemistry status in comparison to the reference curves. PI Notifications is leveraged to provide email alerts to any anomaly in chemistry requiring attention.

PPI-GNL-REG-PRF: Process Plugins Reciprocating Engine Generator Performance Monitor & Plant Heat Rates

This module provides real-time expected generator capacity, and expected heat rates based upon manufacturer specifications. This information can be useful in determining loss of machine efficiency or other problems. Curves are customizable and can be easily adjusted anytime afterward. Expected values calculations require the availability of appropriate curves (from the manufacturer or actual historical data). This tool makes it easy to identify problems with machine performance early.

PPI-GNL-RED-PRF: Process Plugins Reciprocating Engine Driver Condition Monitor

This module provides real-time actual vs. expected power output capacity, and actual vs. expected efficiency based upon manufacturer specifications. This information can be useful in early detection of machine performance problems. Curves are customizable and can be easily adjusted anytime afterward. Expected values calculations require the availability of appropriate curves (from the manufacturer or actual historical data).

PPI-SOL-STR-PRF: Process Plugins Solar String Condition Monitor

This solution monitors the condition and performance of the module DC output, axis trackers, string inverters, and transformers. Real-time solar conditions (i.e. cloud cover) is imported from the internet in

order to asses and historize output vs. ambient light irradiance. DC to AC "Performance Ratio" and lifetime system degradation is calculated, monitored, and historized. For each string inverter, a real-time plot of output power and current vs. DC voltage is rendered with any available design curve. PI Notifications is leveraged to provide email alerts in the event of a performance reduction or any discernable condition requiring attention.

PPI-WEB-OSI-CAISO: Process Plugins CAISO Connector PI Data Archive

This connector is used for the California Independent System Operator Automated Dispatch System (CASIO ADS). With this connector Process Plugins provides a Windows Service that first presents a certificate to the CAISO authority where we are then returned dispatch instructions in the form of an XML file. The service then parses this instruction and writes the data to the PI Data Archive. Optionally we can then use the installed PI Interface to then relay those instructions to the site control system for automatic dispatch.

PPI-WEB-MOD-CAISO: Process Plugins CAISO Connector MODBUS Protocol

This connector is used for the California Independent System Operator Automated Dispatch System (CASIO ADS). With this connector Process Plugins provides a Windows Service that first presents a certificate to the CAISO authority where we are then returned dispatch instructions in the form of an XML file. The service then parses this instruction and writes the instructions to the control system via MODBUS communication protocol.

PPI-ERP-NOTIF-MAXIMO: Process Plugins Connector to Maximo via PI Notifications

This connector is used to send and receive data directly from the Maximo system via the PI Notifications. Using the native PI Notifications delivery channel of web services the Process Plugins Connector provides a simple tool to build a web service to communicate to the Maximo database to insert selected data. This allows for development of precise preventative measures since real run time timers are sent via this method or you can issue urgent work orders automatically from triggered data in the PI system.

PPI-ERP-NOTIF-SAP: Process Plugins Connector to SAP via PI Notifications

This connector is used to send and receive data directly from the SAP system via the PI Notifications. Using the native PI Notifications delivery channel of web services the Process Plugins Connector provides a simple tool to build a web service to communicate to the SAP database to insert selected data. This allows for development of precise preventative measures since real run time timers are sent via this method or you can issue urgent work orders automatically from triggered data in the PI system.

PPI-ERP-NOTIF-MP20: Process Plugins Connector to MP20 via PI Notifications

This connector is used to send and receive data directly from the MP20 system via the PI Notifications. Using the native PI Notifications delivery channel of web services the Process Plugins Connector provides a simple tool to build a web service to communicate to the MP20 database to insert selected data. This allows for development of precise preventative measures since real run time timers are sent via this method or you can issue urgent work orders automatically from triggered data in the PI system.

PPI-WEB-PWS-WW: Process Plugins Web Connector for Wonderware

This connector is used to send data from a Wonderware historian to the PI Web Services or PI Web API via SSL connection with either Windows authentication or via certificate. This eliminates the need for any

hardware VPN to establish communication. The only requirement is that the connecting device has internet access and can be firewall internal to the location if needed.

PPI-WEB-PWS-OPC: Process Plugins Web Connector for OPC

This connector is used to send data from any OPC Server to the PI Web Services or PI Web API via SSL connection with either Windows authentication or via certificate. This eliminates the need for any hardware VPN to establish communication. The only requirement is that the connecting device has internet access and can be firewall internal to the location if needed.

PPI-WEB-PWS-MOD: Process Plugins Web Connector for MODBUS

This connector is used to send data from any MODBUS data source to the PI Web Services or PI Web API via SSL connection with either Windows authentication or via certificate. This eliminates the need for any hardware VPN to establish communication. The only requirement is that the connecting device has internet access and can be firewall internal to the location if needed.

PPI-WEB-PWS-PI: Process Plugins Web Connector for PI

This connector is used to send data from any PI Data Archive or PI AF to the PI Web Services or PI Web API via SSL connection with either Windows authentication or via certificate. This eliminates the need for any hardware VPN to establish communication. The only requirement is that the connecting device has internet access and can be firewall internal to the location if needed.

PPI-WEB-PWS-RDBMS: Process Plugins Web Connector for RDBMS

This connector is used to send data from any Relational Database such as SQL or Oracle to the PI Web Services or PI Web API via SSL connection with either Windows authentication or via certificate. This eliminates the need for any hardware VPN to establish communication. The only requirement is that the connecting device has internet access and can be firewall internal to the location if needed.