ProcessPlugins Pump Condition Monitor

Partner Organizations:

Process Innovations Inc.

OSIsoft.

PROCESS PLUGINS™ PUMP CONDITION MONITOR

The Pump Performance module monitors and presents a real time graphic display of your pump's key performance indicators. Pump head and efficiency are calculated and plotted against expected curves. Reference curves are scalable, dynamic, and adjust with pump speed as appropriate. Real time calculations include:

- Pump drive power consumption in kilowatts (kW) and horsepower (hp).
- Design efficiency corrected to actual pump speed, with a dynamic curve displayed graphically as function of flow.
- Design head corrected to actual pump speed, with a dynamic curve displayed graphically as function of flow.
- Actual efficiency plotted as function of flow.
- Actual head plotted as function of flow.
- Volumetric flow rate.
- Suction head, net positive suction head (NPSH), and total head.

Reference curves (see illustration below) are not static images, but are continually rendered real-time within the same object that renders the actual plot. This feature, which is unique to the Process Plugins™ solution, provides the following advantages:

1. Dynamic curves represent the expected performance at real time pump speed.
2. Since curves are not a background image, the curves and plots (dots) belong to the same object ensuring extremely high accuracy.
3. Real time actual values do not need to be corrected to test RPM since they are not plotted merely against static test curves.

The Process Plugins™ solution has the capability of monitoring an unlimited number of pumps, which could be added by the end user at any time in the future. All calculations are in accordance with ASME PTC 8.2 and utilize properties of water and steam calculated in accordance with the ASME 1997 formulations.

Using the "AF Relative" feature, one master display file may be used for an unlimited number of pumps. Corporate level summary "drill down" screens make navigation easy via PI Process Book, or Internet Explorer using PI Web Parts.

- FW PUMP 1A

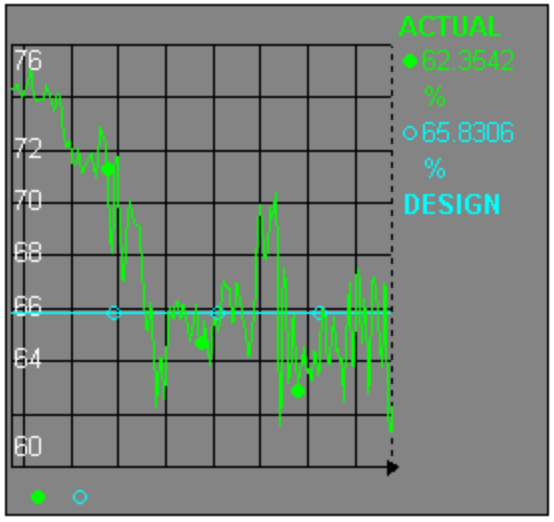
FIELD INPUTS:

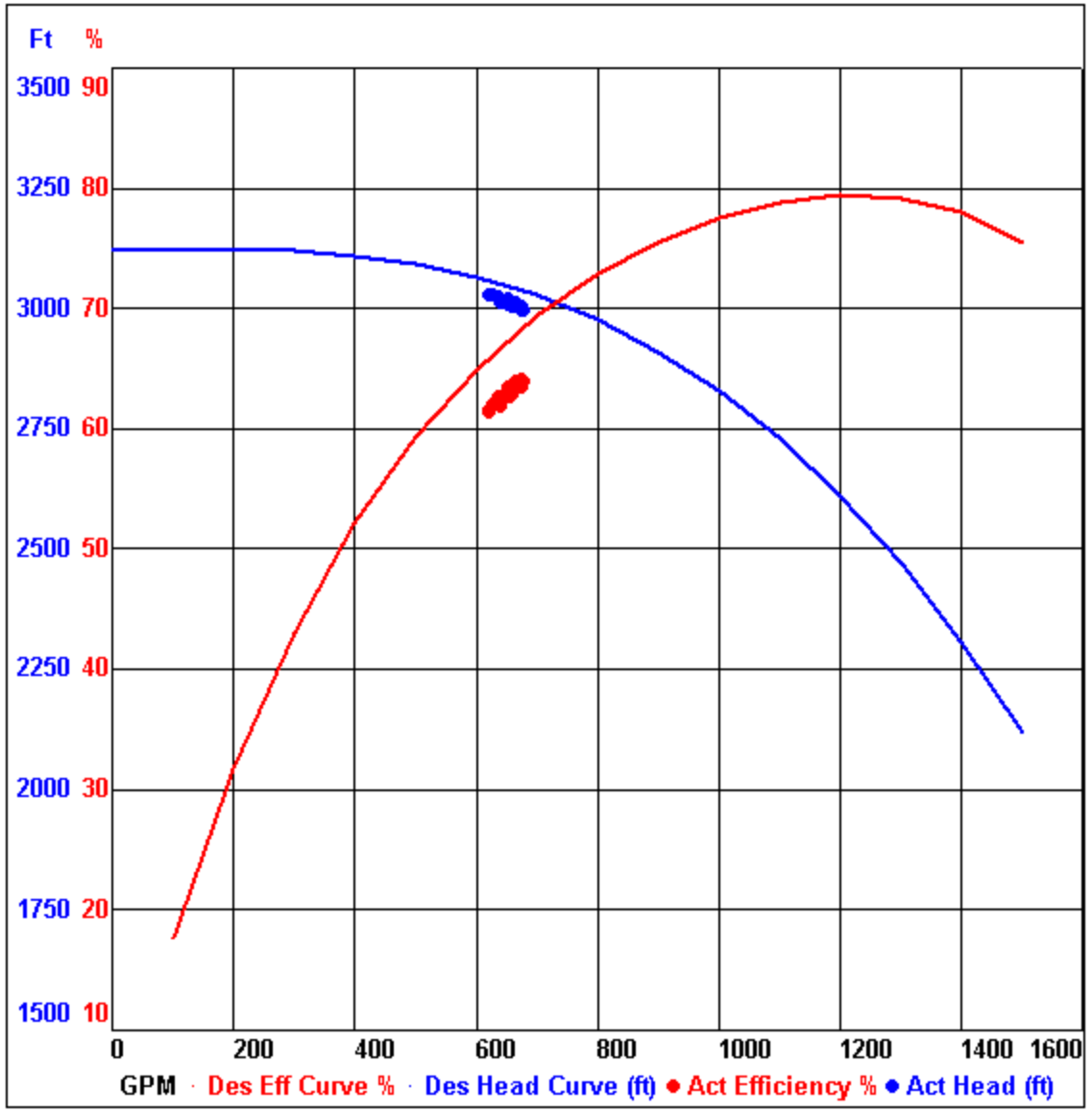
Temperature:	248.0 °F
Suction Press:	14.1 PSIG
Discharge Press:	1,291.2 PSIG
Mass Flow:	296.8 KPPH

CALCULATED RESULTS:

Pump Flow:	628.5 GPM	
Motor Power:	602.4 kW	
Fluid Power:	338.1 kW	
Suction Head:	134.5 ft	55.0 psi
NPSH:	124.1 ft	50.7 psi
Discharge Head:	3,158.6 ft	1,291.5 psi

	ACTUAL	DESIGN
Total Head:	3,024.0 ft	3,059.6 ft
	1,236.5 psi	1,251.0 psi
Efficiency:	62.4 %	65.8 %





Process Plugins™

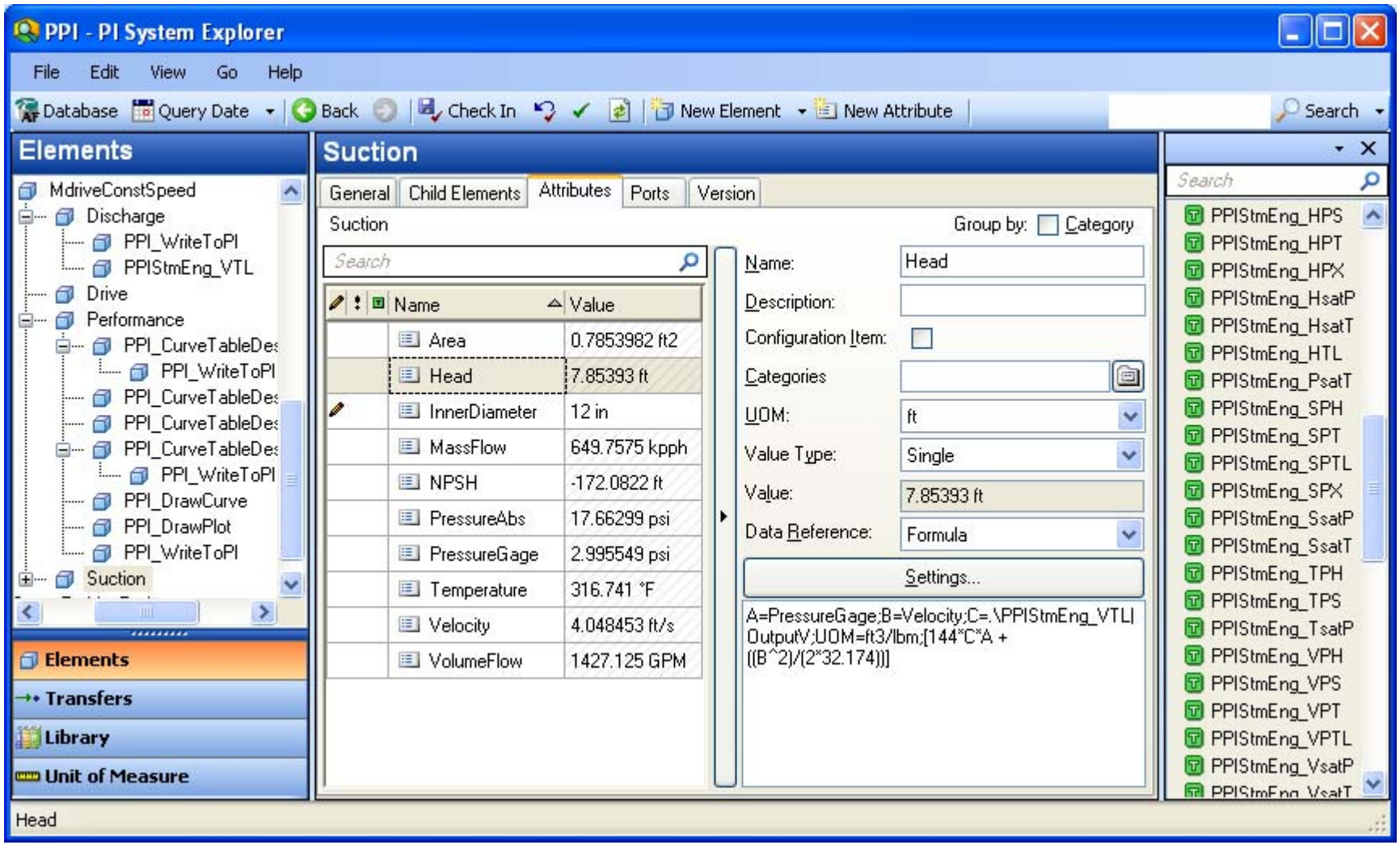
MORE ABOUT PROCESS PLUGINS™

OSIsoft's PI System continues to be the industry standard in data historians, which has been the core of its 21st century real-time infrastructure platform. And now this platform comes fully loaded with every feature necessary to support all of your needs for monitoring, modeling, diagnostics, or forecasting without the need for any 3rd party software. That's where the Process Plugins™ package comes in.

Process Plugins™ is not 3rd party software. The Process Plugins™ package customizes your OSIsoft platform for your plant. This is the only existing solution if you want:

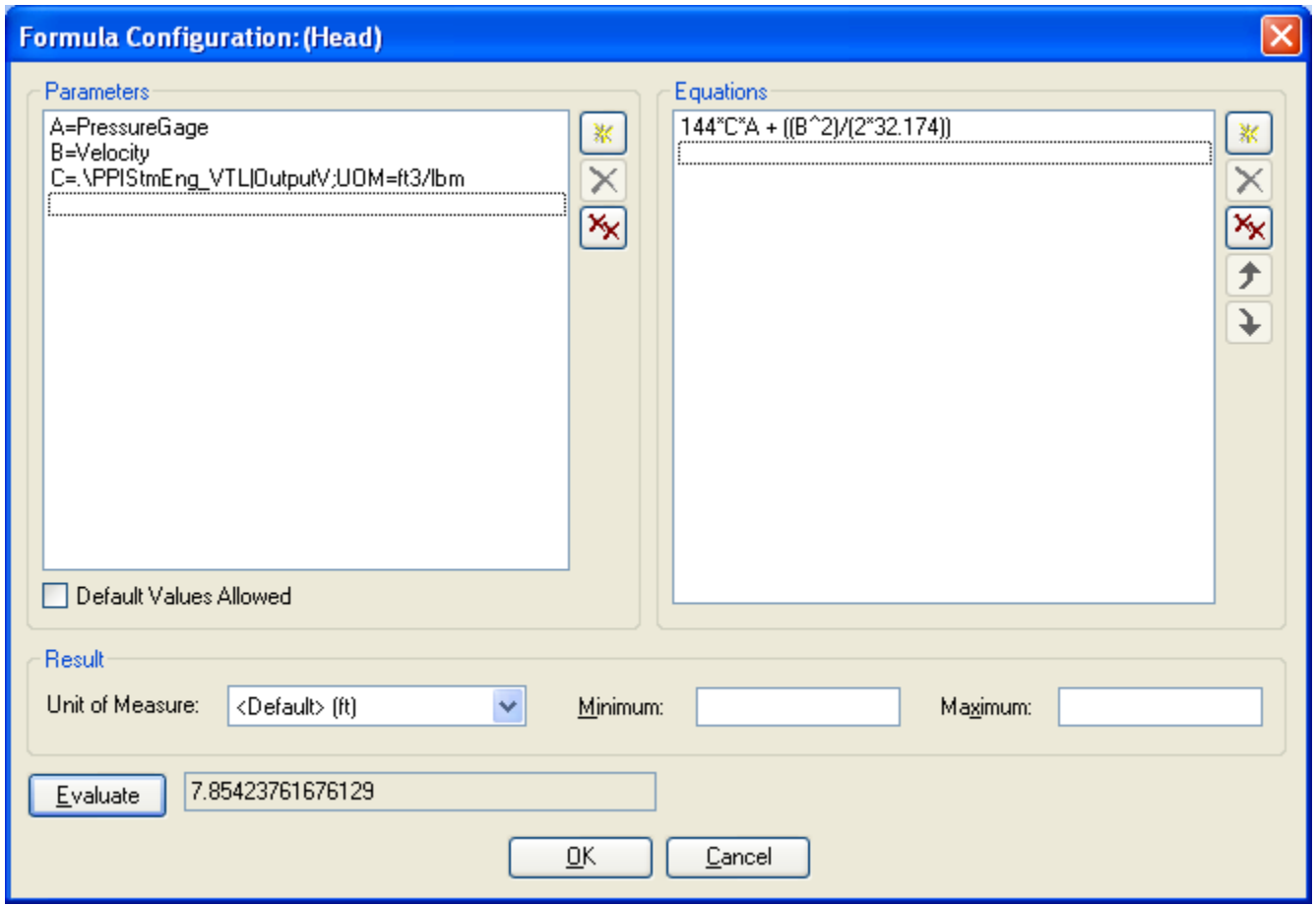
1. No unnecessarily redundant PI tags
2. No 3rd party software
3. One Microsoft certified package with seamless integration of calculations and models
4. Web browser interface capability
5. Ability to drill down into calculations to see (or edit) exactly what they're doing

PI Analysis Framework (PI-AF)



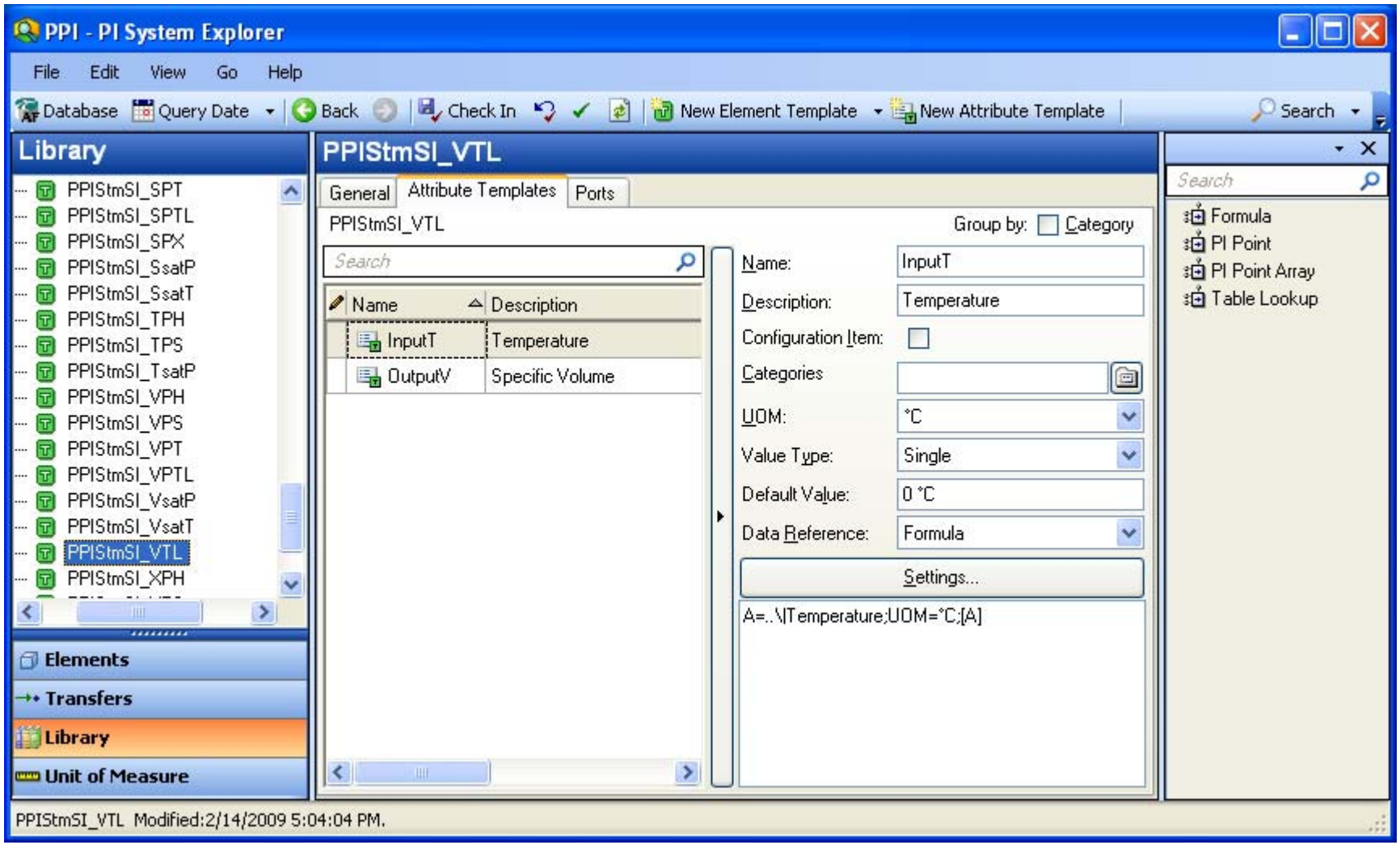
The Process Plugins™ package resides primarily within OSIsoft's PI Analysis Framework (PI-AF). Your plant customization exists in the form of *elements* which handle most of your basic performance calculations. Using PI System Explorer, system administrators can view, modify, or enhance elements as desired.

Element Formulas



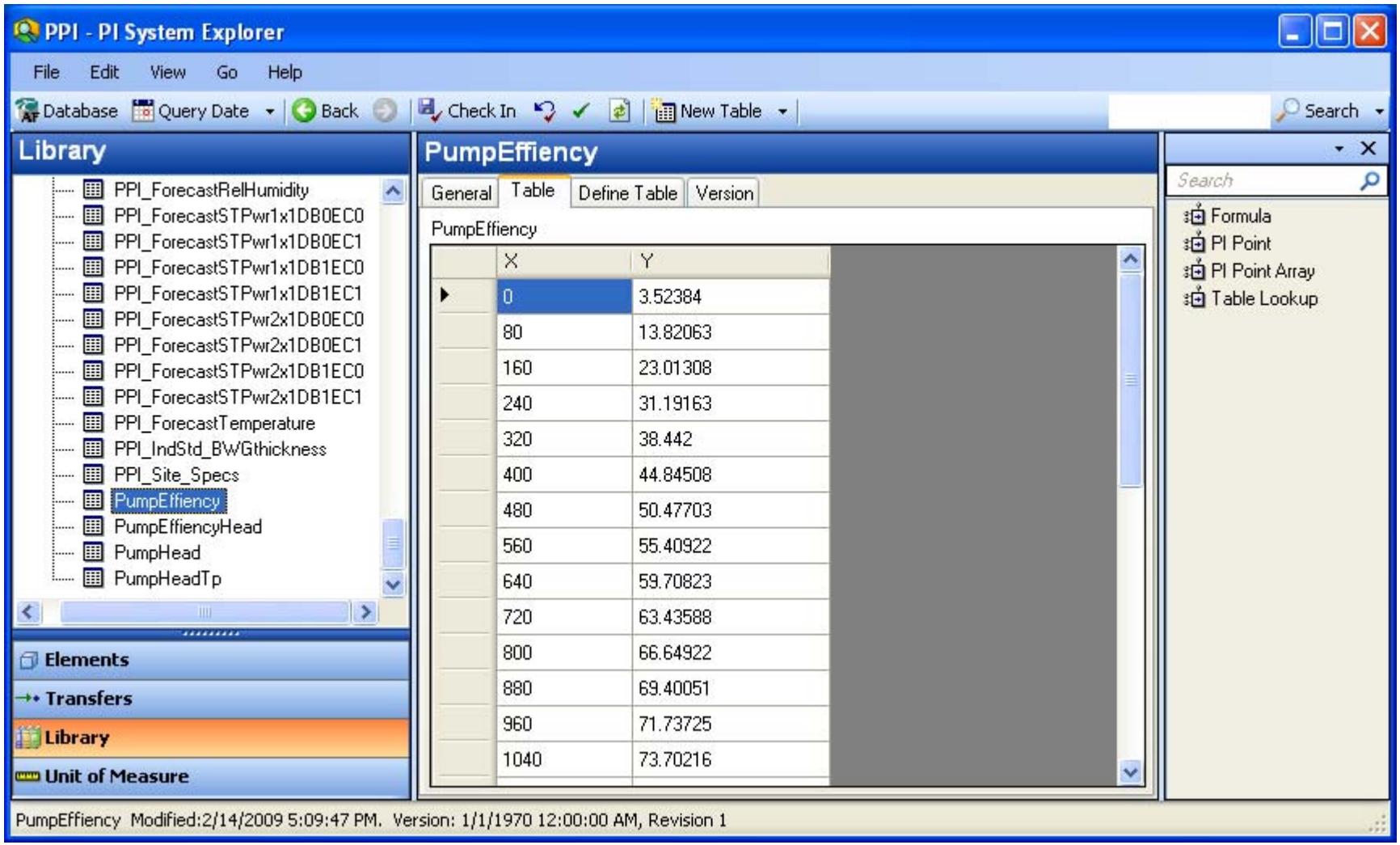
Fundamental performance calculations exist as formulas within elements. Some routines utilize OSIsoft's PI Advanced Computing Engine (PI ACE), which delivers results back to an element.

Element Templates



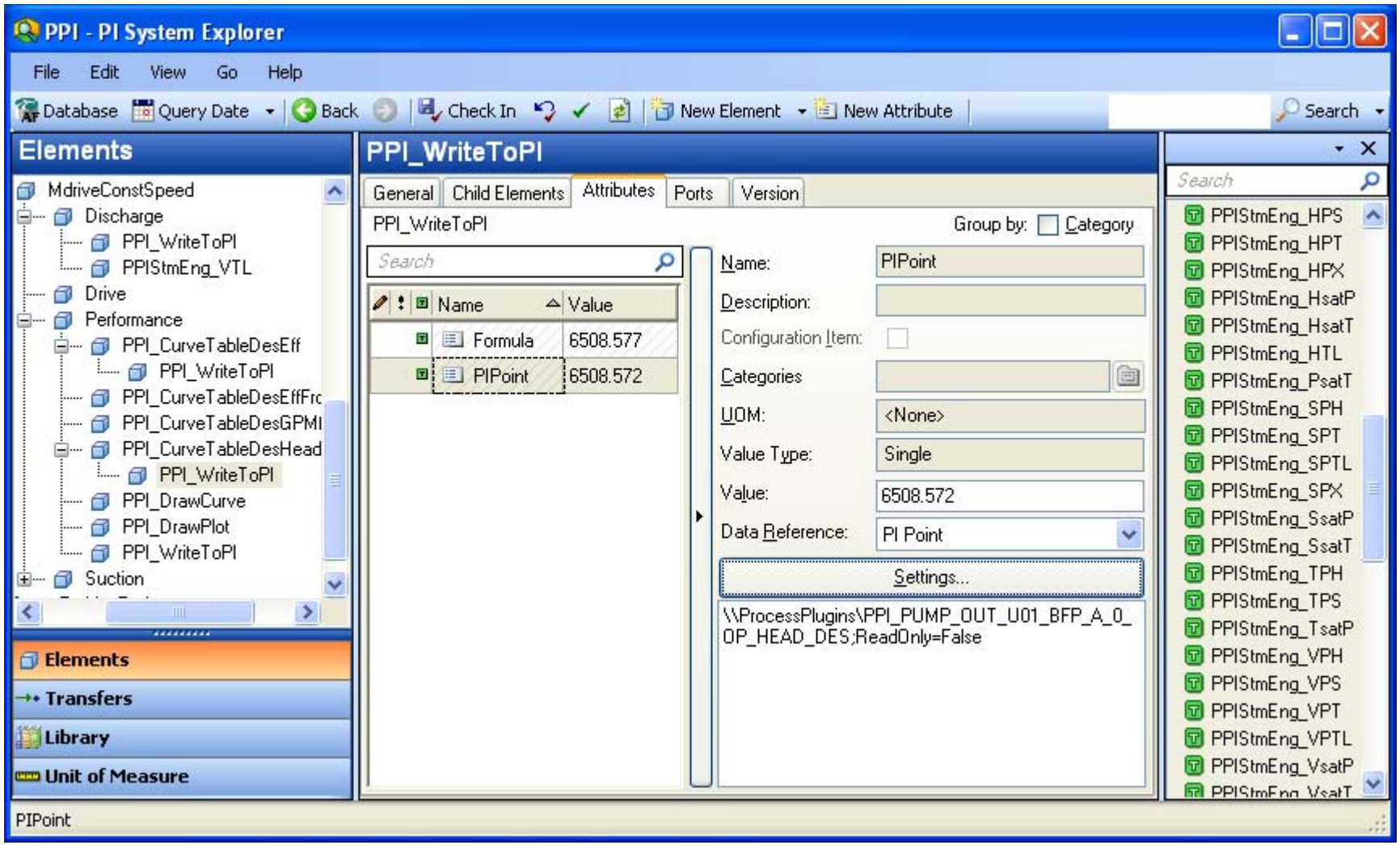
The Process Plugins™ package comes with a complete set of “Drag & Drop” Element Templates for use in PI-AF.

Lookup Tables



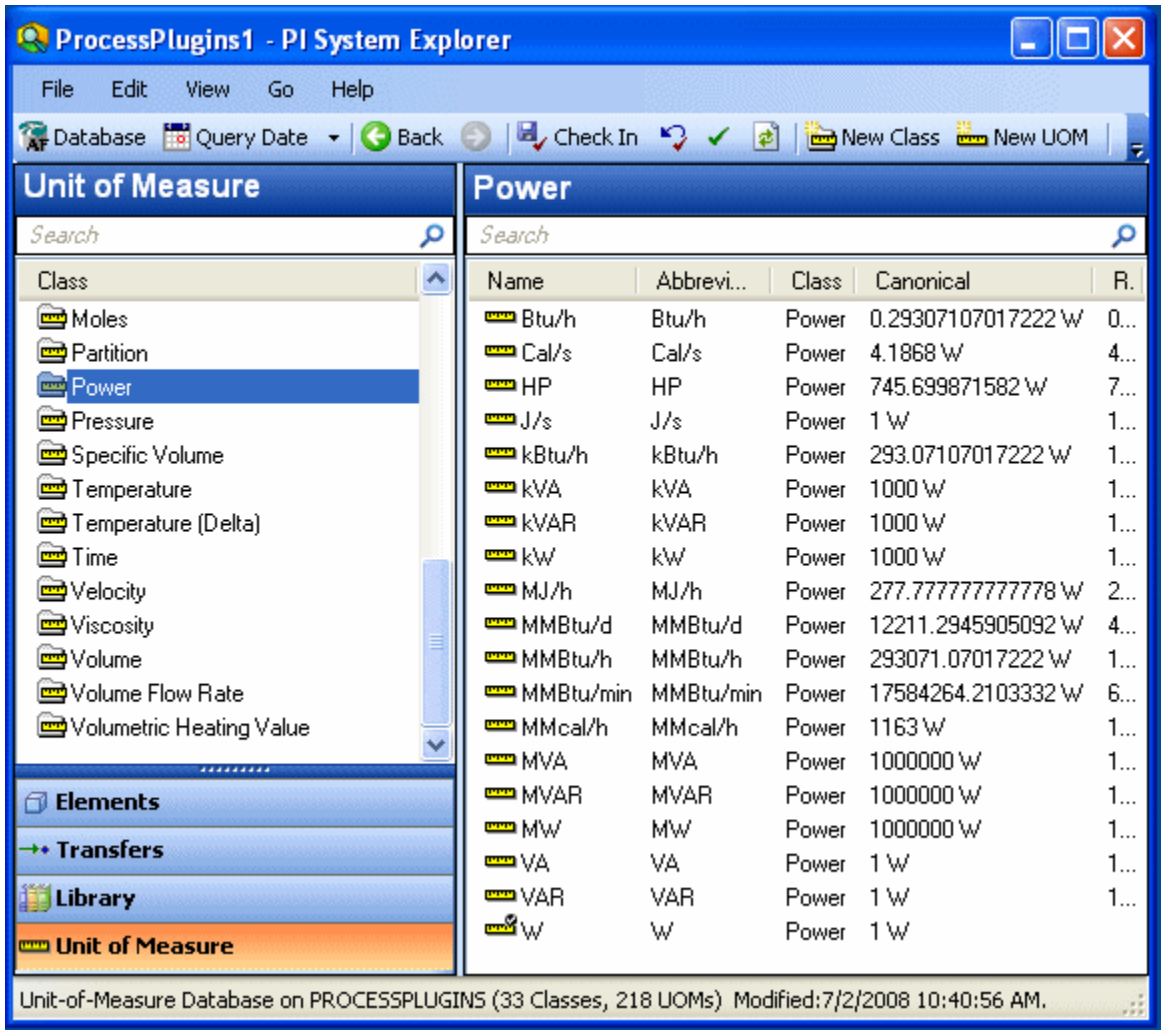
The Process Plugins™ package comes with both industry standard and site specific tables which are used by elements for lookup functions as well as interpolation.

Data Storage



Key resultant data generated by Process Plugins™ modules are stored in the OSIsoft PI historian. Process Plugins™ modules do NOT store redundant or unnecessary data, but only a handful of PI tags for key results.

Units of Measure



The Process Plugins™ package includes a complete set of engineering units utilized by the utility industry for use with the PI AF Unit of Measure (UOM) system. PI-AF automatically performs unit conversions on demand and delivers results in either the U.S. English or S.I. engineering unit systems.

ProcessPlugins

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