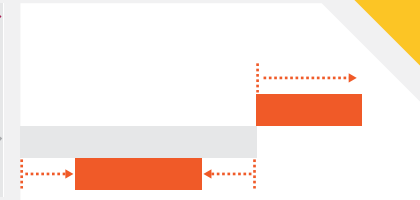
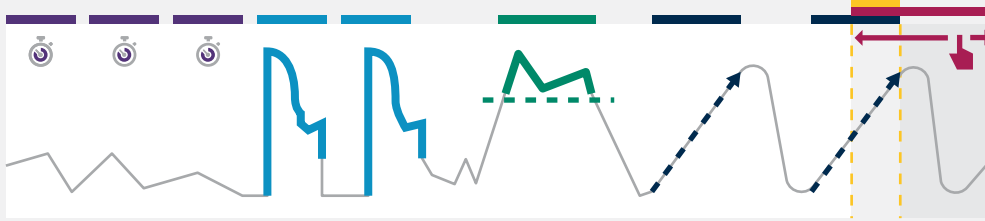
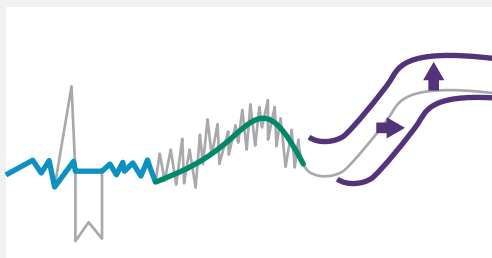


## Identify for Periods of Interest (Conditions)



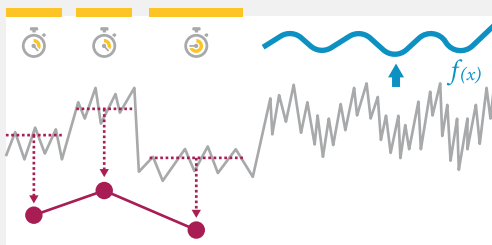
<p><b>TIME</b></p> <p>Repeating Periods: Days, Weeks, Shifts, etc. Use <b>Periodic Condition (&amp; Custom Condition)</b></p>	<p><b>PROFILE OR PATTERN</b></p> <p>Similar Patterns Use <b>Profile Search</b></p>	<p><b>VALUE</b></p> <p>Compare to: Numerical or Text Value(s) Use <b>Value Search</b> ..... Data Item(s) (select  Signal or  Scalar) Use <b>Deviation Search</b> .....</p>	<p><b>CONDITION ADJUSTMENTS</b></p> <p>Grow, Shrink, Move, Merge Conditions Use <b>Formula (search Capsule Adjustments)</b></p>
<p><b>CONDITION COMBINATIONS</b></p> <p>Conditions Overlap, etc. Use <b>Composite Condition</b></p>	<p><b>CUSTOM PERIODS</b></p> <p>Manually Select Capsules &amp;/or Time Ranges Use <b>Custom Condition</b></p>	<p><b>TRENDS, STEP CHANGES</b></p> <p>Increasing, Decreasing, Step Change Use <b>Formula .agileFilter() → .derivative() → Value Search</b> on derivative: &gt; 0 (increasing) or &lt; 0 (decreasing) Larger derivative values indicate step change.</p>	

## Cleanse

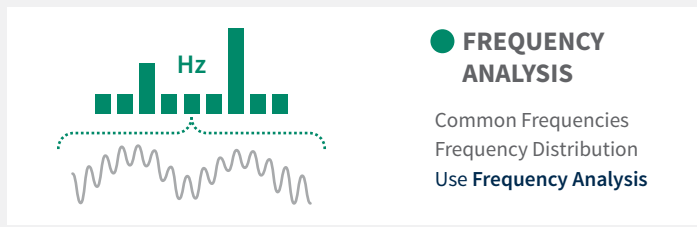
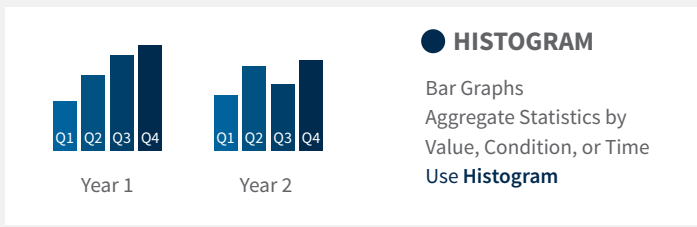


<p><b>REMOVE OUTLIERS</b></p> <p>Use <b>Formula</b> Single-Point Outliers <code>removeOutliers()</code> Bad Data Sections identify bad data <b>Condition</b> then, <code>remove()</code>, <code>splice()</code></p>	<p><b>SMOOTH/FILTER</b></p> <p>Use <b>Low Pass Filter</b> Use <b>Formula (see Signal Cleansing)</b>: <code>agileFilter()</code> is a good first choice</p>	<p><b>ADJUST SIGNALS</b></p> <p>Use <b>Formula</b> Recalibrate Time Shift/Delay: <code>delay()</code> Convert or Change Units: <code>convertUnits()</code> <code>setUnits()</code></p>
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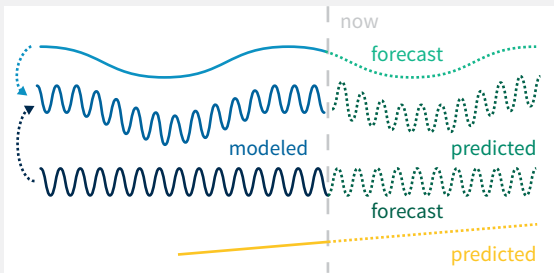
## Quantify



<p><b>CONDITION STATISTICS</b></p> <p>Time or Percent Duration Capsule Count, etc. Use <b>Signal from Condition</b></p>	<p><b>SIGNAL STATISTICS WITHIN CAPSULES</b></p> <p>Integral (Totalize) Average, Standard Deviation, etc. Use <b>Signal from Condition</b></p>	<p><b>EQUATIONS</b></p> <p>Write Equations Function Library Manipulate Conditions, Signals, &amp; more Use <b>Formula</b></p>
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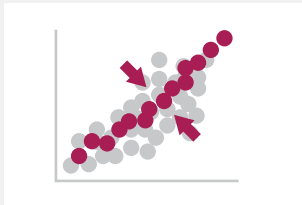


# Model & Predict



**REGRESSION MODEL**  
 Best-Fit Equation Based on Variable(s)  
 Other Than Time  
 Virtual Sensors  
 Statistical & Empirical Models  
 Use **Prediction**

**PREDICTION**  
 Predict using forecasted inputs  
 Use **Prediction**: see forecast functions under **Signal Forecasts** in **Formula**  
 Predict a Signal based on time  
 Use **Prediction**: use `timesince()` in **Formula** to make 'time elapsed' input(s)

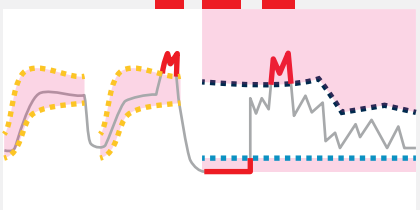


**VALIDATE & OPTIMIZE MODEL**  
 Evaluate Model Fit  
 Use **Scatterplot View**, **Prediction**: "Prediction Model" box  
 Improve Model Fit  
 Use **Prediction**: Edit Inputs, Scale, Regression Method, Training Window

**EQUATION - BASED MODELS**  
 Enter Known Model Equations  
 1st Principles  
 Use **Formula**

$f(x)$

# Monitor



**THRESHOLD DEVIATIONS**  
 Compare to:  
 Numerical or Text Value(s)  
 Use **Value Search** .....  
 Data Items(s) (select **Signal** or **Scalar**)  
 Use **Deviation Search** .....

**CALCULATE THRESHOLDS**  
 Statistical ( $\pm$  std dev, etc.) Limit  
 Use **Reference Profile** calculate statistics within a Condition Equation  
 Use **Formula** enter equation, calculate statistics, etc.

**SHADING AND FORMATTING**  
 Shade Inside Bounds Enter value, signal, or scalar threshold  
 Use **Boundaries** Use **Scorecard Metric** with optional thresholds  
 Shade Outside Bounds - **Trend View**  
 Shade Table - **Scorecard View**

**VISUALIZE THRESHOLDS**  
**Variable**  
 Use **Data tab**: load signal, Customize line type  
**Constant**  
 Use **Formula**: enter value, click **Execute**

**MONITOR MULTIPLE ASSETS**  
 View Statistics &/or Conditions For Each Asset  
 Use **Treemap**

Asset 1  
Avg. T = 94 F

Asset 3  
Avg. T = 84 F

Asset 2  
Avg. T = 91 F

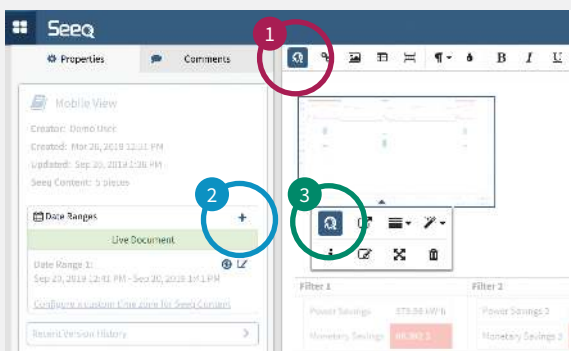
Asset 4  
Avg. T = 97 F

Hi Hi Alert Hi Alert Normal

Ave Temperature	104.1 °F
Max. Flow	150.2 kg/h
Total Production	2,528 kg

**TABLE**  
 Signal Statistics & Values Condition Statistics  
 Color by Value Range (Constant or Varying Limit)  
 Use **Scorecard Metric**

# Document & Publish



**INSERT FIGURE** **SET FIGURE DATE RANGE**

**REPORTS & DASHBOARDS**  
 Use Figures from 1 or more Analyses  
 Process Diagrams  
 Text, Comments, Images  
 Use **Organizer Topics**

**MAKE DATE RANGE**  
 Static Figures  
 Use **Add Date Range**  
 Auto-Updating Figures  
 Use **Add Date Range**, Click "Auto-Update"



**DOCUMENT ANALYSES**  
 Document and Collaborate  
 Include Relevant Images & Tables  
 Use **Journal**

**ACCESS TIME RANGES, DATA, & PREVIOUS STEPS**  
 Use **Journal Links**  
 to Time Ranges, Data, & Previous Steps