**Software Solutions**

TruBio DV

Features

- **Embedded configurable control logic for controlling critical process parameters**

- **Save an unlimited number of process control strategies and load them onto any bioreactor with Trubio SW**

- **Build custom calculations to execute in your process control strategies**

- **Scalable from process development into GMP manufacturing**

- **Able to validate**

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ConfigBuilder

The **ConfigBuilder** feature in TruConfig™ allows a user to easily configure, modify and save his/her process control strategies, regardless of their complexity, in a matter of minutes. ConfigBuilder is an application program layer that allows the user to configure control loops using text-based, drop-down menus, rather than programming in native DeltaV code. TruBio then uses the process configuration to automatically set up the DeltaV control loops in the TruLogic controller and run the process. ConfigBuilder allows a user to configure control loops for pH, dissolved oxygen, temperature, pressure, agitation, flow, level, weight and more. Note that ConfigBuilder can also be used in real-time during a process run to change the control loops and associated parameters in real-time.
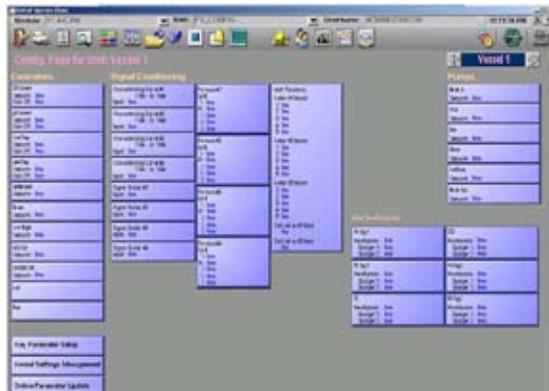
Config Page

The **Vessel Save&Load** feature of TruConfig allows a user to configure an unlimited number of process control strategies (including process set-points, engineering units, and tuning parameters for each control loop) as encrypted files having a unique file name. These configuration files can then be loaded onto any bioreactor controlled using TruBio DV, or emailed for tech transfer to any other approved site running TruBio DV.
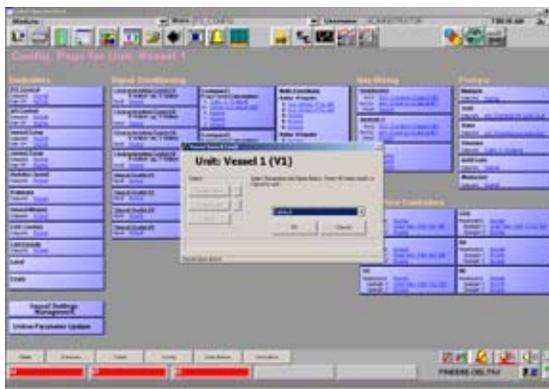
Vessel Save/Load

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The **Signal Conditioning** feature of ConfigBuilder is used to compute the setpoint of any control process variable using an equation based on any subset of TruBio DV process variables. TruBio DV currently allows the following types of process signal conditioning:

- Free Form Equations (four)
- Characterization Curves (four)
- Signal Scalars (four)
- Basic Math Functions (three adders and two derivatives))

The **Free Form Equation** feature of TruConfig allows a user to configure custom calculations, for execution in his/her process control strategy. The user can generate an output process variable from a general equation that consists of up to five input process variables, and five scaling constants. Basic mathematical functions include square root, exponential, and absolute value. If more than 5 constants and 5 variables are needed, the user can link several Free Form Equations together by choosing the inputs variable of one Free Form Equation to be the output of a different Free Form Equation. These calculations are executed in the TruLogic™ controller (not the PC), and do not require a controller download to execute.
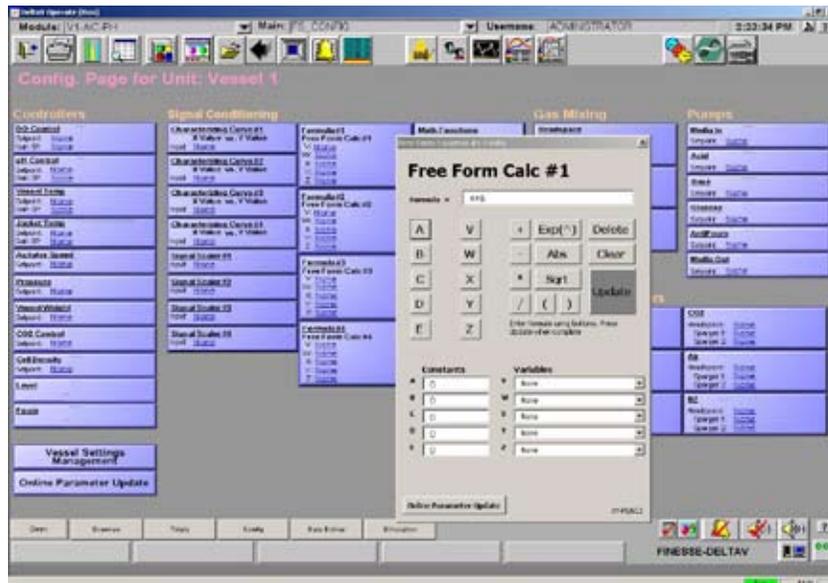

Free Form Calculations

The **Characterizing Curve** feature in TruConfig allows a user to represent any non-linear relationship between an input and output variable, by entering up to 21 data points that define the curve. This function block will then extrapolate between the data points of the curve to generate the output variable.
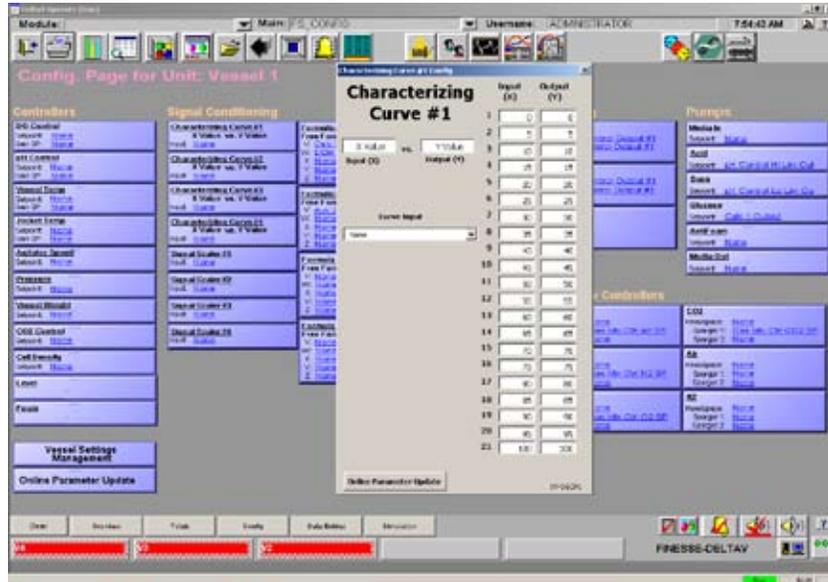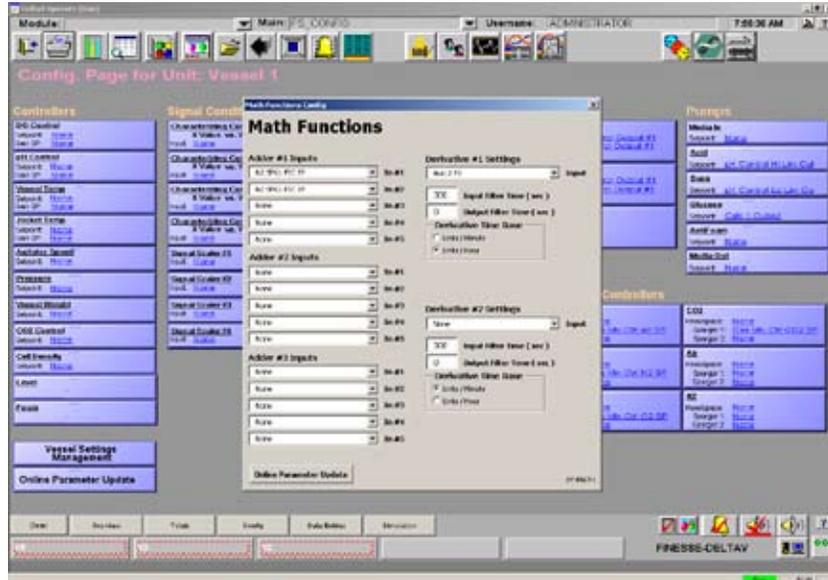

Characterization Curve

Signal Scalers are used to re-scale an input by multiplying it by a user-defined factor. This function can be used to change the scale or units of a process variable.
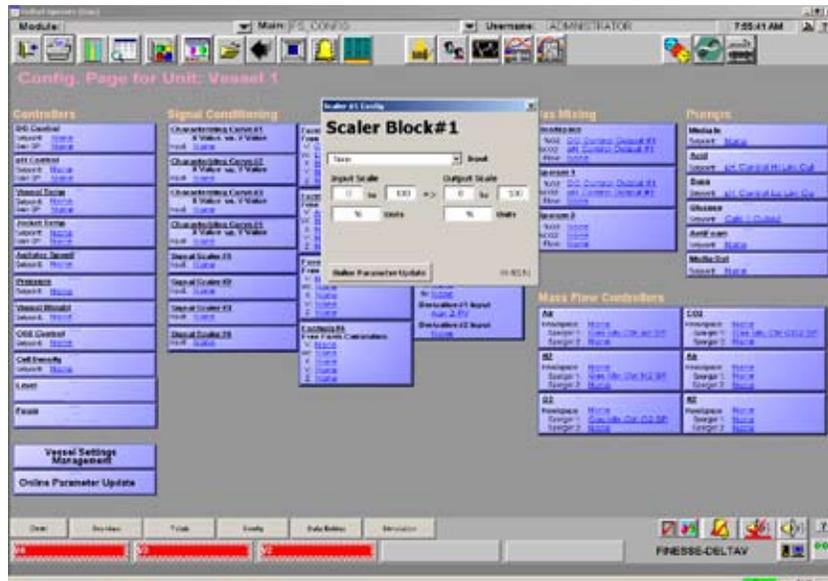
Signal Scaler

The **Basic Math Functions** feature in TruConfig allows the user to perform simple mathematical calculations using input process variables. Standard functions include adders that allow up to five input variables to be summed, or derivatives of an input variable to be calculated. These functions can be cascaded: for example, nine inputs could be summed by linking two adders together. The Derivative function allows for 1 input to be chosen as well as the input and output filter times and derivative time base.

Math Functions