TOSHIBA

Leading Innovation

Unified Controller – nv series™

Process Control Optimizer

nv-ADCOP

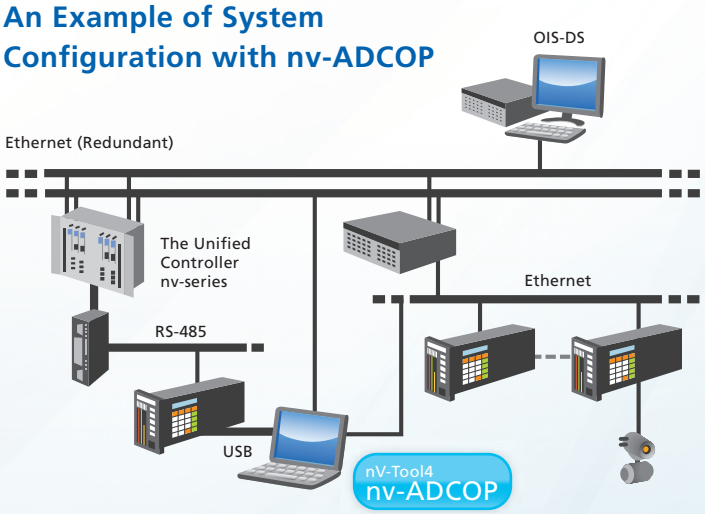
(ADvanced Control OPtimizer)

Why not discover the true colors of your process?

Bring out the hidden value in your system!

What are the hidden values that can be brought out in your process control system?
For example, in water treatment plant added value may be achieved by minimizing the dispersion of pH concentration in a pool.
In a coal fired boiler it may be attained by stabilizing and increasing the main steam temperature within the operation range.
The improvement will bring both cost and energy savings for the plant owner.
nv-ADCOP helps you to bring this value-adding performance by providing the control function blocks for such applications, identifying the process parameters and optimizing the control ones.

An Example of System Configuration with nv-ADCOP



Features

1 nv-ADCOP Library for Advanced Applications

Provides advanced control function blocks that including MD-PID, (Model-driven PID, see Note1), executes much improved control performance than conventional control and the other useful function blocks as well as samples programs for typical applications.

2 System Identification of the Target Process

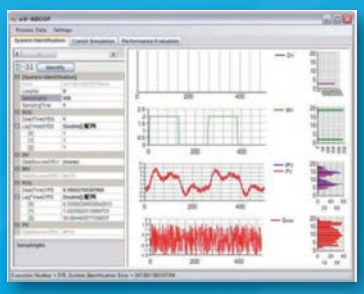
Identifies the parameters of the specified processes by sampling a set of manipulated value, disturbance values and process values.

3 Parameter Optimization for the Target Controller

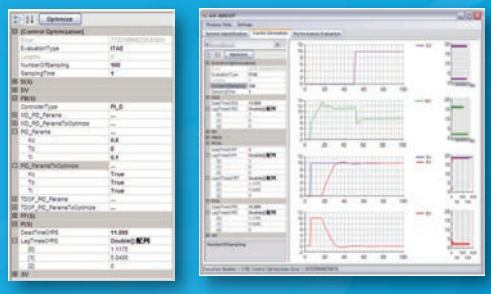
Optimizes the parameters of specified controller for the identified process. This is available for optimizing MD-PID as well as two-degree-of-freedom PID and conventional PI-D, eliminating manual tuning.

Note1: The Model-driven-PID control is developed by TOSHIBA, based on the concept of model-driven control which Hidenori Kimura, former professor of Tokyo University, proposed in 2000.

nv-ADCOP Library



System Identification



Control Optimization to find the Optimal Parameters

TOSHIBA eco style

Contents of nv-ADCOP Library

Function Blocks for Control Applications

nMD_PID_LC (Model-driven PID for LC531), nMD_PID_PU (Model-driven PID for PU821), nTDOF_D_LC (Two-degree-of-freedom PID for LC531), nTDOF_PID_PU (TDOF PID for PU821), nPI_D_LC (PI_D for LC531), nPI_D_PU (PI_D for PU821), nFF (Feed forward control), etc..

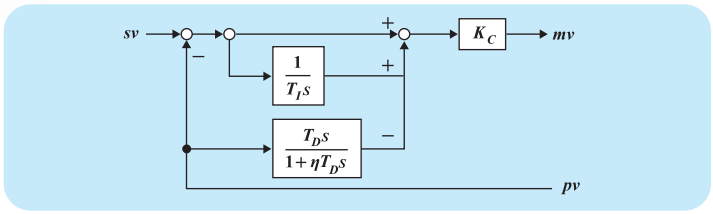
Function Blocks for Process Simulations

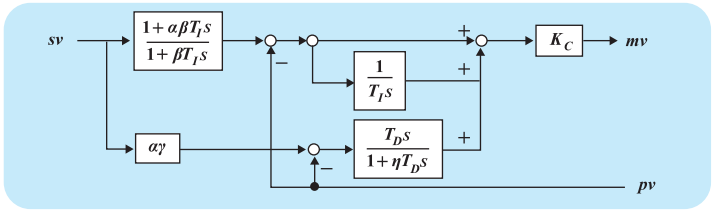
nProcess (Process transfer function), nLagLead1 (1st order lag & lead), nLag3 (3rd order lag), nLead3 (3rd order lead), nDT170 (Dead time), nBBT (Balance less bump less tracking), nOSC (Oscillator), and so on.

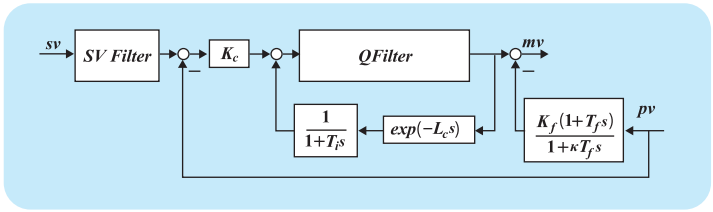
Sample Programs using the above Function Blocks

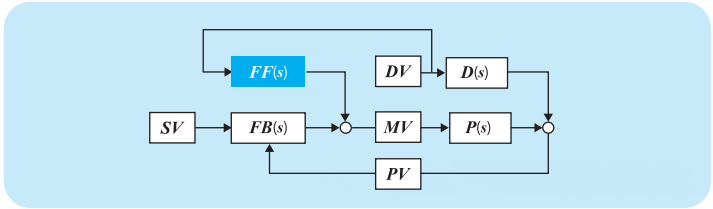
Single feedback, Single feedback with feed forward, Cascade feedbacks, Cascade feedbacks with feed forward, and so on.

Applied PID algorism in nv-ADCOP Library









PI-D Control

Is amongst the most common PID algorism which can be implemented in world wide DCS. Compared with conventional PID, the merits of PI-D are to prevent differential shocks to target process when the SV (set point value) is changed.

Two degree of freedom PID Control

Is a type of two degree of freedom PID algorism developed by TOSHIBA. Compared with a general PI-D algorism, the merit of TDOF-PID is in its ability to optimize control performance for both set point change and process disturbance.

Model Driven PID Control

Is a type of IMC (Internal Model Control) algorism developed by TOSHIBA. Compared with PI-D, the merits of MD-PID are to provide optimal control for

- long dead time process.
- disturbance as well as set point changes.
- various process dynamics.

Feed Forward Control

Is a type of disturbance suppression algorism. DV (Disturbance Value) affect PV (Process value). The disturbance components of PV can be compensated by this FF control.

nv-ADCOP is offered as a package software of unified controller nv-series. [model: HET8CB1SS]

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The content of the catalog is subject to change without notice.
The information contained herein as of Dec., 2012

EG16073
2013-03(TBLS)