GMAXC

GMAXC: Unleash the power of **Multivariable Predictive Control** (MVPC) to realize process benefits in terms of:

- Increased throughput/capacity,
- Improved yield,
- Tighter product quality control,
- Reduced energy consumption, and
- Operator convenience

As a fully integrated package, GMAXC includes:

- GMAXCID: Simplified process identification with heuristic based data validation and collation. Combined with Box Factorial design of plant tests, GMAXCID can save plant testing times by up to 75% over conventional dynamic identification methods

- SCRIPT add-on option to allow process specific nonlinear control action and process event based *ad hoc* adaptation, including fast ramping capabilities

- GMAXCOPC: an OPC Client for simplified fill-in-the-blanks type configurable interface with plant DCS and database systems

- Non-linear optimization with control;

- Integration of Microsoft Access database type file for history collection with PC based online execution. The database can be used for controller performance analysis and audit.

GMAXC is specifically designed to offer MVPC technology at a commodity level for rapid assembly line type implementation, and can also replace other MVPC controllers to reduce life cycle costs

GMAXC
Multivariable Predictive Controller with Script

MV **CV** **DV**

GMAXC Turned ON

IntelliOpt

G-OPT

G-OPT: A General Purpose Optimizer program based on genetic algorithm for Real-Time Optimization (RTO):

Minimize $F(X_1, X_2,...X_n)$ subject to:

- $X_{i,low} <= X_i <= X_{i,high}, \ 1 <= i <= n$
- $Y_{j,low} <= Y_j = G_j(X_1, X_2,...X_n) <= Y_{j,high}, \ 0 <= j <= m$

  where F and G functions can be nonlinear and discontinuous
- Model programming and customization with VBA script
- User specific steady state detection and ad hoc logic can be easily implemented
- Some independent variables may be specified as ZOOM – Zero or One Mixed Integer for ON/OFF type solutions
- Online Run frequency option along with Demand Run execution
- Multiple problem capability with Load/Save feature
- Microsoft Excel Interface option for data input/output

Ideal for process unit optimization and integration with MVPC (multivariable predictive controllers) like *IntelliOpt's* GMAXC.

Z-Way

Z-Way: An easy to apply **Fuzzy Logic Controller**:

- Formulation Uses Operator Experiences and Basic Chemical Engineering
- Avoids Costly and Difficult Plant Tests
- Configuration based on Fill-in-the-Blanks and Click/Select Type options
- Reduces Application Implementation Time
- Field Proven and in-use on Commercial Distillation (Azeotropic) Towers

Technology: A four step approach to map input data nonlinearly into outputs:

- Fuzzifier - Models the behavior as a matter of degree, rather than in precise discrete categories
- Rules - Based on simple operating heuristics and engineering principles (e.g. If Tray is Cold Then Decrease Reflux by a Small Amount)
- Inference Engine - Based on the values of the inputs (e.g. multiple tray temperatures), the Z-Way controller checks all the rules and activates the sub-conditions to be made in the outputs (e.g. reflux flow, reboiler steam flow)
- Defuzzifier - Similar, but, opposite of Fuzzi-fication, the output membership function is converted into a practical number which can be implemented by a PID controller

Advantages:

- Typical Implementation Time as Low as 1 Week
- Ideal for Control Problems Requiring multiple PIDs
- Time Based Hold on Output Option-Useful for Slow Processes
- Multivariable - 6 Inputs X 2 Outputs

Includes:
- Script Option
- Embedded **OPC** Client

DEA

DEA (Decipher for Events and Alarms) : A Comprehensive **Alarm Management System** for Collecting, Archiving, Displaying, Interpreting and Managing Process Alarm and Events, including Metrics for Alarm System Performance:

- Real-Time Filtered Alarm Viewing,
- Excel Add-In (.xla) to Analyze and Interpret A&Es,
- Advisory system for root cause identification and corrective action

Benefits: Improves Operator Productivity, Raises Operational Safety Levels, Identifies Malfunctioning Instrumentation