FEBRUARY 01, 2010

UPGRADE DETAILS

What's New for SIL Solver® Version 5.53

SIL Solver® Version 5.53 builds upon features introduced in Version 5.01. For the benefit of those users upgrading from Version 5.01 to 5.53, the features introduced since Version 5.53 are attached.

SUMMARY OF FEATURE CHANGES BETWEEN 3.7.1 AND 5.53

Managing Projects

Added ability to copy a project (version 5.0)
Added ability to rename a project (version 5.0)
Removed disconnect (version 5.0)
Added ability to delete a project (version 4.1)

User Interface Improvements

Connect All Protective Fuctions (version 5.53)
A project can be split on multiple functions into parts for work execution and then assemble into one project file. Each project should be named the same on the different workstations and the name of the protective function should be different on each workstation. To merge/assemble all functions on a single project, first the protective functions should be moved into a single folder on the same workstation. Then use the "Connect All" feature to attach all of the functions.

Enhanced Import function (version 5.53)
Import function expanded to display all projects from targeted file location

Improved "What If" function (version 5.53)
"What If" functionality was modified to "pre-select" all input selections for the what-if selection. User may then change any input selection, such as the test interval.

SIS-TECH Applications

General Display (version 5.53)

1. General rearrangement of buttons to make the interface more intuitive. Improvement of some color and font selections to make interface easier to read.
2. Changed “Add” buttons to “Save” buttons to emphasize that this action results in the data being saved to the protective function.
3. Input M, Logic Solver & Support System have been placed on separate tabs.
4. Added the option to incorporate a Tag name for the Logic Solver and Support System.
5. PFD is now displayed as only 2 significant digits.
6. Removed target entry screen. Targets should be added on protective function page.
7. Date is displayed in the lower right hand corner. The date format (American or European) is selected under Options.
8. Technical Manual is now available at Start | All Programs | SIL Solver | SIL Solver Guide version 5.
9. SIL Solver version changes 5.01 to 5.53 is now available in the C:\SILSolver_CR_DBF directory.
10. Header of the “SIL Solver Protective Function” screen was modified to add the protective function name as well as identification and rearrangement of the following fields: “Customer ID”, “Project ID” and “Function ID”.
11. The Data Sheets Version Information window has the option to print the description of the modification.

Auto-connect (version 5.0)

SIL Solver® project folders are automatically recognized by SIL Solver® when the user selects the primary folder location for the projects. Selecting the default folder for SIL Solver® will attach all projects within the default folder. If the user does not want to see a particular project, it will need to be removed from the designated folder (e.g., archiving). Due to this feature, the disconnect selection was removed.

Ability to replace previously entered test interval or architecture for an input or action without deletion (version 5.0)

Allows user to play what-if scenarios. User selects the data entry to evaluate by what-if and then selects new architecture and test interval for equipment.

Logic Solver and Support System Entry (version 4.1)

Changed entry method for logic solver and support systems to reduce error rate. Now, the user must make equipment selection and then click add to confirm. Inadvertent entries are eliminated.

General Display (version 4.0)
All screens were reformatted for better clarity of text and graphics. Screens now expand without loss of resolution on larger monitors. Previous versions would lose alignment of some fields when the screen was expanded to full size.

Verification test format change (version 4.0)
Verification test can be changed from color (red/green) to text (yes/no) for color blind users of the software.

Security

XP Issues (version 5.0)
New XP security feature allows IT to limit the writing of folders to the main computer directory, especially to the c:/Program Files directory. The SIL Solver® print feature uses Crystal Reports, which must be able to write a series of files to a specified location prior to printing. When the print is complete, Crystal Reports deletes these files. Some security implementation has resulted in conflict with Crystal Reports writing the required files. Some users have experienced printing problems as a result of the XP security, although SIL Solver® maintains all other capabilities.

SIL Solver® now creates a folder on installation – c:/SILSolver_CR_Dbf – for use by Crystal Reports. IT must give the user rights to this folder.

Relocation of default project folder (version 4.2)
SIL Solver® defaults to a folder external of the Program Files directory. This folder is named c:/silsolver_projects. The user can select another file location by choosing Options on the SIL Solver® main entry screen and choosing Project Files Location. The browser is used to select the location of the files.

Reports

Enhanced report printing (version 5.53)
Project print feature now prints a summary of all functions for each report. If "All Protective Function Reports" is selected, the print feature will now scroll all attached functions to a documentation report, followed by the details, results summary, and data summary reports. This better supports Adobe Acrobat printing, since only four reports will be created requiring naming. The reports can be merged as desired using Adobe Acrobat editing features.

Ability to print Project Data Device Sheets (version 5.53)
Added print feature "Project Data Device Sheets" at project level. This prints the device data sheets for the project. Each datasheet is only printed once even if used in multiple functions.

Ability to print Project Revision Information (version 5.53)
Added selection to print "Function Revision or Project Revision Information" this revision information is entered into the project or function revision tables.

Ability to select the printer (version 5.53).

Enhanced report format (version 4.0)
All reports have been re-formatted to improve readability with larger margins and larger size font.

Ability to print safety functions at project level (version 4.0)
All functions in a project can be printed at one time rather than having to print the functions separately.

Ability to select all reports or individual ones at function and project level (version 4.0)

Database

Updated and expanded database (all versions)
A listing of the device database device IDs may be found in the back of the SIL Solver® Technical Manual.

Database access on opening screen (version 4.0)
Ability to access the database from the opening screen. All features available to the user from the protective function screen are now available using the datasheets button on the opening screen.

Device Datasheets

Version 5.53
1. Added new datasheets for BTU Analyzer, Dual Coil Solenoids DTT High and Low Wattage, Nuclear Density Switch, Nuclear Density Transmitter, and Magneto Restrictive Level Transmitter

2. Added 3-month, 6-month and 1-year partial stroke testing for the Smart Positioners.
3. Reformatted notes to improve printing
4. Instrument Air-Monitored Receiver PFDavg changed from 1.0000E-03 to 5.0000E-03 due to further examination of potential air supply check valve failure.
5. Instrument Air-Receiver PFDavg changed from 5.0000E-03 to 1.0000E-02 due to further examination of potential air supply check valve failure
6. Instrument Air data and notes updated to clarify configurations
7. Added common cause of 1% to solenoid configurations using 1oo2 and 2oo3 voting
8. Updated data and notes for UPSET to cover need for diagnostics for loss of power
9. Added new data for UPSDM to cover monitored UPS
10. Increased dangerous failure rate of UPSDT to cover unmonitored UPS
11. Added new options for partial stroke testing with smart positioners (POSxx and PO4xx datasheets)
12. Liquid filled dP Level Transmitter triplicated diagnostics updated from 80% to 90%
13. Boundary descriptions reviewed and updated for all devices.

Version 5.01

1. Added 2oo2D architecture to ANHCT, ANHIR, HCDCT, and HCDIR.

Version 5.0

1. Added proximity switch, level servo gauge, level ultrasonic, flow ultrasonic, carbon monoxide analyzer, hydrocarbon analyzer - catalytic, hydrocarbon analyzer – infrared, Block Valve - Butterfly - FTC - PS Month, Block Valve - Double Acting, Block Valve - Globe - FTC, Block Valve - Globe - FTO, Block Valve - Globe - FTC - PS Month, Block Valve - Gate - FTC, Block Valve - Gate - FTO, Block Valve - Gate - FTC - PS Month, Control Valve - Ball - Spring Return - FC, Control Valve - Ball - Spring Return - FO, Control Valve - Butterfly - Spring Return - FC, Control Valve - Butterfly - Spring Return - FO, Control Valve - Globe- Spring Return - FC, Control Valve - Globe - Spring Return - FO, Control Valve - Gate - Spring Return - FC, Control Valve - Gate - Spring Return - FO, Control Valve - Ball - FTC - Frequently Stroked, Flame Gas Detector - Flame Temperature, Hydraulic Valve - PS Test - Monthly Clean, Hydraulic Valve - PS Test - Monthly Dirty, Rising Stem - Generic – FTC, RCS-1oo1HS - 3 month, 6 month diagnostic interval, smart positioner-on/off-monthly partial test, pneumatic positioner - modulating, and pneumatic positioner - on/off.
2. Added instrument air data to the device datasheets. This data replicates the support system data and allows its selection on the action worksheet.
3. Added common cause values to flame rod datasheet.
4. Increased dangerous failure rate for the alarm annunicator, pneumatic positioner - unspecified

5. Decreased dangerous failure rate for chlorine analyzer, conductivity analyzer, carbon dioxide analyzer, hydrogen sulfide analyzer, nitrogen analyzer, oxygen analyzer, level transmitter - capacitance, push button, hand switch, RTD - high and low stress environments
6. Increased safe failure rate for all RCS datasheets.

Version 4.1

1. Added Block Valve-Butterfly-FTC, Block Valve-Butterfly-FTO, Block Valve-Butterfly-FTC-PS Month. Added Block Valve-Gate-FTC, Block Valve-Gate-FTO, Block Valve-Gate-FTC-PS Month, Block Valve-Globe-FTC, Block Valve-Globe-FTO, Block Valve-Globe-FTC-PS Month, Rising Stem-Generic-FTC, Hydraulic Valve-PS Month Dirty and Clean Service, Updated the device descriptions throughout the block valve and control valve device types.

Version 4.0

1. Added daily, weekly, and monthly test intervals.
2. Changed DI from 0.003 to 0.5 hr in all sheets where DI was equal to 0.003 hr. This does not significantly affect any result. SIL Solver® calculations assume that detected device failures are voted toward the trip state. Fault tolerance is used to obtain reliability. If fault tolerance is not provided and simplex devices are failed away from the trip state, the diagnostic alarm would be a high priority safety alarm requiring immediate operator action. The DI change was made to consider that most users classify diagnostic alarms as low priority alarms, allowing the operator 15 to 30 minutes for acknowledgement.
3. Updated data for alarm annunciator, compressor stop, differential pressure transmitter, gate valve spring return fail close and fail open, load monitor, pump stop, RCS 1oo1 hot standby, RCS 2oo2D with monthly diagnostics, relay fail to close, relay fail to open, temperature transmitter, thermocouple low stress, thermocouple high stress, RTD low stress, RTD high stress, pneumatic positioner, and trip amplifier non-programmable.
4. Added data sources to auxiliary contact, ball valve spring return fail to close in clean service, Bently Nevada overspeed monitor, compressor stop, de-energize to trip solenoid valve, differential pressure flow transmitter, differential pressure level transmitter, differential pressure transmitter, combination UV/IR flame scanner, IR flame scanner, load monitor, monitored energize to trip solenoid valve, motor contactor, motor operated valve fail to close, pump stop, pneumatic positioner, position switch, pressure transmitter, RCS 1oo1 hot standby, RCS 2oo2D, radar level gauge, relay fail to close, relay fail to open, temperature transmitter, trip amplifier non-programmable, UV flame scanner, vibrating level switch, and vortex shedding flow transmitter.
5. Added butterfly block valve, catalytic hydrocarbon detector, flame rod, frequently stroked solenoid valve, hand switch, IR hydrocarbon detector, liquid filled differential

pressure level transmitter, magnetic flow transmitter, nuclear level transmitter, pneumatic pressure switch, pneumatic solenoid valve, position transmitter, push button, RCS 1oo1 hot standby without monthly diagnostics, RCS 2oo2D without monthly diagnostics, remote sealed differential pressure level transmitter, pneumatic positioner in modulating service, pneumatic positioner in on/off service, smart modulating positioner, smart on/off positioner, solenoid valve DTT high wattage, solenoid valve DTT low voltage, UPS DTT, UPS ETT, temperature transmitter with thermocouple low stress, temperature transmitter with thermocouple high stress, temperature transmitter with RTD low stress, temperature transmitter with RTD high stress, and variable speed drive.

6. Updated notes on temperature transmitter separate thermowell guidance.
7. Updated notes on butterfly control valve FTC action upon air removal.
8. Replaced Fisher DVC 6000 with generic smart positioner, providing one value to represent the various manufacturers of smart positioners. The smart positioner values are provided for modulating and on-off services. Added new references.

Logic Solver Datasheets

Version 5.53

1. Notes modified on some sheets to clarify some architectures and technologies.
2. Boundary descriptions reviewed and updated for all logic solvers.

Version 5.0

1. Updated notes for DMDIO and DMSIO

Version 4.1

1. Added clarification to NSDD that Dual MP and Dual I/O is 2oo2 voted.

Version 4.0

1. Updated data for safety configured general purpose PLC, relay fail to close, relay fail to open and trip amp non-programmable.
2. Updated notes for generic 2oo4D dual MP, dual I/O; generic 1oo2D dual MP, and simplex I/O
3. Added data sources to relay fail to close, relay fail to open, and trip amp non programmable.
4. Added non safety configured PES with dual MP and dual I/O, non safety configured PES with dual MP and simplex I/O, non safety configured PES with simplex MP and simplex I/O, and relay time delay.
5. Deleted non safety configured PES.

Support System Datasheets

Version 5.53

1. Boundary descriptions reviewed and updated for all support systems.
2. Instrument Air-Monitored Receiver PFDavg changed from 1.0000E-03 to 5.0000E-03 due to further examination of potential air supply check valve failure.
3. Instrument Air-Receiver PFDavg changed from 5.0000E-03 to 1.0000E-02 due to further examination of potential air supply check valve failure.
4. Instrument Air notes updated.

Version 5.0

1. No changes. Instrument air data is replicated in the device datasheets.

Version 4.1

1. Added instrument air with receiver and instrument air with monitored receiver.

Version 4.0

1. Updated assumptions for instrument air with receiver and instrument air with monitored receiver.