

SolidWorks Automation Suite - User Guide

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Introduction

Welcome to the SolidWorks Automation Suite! This comprehensive application enables you to automate repetitive SolidWorks tasks, create custom workflows, and boost productivity.

Key Benefits

- **Automation:** Automate document operations, property editing, and feature manipulation
 - **Workflows:** Create, save, and reuse complex automation sequences
 - **Efficiency:** Process multiple files in batch operations
 - **Consistency:** Ensure standardized processes across projects
 - **Flexibility:** Customize workflows to match your specific needs
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Getting Started

System Requirements

- **Operating System:** Windows 10/11 (64-bit)
- **.NET Framework:** 4.8 or higher
- **SolidWorks:** 2020 or higher
- **RAM:** 8 GB minimum (16 GB recommended)
- **Disk Space:** 500 MB for application + space for templates

Installation

1. **Download** the installer: `SolidWorksAutomation.msi`
2. **Run** the installer with administrator privileges
3. **Follow** the installation wizard
4. **Select** features to install (Main Application, Documentation, Samples)
5. **Choose** installation location (default: `C:\Program Files\SolidWorksAutomation`)
6. **Complete** installation and launch the application

First Launch

On first launch, the application will:

1. Create default folders for templates, workflows, and logs
2. Initialize default settings
3. Create a default settings profile
4. Attempt to connect to SolidWorks

Important: Ensure SolidWorks is closed before first launch for clean connection setup.

Main Features

1. Component Generation

The application supports automated generation of:

- **Bundles:** Heat exchanger tube bundles
- **Headers:** Inlet/outlet headers (types 61-66)
- **Structures:** XCH and Z-type structures
- **Hoods:** Equipment enclosures
- **Plenums:** Air distribution chambers
- **Walkways:** Access platforms
- **Machinery Mounts:** Equipment mounting structures

Generating Components

1. **Select Component Type** from the navigation panel
2. **Enter Parameters:** Job number, dimensions, specifications
3. **Review Configuration:** Check all settings
4. **Generate:** Click “Generate” button
5. **Monitor Progress:** Watch the progress bar and status messages
6. **Completion:** Files are created in SolidWorks automatically

2. SolidWorks Connection

Connecting to SolidWorks


- **Auto-Connect:** Application attempts to connect on startup (if enabled)
- **Manual Connect:** Click “Connect to SolidWorks” button
- **Connection Status:** Indicator in the toolbar shows connection state

Connection Modes

- **Attach to Running Instance:** Connects to already open SolidWorks
- **Start New Instance:** Launches SolidWorks if not running
- **Keep Visible:** Keeps SolidWorks window visible during operations

3. Document Operations

Opening Documents

- File  Open Document
- Browse to file location
 - Select document **type** (Part, Assembly, Drawing)
 - Click Open

Saving Documents

File → Save

- Saves active document
- Use Save As **for** new location

Batch Operations

Tools → Batch Operations

- Select multiple files
- Choose operation (Open, Save, Export, Close)
- Execute batch

4. Property Management

Setting Custom Properties

1. **Open** a document
2. **Navigate** to Properties panel
3. **Enter** property name and value
4. **Choose** scope (File-level or Configuration-specific)
5. **Click** “Set Property”

Batch Property Updates

1. **Create** a properties file (JSON or CSV)
2. **Load** the file in Batch Properties tool
3. **Select** target documents
4. **Apply** properties to all documents

5. Export Functionality

Supported Export Formats

- **PDF**: For drawings and documents
- **DXF/DWG**: For 2D geometry
- **STEP/IGES**: For 3D models
- **STL**: For 3D printing
- **Parasolid**: For advanced CAD exchange

Exporting Documents

1. **Open** document to export
 2. **Select** File → Export
 3. **Choose** format
 4. **Configure** export options
 5. **Select** output location
 6. **Click** Export
-

Workflow Management

What are Workflows?

Workflows are sequences of automated steps that perform complex operations on SolidWorks documents. They can:

- Open and close documents
- Modify properties
- Edit features
- Create drawings
- Export files
- And much more!

Creating a Workflow

Step 1: Create New Workflow

Workflows → New Workflow

- Enter workflow name
- Add description
- Choose execution mode (Sequential, Parallel, Conditional)

Step 2: Add Steps

Click "Add Step"

- Select step **type** (Open Document, Set Property, Export, etc.)
- Configure step parameters
- Set timeout **and** retry options
- Enable/disable step

Step 3: Configure Steps

Each step has:

- **Name:** Descriptive name for the step
- **Action:** What the step does
- **Parameters:** Input values (file paths, property names, etc.)
- **Timeout:** Maximum execution time
- **Retry Count:** Number of retry attempts on failure
- **Continue on Error:** Whether to continue if step fails

Step 4: Save Workflow

File → Save Workflow

- Workflow is saved as JSON file
- Can be edited, shared, and reused

Running a Workflow

1. **Open** Workflows panel
2. **Select** workflow from list
3. **Click** "Run Workflow"
4. **Monitor** progress in real-time
5. **View** results and logs

Workflow Templates

Built-in Templates

The application includes pre-built templates:

Simple Document Processing

- Opens a document
- Sets custom properties
- Saves the document
- Closes the document

Batch Export to PDF

- Opens documents
- Exports each to PDF
- Closes documents

Creating Custom Templates

1. Create a workflow
2. Test thoroughly
3. Save as template: Workflow → Save as Template
4. Template appears in Templates list for reuse

Workflow Best Practices

✓ DO:

- Use descriptive names for workflows and steps
- Set appropriate timeouts
- Enable logging for debugging
- Test workflows on sample data first
- Save workflows regularly

✗ DON'T:

- Create extremely long workflows (break into smaller ones)
- Skip error handling
- Use hardcoded paths (use parameters instead)
- Run untested workflows on production files

Settings & Configuration

Accessing Settings

Tools → Settings
or
Press Ctrl+, (Ctrl+Comma)

Settings Categories

1. Paths Settings

Configure folder locations:

- **Templates Path:** Location of SolidWorks templates
- **Workflows Path:** Where workflows are saved

- **Output Path:** Default output location for generated files
- **Logs Path:** Application log files location
- **Backup Path:** Backup files location

2. SolidWorks Settings

Control SolidWorks behavior:

- **Auto Start:** Start SolidWorks automatically
- **Keep Visible:** Keep SolidWorks window visible
- **Auto Save:** Save documents after processing
- **Close After Processing:** Close documents when done
- **Document Timeout:** Maximum time to wait for operations
- **Rebuild Timeout:** Maximum time for rebuilds

3. Workflow Settings

Configure workflow execution:

- **Enable Parallel Execution:** Run steps in parallel when possible
- **Max Parallel Workflows:** Number of concurrent workflows
- **Enable Auto Retry:** Retry failed steps automatically
- **Default Retry Count:** Number of retry attempts
- **Save Workflow History:** Keep execution history

4. Analytics Settings

Control tracking and reporting:

- **Enable Analytics:** Track workflow performance
- **Track Error Rates:** Monitor failure rates
- **Generate Reports:** Create performance reports
- **Report Retention:** How long to keep reports

5. UI Settings

Customize the interface:

- **Theme:** Light or Dark mode
- **Window Size:** Default window dimensions
- **Remember Position:** Restore window position on startup
- **Show Tooltips:** Display helpful tooltips
- **Font Size:** Adjust text size

Settings Profiles

Creating a Profile

1. **Configure** settings as desired
2. **Click** "Save as Profile"
3. **Enter** profile name and description
4. **Save**

Switching Profiles

1. **Open** Settings
2. **Click** "Profiles" dropdown
3. **Select** profile to load
4. **Apply**

Importing/Exporting Profiles

Export:

```
Settings → Profiles → Export
- Choose profile
- Select location
- Save as .json file
```

Import:

```
Settings → Profiles → Import
- Browse to .json file
- Load profile
- Apply settings
```

Troubleshooting

Common Issues

Issue: Cannot Connect to SolidWorks

Symptoms:

- Connection button stays disabled
- Error message: "Failed to connect to SolidWorks"

Solutions:

1. Ensure SolidWorks is installed (2020 or higher)
2. Close all SolidWorks instances
3. Run application as Administrator
4. Check SolidWorks license is valid
5. Restart both SolidWorks and the application

Issue: Workflow Fails to Execute

Symptoms:

- Workflow starts but stops immediately
- Error in workflow log

Solutions:

1. Check workflow validation (red X indicates errors)
2. Verify all file paths exist
3. Ensure SolidWorks is connected
4. Check step timeouts aren't too short
5. Review log files for specific errors

Issue: Properties Not Updating

Symptoms:

- Set property operation completes but property unchanged

Solutions:

1. Verify document is open
2. Check property name is correct (case-sensitive)

3. Ensure configuration name is correct
4. Try rebuilding the document
5. Save and reopen the document

Issue: Slow Performance

Symptoms:

- Operations take longer than expected
- UI becomes unresponsive

Solutions:

1. Close unnecessary SolidWorks documents
2. Reduce parallel workflow count
3. Increase timeout values
4. Disable automatic saving (do manual saves)
5. Check system resources (RAM, CPU)
6. Close other applications

Log Files

Viewing Logs

Help → View Logs
or
Navigate to: %AppData%\SolidWorksAutomation\Logs

Log Levels

- **INFO:** Normal operations
- **WARNING:** Non-critical issues
- **ERROR:** Operation failures
- **CRITICAL:** Application-level errors

Interpreting Logs

Look for:

- Timestamps of errors
- Step names that failed
- Error messages
- Stack traces for debugging

FAQ

General Questions

Q: Do I need a SolidWorks license?

A: Yes, a valid SolidWorks license is required as the application uses the SolidWorks API.

Q: Can I run this on Mac or Linux?

A: No, the application requires Windows and SolidWorks (Windows-only).

Q: Is my data safe?

A: Yes, the application only modifies files you explicitly tell it to. Always backup important files first.

Q: Can I automate drawings?

A: Yes, the application supports drawing creation, view insertion, and dimension placement.

Workflows

Q: How many steps can a workflow have?

A: No hard limit, but we recommend keeping workflows under 50 steps for maintainability.

Q: Can workflows call other workflows?

A: Not currently, but this is a planned feature.

Q: Can I share workflows with colleagues?

A: Yes! Export workflows as JSON and share the files.

Performance

Q: How many files can I process at once?

A: Depends on system resources. Start with batches of 10-20 files and adjust based on performance.

Q: Will the application slow down SolidWorks?

A: Minimal impact. The application uses standard SolidWorks API calls like manual operations.

Technical

Q: What .NET version is required?

A: .NET Framework 4.8 or higher.

Q: Can I extend the application with custom code?

A: Yes! The application is extensible. Contact support for developer documentation.

Q: Does it support SolidWorks PDM?

A: Basic support. Advanced PDM integration is planned for future releases.

Getting Help

Support Resources

- **Documentation:** Included in installation
- **Email Support:** support@example.com
- **GitHub Issues:** <https://github.com/swiffc/Solidworks-Automation/issues>
- **Community Forum:** Coming soon

Reporting Bugs

When reporting bugs, include:

1. Application version (Help → About)
 2. SolidWorks version
 3. Steps to reproduce
 4. Error messages
 5. Log files (if applicable)
-

Keyboard Shortcuts

Shortcut	Action
Ctrl+N	New Workflow
Ctrl+O	Open Workflow
Ctrl+S	Save Workflow
Ctrl+,	Open Settings
F5	Refresh/Reload
F12	Open Developer Console
Ctrl+Q	Quit Application

Version History

Version 1.0.0 (Current)

- Initial release
 - Core workflow engine
 - Component generation (Bundle, Header, etc.)
 - Settings management
 - Basic analytics
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