

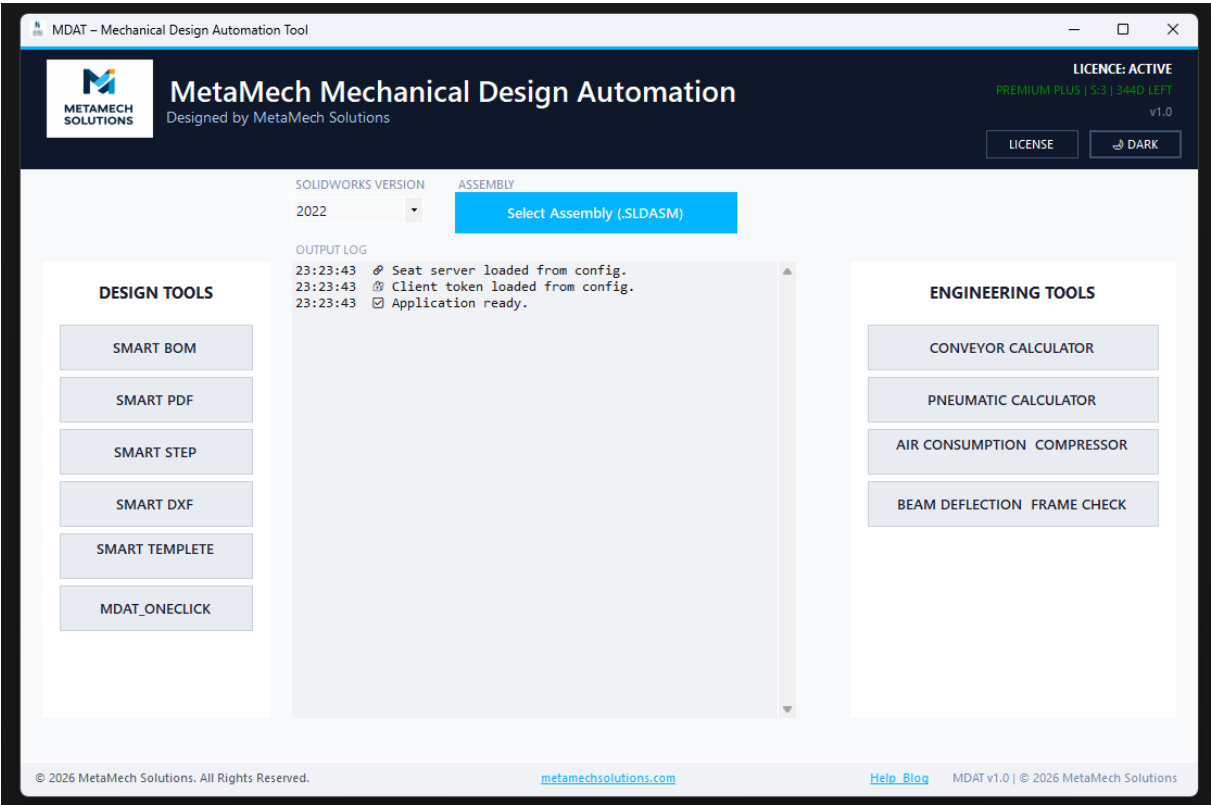


**METAMECH  
SOLUTIONS**

# **MetaMech MDAT**

Mechanical Design Automation Tool

User Manual



Version 2026  
MetaMech Solutions | Ireland  
metamechsolutions.com

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# 1. Getting Started

MetaMech MDAT is a professional SolidWorks automation suite that eliminates repetitive, error-prone tasks mechanical engineers deal with every day. Built by MetaMech Solutions in Ireland for engineers who value their time.

## System Requirements

- OS: Windows 10 or 11 (64-bit)
- .NET Framework: 4.0 or later (pre-installed on most Windows PCs)
- SolidWorks: 2018 or later (required for Design Tools)
- Internet: Required for first-time activation only

## What's Included

File	Purpose
MDAT.exe	Main application
PdfMergeTool.exe	PDF merge engine
PdfSharp-gdi.dll	PDF processing library
Config.txt	Server & tool configuration
MetaMech_RSA_PUBLIC.xml	License verification key
User Manual.pdf	This document

## 2. Installation

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### Step 1: Download

Download MetaMech-Trial.zip from [metamechsolutions.com/download](https://metamechsolutions.com/download)

### Step 2: Extract

- Right-click the ZIP file > Extract All
- Choose a location (e.g. C:\MetaMech\ or your Desktop)
- Click Extract

Important: Do NOT extract into Program Files - Windows permissions can cause issues.

### Step 3: Launch

Double-click MDAT.exe to start MetaMech. On first launch, the app will automatically contact the MetaMech server to activate your free 3-day trial.

You will see a welcome message confirming your trial is active. No license key needed - it is completely automatic.

### Step 4: Connect SolidWorks

- Open SolidWorks and load an assembly (.SLDASM file)
- In MetaMech, select your SolidWorks version from the dropdown
- Click "Select Assembly" or MetaMech will detect it automatically
- You're ready to use the Design Tools!

## 3. Licensing

### Free Trial

- Duration: 3 days from first launch
- Features: All tools fully unlocked
- Limits: One trial per machine - cannot be reset by reinstalling
- No key required: Activates automatically on first launch

### Purchasing a License

When your trial expires, visit [metamechsolutions.com/pricing](https://metamechsolutions.com/pricing) to purchase a license.

### License Tiers

Tier	Name	Access
1	Standard	Core design automation tools
2	Premium	All tools including engineering calculators
3	Premium Plus	Everything + priority support

### Activating a Paid License

- After purchase, you will receive a license.key file
- Place it in the same folder as MDAT.exe
- Launch MetaMech - your license will be detected automatically

### License Status Display

The main window header shows your license status: tier name, expiry, days remaining, and active seats. This is visible at all times in the top-right corner of the application.

### Seat Management

Your license allows a set number of simultaneous users (seats). If all seats are in use, a message will appear. Close MetaMech on another PC, or wait - inactive seats are automatically released after 6 hours.

### Offline Use

After initial activation, MetaMech works offline for a grace period:

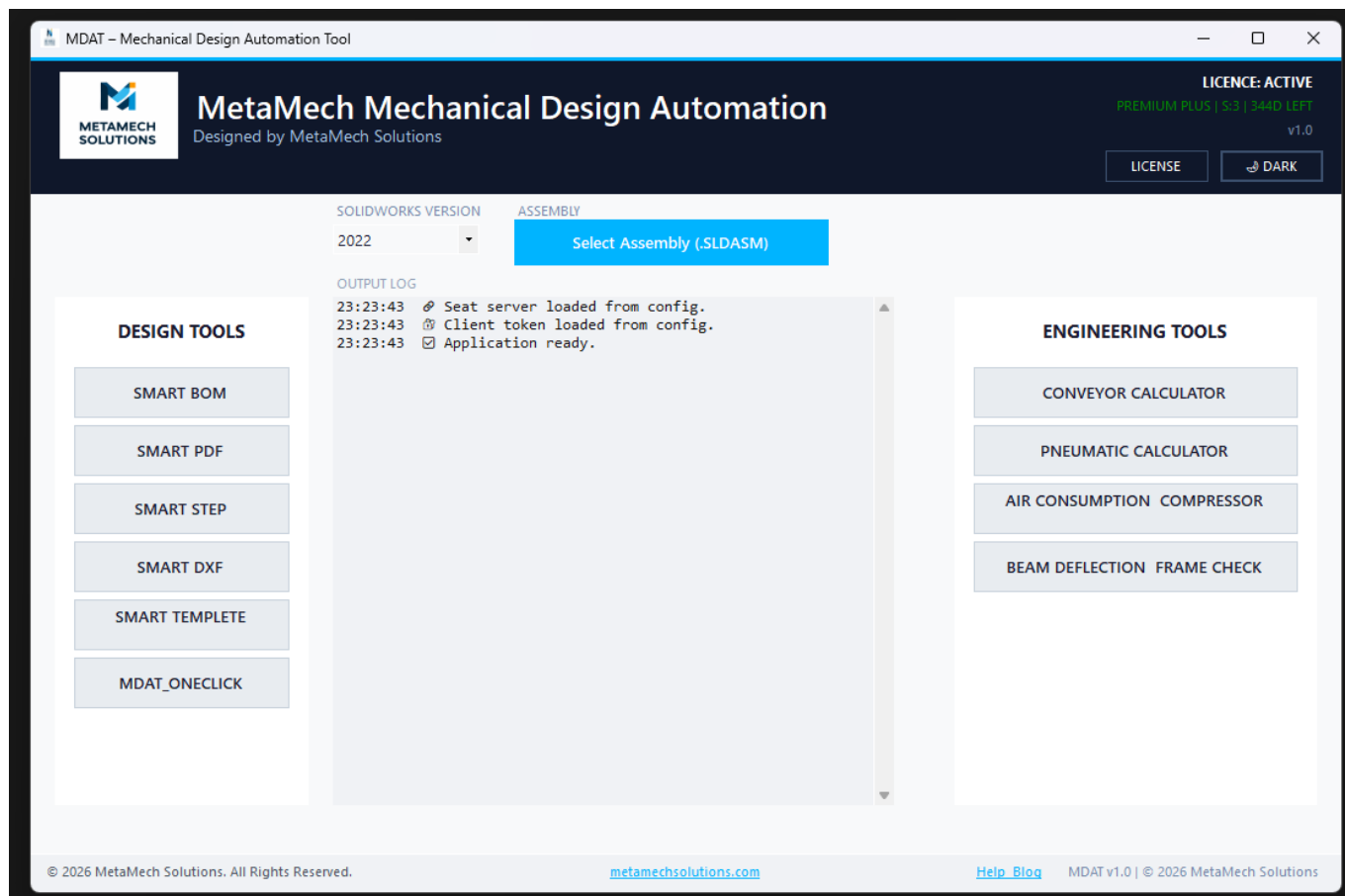
- Trial: 1 day offline
- Standard: 3 days offline

- Premium: 7 days offline
- Premium Plus: 14 days offline

After the grace period, connect to the internet briefly to re-validate.

## 4. Interface Overview

MetaMech has a clean, professional dark-themed interface designed for efficiency:



MetaMech MDAT - Main Application Window

### Header Bar

Shows the MetaMech logo, application title, license status (tier, seats, days remaining), and quick-access buttons for License info and Dark/Light theme toggle.

### Left Panel - Design Tools

Six tool buttons for SolidWorks automation: SMART BOM, SMART PDF, SMART STEP, SMART DXF, SMART TEMPLATE, and MDAT ONE-CLICK. Each button runs a specific automation macro on your open assembly.

### Center Panel

SolidWorks version selector dropdown, assembly file selector button, and the Activity Log. The log shows real-time progress with timestamps, status icons, and completion times for each operation.

## Right Panel - Engineering Tools

Standalone engineering calculators: Conveyor Calculator, Pneumatic Calculator, Air Consumption/Compressor, and Beam Deflection/Frame Check.

## Footer

Copyright notice, website link, help/blog link, and version number.

## 5. Design Tools (SolidWorks Automation)

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These tools automate SolidWorks tasks. SolidWorks must be running with an assembly (.SLDASM) open before using these tools.

### SMART BOM

**Purpose:** Generate a complete Bill of Materials from any assembly.

Opens your assembly, traverses all components, and exports an organized BOM to Excel. Includes part numbers, descriptions, quantities, and material information. Supports flat and indented BOM structures.

**Output:** Excel spreadsheet (.xlsx) saved to the output folder.

### SMART PDF

**Purpose:** Batch-export all associated drawings to PDF format.

Finds every drawing file linked to your assembly components and exports them as individual PDFs. Perfect for creating drawing packages for manufacturing or client review.

**Output:** Individual PDF files for each drawing.

### SMART STEP

**Purpose:** Batch-export all assembly parts to STEP format.

Exports every part and sub-assembly as a neutral STEP file. Essential for sharing models with vendors, suppliers, or other CAD systems that cannot read native SolidWorks files.

**Output:** .stp files for each component.

### SMART DXF

**Purpose:** Batch-export flat patterns and profiles to DXF format.

Automatically detects sheet metal parts, unfolds them, and exports flat patterns as DXF files. Ready for laser cutting, CNC machining, or waterjet operations.

**Output:** .dxf files for manufacturing.

### SMART TEMPLATE CHANGE

**Purpose:** Push standardised templates and custom properties across all files.

Updates drawing templates, title blocks, and custom properties across your entire assembly. Ensures company-wide consistency for drawing formats and metadata.

**Output:** Updated files with new templates and properties applied.

### MDAT ONE-CLICK

**Purpose:** Run the complete automation pipeline in a single click.

Executes BOM generation, PDF export, and STEP export in sequence. Creates a complete release package without any manual intervention. The ultimate time-saver for release engineers.

**Output:** Complete release package - BOM + PDFs + STEP files.

## 6. Engineering Tools

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Standalone engineering calculators that work without SolidWorks. Access them from the right panel.

### Conveyor Calculator

Calculate belt conveyor parameters including speed, throughput capacity, required motor power, and belt tension. Supports flat, inclined, and decline conveyor configurations. Enter belt width, speed, material density, conveyor length, and incline angle to get comprehensive results.

### Pneumatic Cylinder Calculator

Size pneumatic cylinders for your application. Enter required force, operating pressure, and stroke length. Returns recommended bore size, rod diameter, and per-cycle air consumption.

### Air Consumption / Compressor Calculator

Calculate total compressed air usage for pneumatic systems. Enter cylinder sizes, cycle rates, and operating pressure. Returns total air consumption in litres per minute (l/min) and cubic feet per minute (CFM). Helps size compressors for your production line.

### Beam Deflection / Frame Check

Calculate beam deflection and verify frame structural integrity. Useful for machine frame design and validation.

### Motor Power Calculator

Calculate required motor power for mechanical drive systems. Enter torque, rotational speed (RPM), and efficiency factor. Returns power requirements in kW and HP.

### Torque Calculator

Calculate torque for various mechanical applications. Enter force and radius or lever arm length. Returns torque in multiple units: Nm, lb-ft, kgf-cm.

### Unit Converter

Quick conversion between common engineering units. Covers length (mm/in/ft/m), force (N/lbf/kgf), pressure (bar/PSI/MPa), torque (Nm/lb-ft), and more.

### Engineering Notepad

A built-in notepad for engineering calculations, notes, and project documentation. Keep your working notes alongside your automation tasks.

## 7. PDF Merge Tool

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Merge multiple PDF files into a single document with an auto-generated index page and clickable navigation.

### How to Use

- Click the PDF Merge tool button in MetaMech
- Click "Add PDF Files" to select individual files, or "Add Folder" to add all PDFs from a directory
- Use "Move Up" and "Move Down" buttons to set the merge order
- Remove unwanted files with "Remove Selected"
- Click "Merge with Index" for a professional document with index page and page numbers
- Or click "Merge (No Index)" for a simple concatenation
- Choose where to save the output file
- The merged PDF opens automatically when complete

### Index Page Features

- Auto-generated cover page titled "INDEX OF DRAWINGS"
- Hierarchical numbering system (1., 1.1., 1.2., etc.)
- Drawing name or custom description for each entry
- Start page number column
- Page count column
- Clickable links - click any entry to jump directly to that drawing
- Auto page numbering stamped on every page ("Page 1 of 47")

### Tips

- Works with any PDF files, not just SolidWorks drawings
- Use tab-indented entries in merge\_order.txt for hierarchical grouping
- Great for creating submission packages, tender documents, and drawing registers

## 8. Settings & Themes

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### Dark / Light Theme

MetaMech supports both dark and light visual themes. Click the theme toggle button (moon/sun icon) in the top-right corner of the main window. Your preference is automatically saved and restored on next launch.

### SolidWorks Version

Select your installed SolidWorks version from the dropdown in the center panel. MetaMech supports SolidWorks 2018 through 2026.

### Configuration File (Config.txt)

The Config.txt file in the application folder contains server URLs, authentication tokens, and macro configurations. You should not need to edit this file unless instructed by MetaMech support.

Do not share your Config.txt file - it contains your connection credentials.

## 9. Troubleshooting

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### "License not valid" / "Activate your licence"

- First launch? Make sure you are connected to the internet. The trial activates automatically.
- Trial expired? Purchase a license at [metamechsolutions.com/pricing](https://metamechsolutions.com/pricing)
- Already purchased? Place your license.key file in the same folder as MDAT.exe
- License.key in wrong folder? It must be next to MDAT.exe, inside the output folder.

### "No seats available"

- All license seats are currently in use on other machines.
- Close MetaMech on another PC to free up a seat.
- Wait 6 hours - inactive seats release automatically.
- Contact support if the issue persists.

### "SolidWorks not available"

- Start SolidWorks before clicking any Design Tool button.
- Open an assembly file (.SLDASM) in SolidWorks.
- Make sure the correct SolidWorks version is selected in the dropdown.

- Supported versions: SolidWorks 2018 through 2026.

### **Design Tool runs but nothing happens**

- Check that an assembly (not a part or drawing) is open in SolidWorks.
- Check the Activity Log panel for error messages.
- Make sure the assembly is fully resolved (no suppressed or missing components).

### **"Trial already used on this machine"**

The free trial is limited to one activation per machine and cannot be reset by reinstalling. To continue using MetaMech, purchase a license at [metamechsolutions.com/pricing](https://metamechsolutions.com/pricing)

### **PDF Merge fails**

- Ensure PdfMergeTool.exe and PdfSharp-gdi.dll are in the same folder as MDAT.exe
- Check that all input PDF files are valid and not password-protected
- Try merging fewer files to identify which file may be corrupted

### **Application won't start or crashes**

- Ensure .NET Framework 4.0 or later is installed
- Try right-click > Run as Administrator
- Make sure all files are extracted from the ZIP (do not run from inside the ZIP)
- Check Windows Event Viewer for detailed error information

## 10. Support & Contact

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**Website:** [metamechsolutions.com](https://metamechsolutions.com)

**Download:** [metamechsolutions.com/download](https://metamechsolutions.com/download)

**Pricing:** [metamechsolutions.com/pricing](https://metamechsolutions.com/pricing)

**Contact:** [metamechsolutions.com/contact](https://metamechsolutions.com/contact)

**Blog:** [metamechsolutions.com/blog](https://metamechsolutions.com/blog)

For technical support, please include your license ID, SolidWorks version, Windows version, and a description of the issue. Screenshots of any error messages are helpful.

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