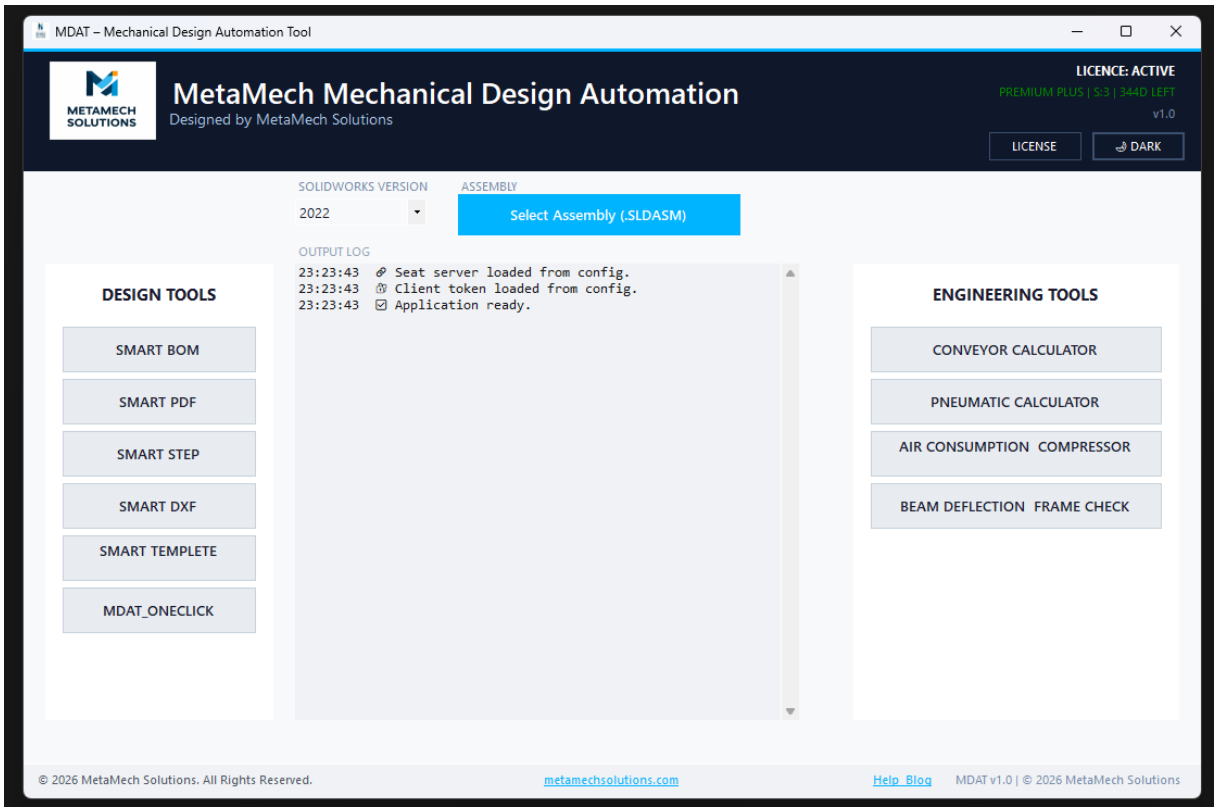
MetaMech MDAT

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.

System Requirements

- OS: Windows 10 or 11 (64-bit)
- .NET Framework: 4.0 or later
- SolidWorks: 2018 or later (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

Step 1: Download

Download MetaMech-Trial.zip from metamechsolutions.com/download

Step 2: Extract

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

> Important: Do NOT extract into Program Files.

Step 3: Launch

Double-click MDAT.exe. Your 3-day free trial activates automatically. No license key needed.

Step 4: Connect SolidWorks

- Open SolidWorks on your PC
- In MetaMech, select your SolidWorks version from the dropdown (e.g. 2022)
- Click "Select Assembly (.SLDASM)" to choose your assembly file
- Now you can click any Design Tool button

> ⚠ **IMPORTANT: You MUST select the SolidWorks version AND assembly BEFORE clicking any Design Tool button. Tools will fail without an assembly loaded.**

3. Licensing

Free Trial

- Duration: 3 days from first launch
- All tools fully unlocked
- One trial per machine - cannot be reset
- Activates automatically

License Tiers

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

Activating a Paid License

- After purchase, you receive a license.key file
- Place it next to MDAT.exe
- Launch MetaMech - detected automatically

Seat Management

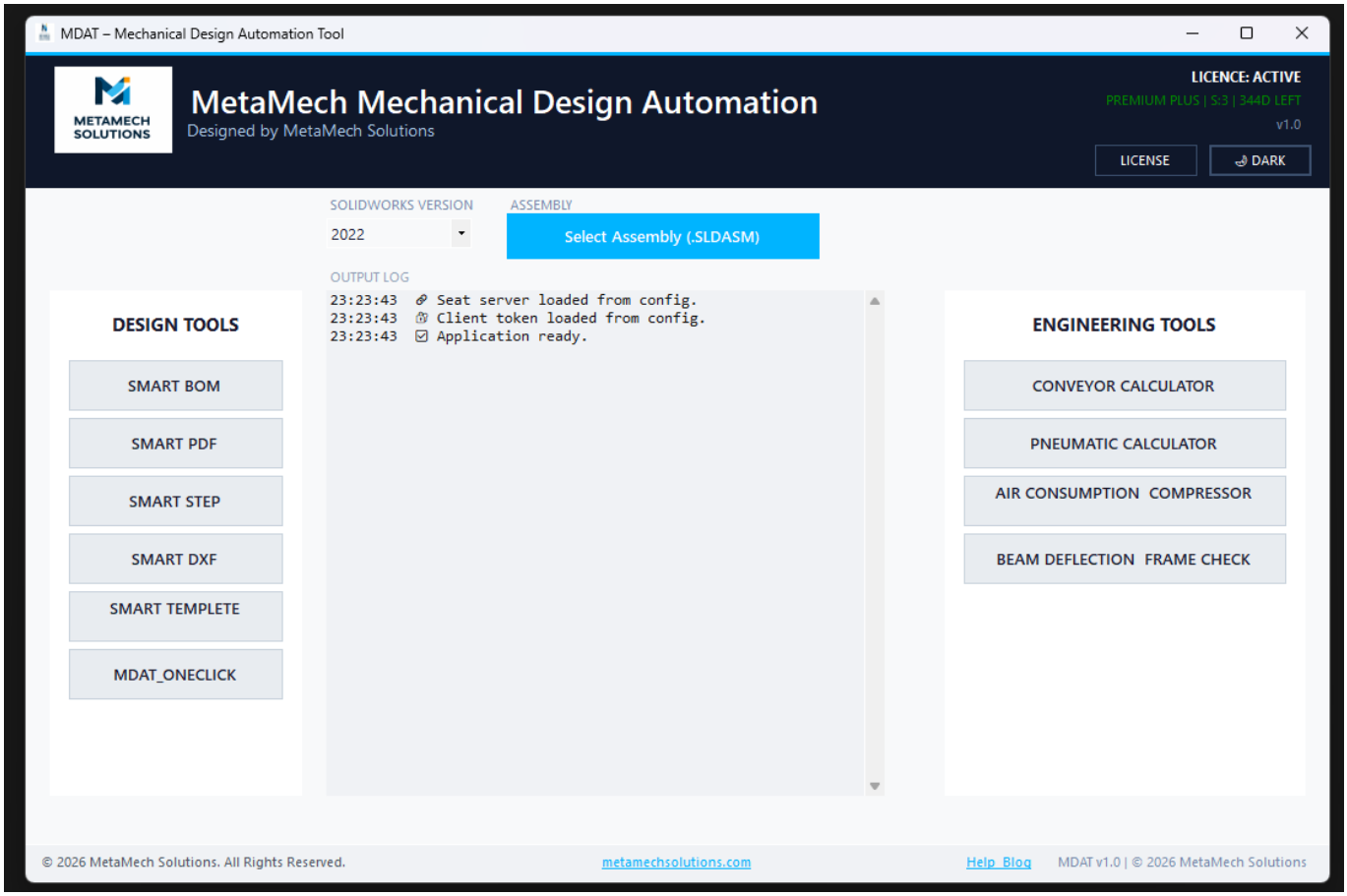
Simultaneous users per license. Inactive seats auto-release after 6 hours.

Offline Use

Trial: 1 day | Standard: 3 days | Premium: 7 days | Premium Plus: 14 days offline.

4. Interface Overview

MetaMech has a professional dark-themed interface:



MetaMech MDAT - Main Application Window

Header Bar

MetaMech logo, title, license status (tier, seats, days remaining), License and Theme buttons.

Left Panel - Design Tools

Six automation buttons: SMART BOM, SMART PDF, SMART STEP, SMART DXF, SMART TEMPLATE, MDAT ONE-CLICK.

Center Panel

SolidWorks version selector, assembly file selector, and Activity Log with real-time progress.

Right Panel - Engineering Tools

Conveyor Calculator, Pneumatic Calculator, Air Consumption, Beam Deflection.

5. Design Tools (SolidWorks Automation)

These tools automate SolidWorks tasks via macros.

Before Using Any Design Tool

You must complete these steps in order:

- 1. Open SolidWorks on your PC
- 2. In MetaMech, select your SolidWorks version from the dropdown
- 3. Click "Select Assembly (.SLDASM)" to load your assembly
- 4. Then click the desired tool button

> ⚠ **Always select SolidWorks version and assembly FIRST. Clicking a tool without an assembly loaded will fail.**

SMART BOM

Purpose: Generate Bill of Materials.

Opens your assembly, traverses all components, and exports an organized BOM to Excel with part numbers, descriptions, quantities, and material info.

Output: Excel spreadsheet saved to output folder.

SMART PDF

Purpose: Batch-export drawings to PDF.

Finds every drawing linked to your assembly and exports them as individual PDFs for manufacturing or review.

Output: Individual PDF files for each drawing.

SMART STEP

Purpose: Batch-export parts to STEP.

Exports every part and sub-assembly as neutral STEP files for sharing with vendors or other CAD systems.

Output: STP files for each component.

SMART DXF

Purpose: Batch-export flat patterns to DXF.

Detects sheet metal parts, unfolds them, and exports flat patterns as DXF files ready for manufacturing.

Output: DXF files for laser/CNC/waterjet.

SMART TEMPLATE CHANGE

Purpose: Push templates and properties.

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

Output: Updated files with new templates applied.

MDAT ONE-CLICK

Purpose: Complete pipeline in one click.

Runs BOM + PDF + STEP exports in sequence automatically. Creates a full release package with zero manual steps.

Output: Complete release package.

6. Engineering Tools

Standalone calculators - no SolidWorks needed. Access from the right panel.

Conveyor Calculator

Calculate belt speed, throughput, motor power, and belt tension for flat, inclined, and decline conveyors.

Pneumatic Cylinder Calculator

Size cylinders: bore, rod diameter, air consumption from force and pressure requirements.

Air Consumption / Compressor

Total compressed air usage in l/min and CFM. Helps size compressors for production.

Beam Deflection / Frame Check

Calculate deflection and verify structural integrity for machine frames.

Motor Power Calculator

Required motor power from torque, speed (RPM), and efficiency.

Torque Calculator

Torque from force and radius in Nm, lb-ft, and other units.

Unit Converter

Convert length, force, pressure, torque between metric and imperial.

Engineering Notepad

Built-in notepad for calculations and project documentation.

7. PDF Merge Tool

Merge multiple PDFs into one with auto-generated index and clickable navigation.

How to Use

- Click PDF Merge in MetaMech
- Add files or a folder of PDFs
- Reorder with Move Up/Down
- Click "Merge with Index" or "Merge (No Index)"
- Choose output location
- Merged PDF opens automatically

Index Features

- Hierarchical numbering (1., 1.1., etc.)
- Clickable links to each drawing
- Page count per document
- Auto page numbering on every page

8. Settings & Themes

Toggle dark/light theme via the theme button (top-right). Saved between sessions.

Select SolidWorks version from the dropdown before using Design Tools.

> Do not share Config.txt - contains connection credentials.

9. Troubleshooting

"Activate your licence"

- Ensure internet on first launch
- Trial expired? Buy at metamechsolutions.com/pricing
- Place license.key next to MDAT.exe

"No seats available"

- Close MetaMech on another PC
- Wait 6h for auto-release

"SolidWorks not available"

- Start SolidWorks first
- Select correct version in dropdown
- Open an assembly (.SLDASM) file

Design Tool does nothing

- Did you select SolidWorks version? (dropdown)
- Did you select an assembly? (Select Assembly button)
- Check Activity Log for errors
- Assembly must be fully resolved

"Trial already used"

- One trial per machine
- Purchase at metamechsolutions.com/pricing

PDF Merge fails

- Ensure PdfMergeTool.exe + DLL present
- Check PDFs are valid and not locked

10. Support & Contact

Website: metamechsolutions.com
Download: metamechsolutions.com/download
Pricing: metamechsolutions.com/pricing
Contact: metamechsolutions.com/contact
Blog: metamechsolutions.com/blog

For support, include your license ID, SolidWorks version, Windows version, and screenshots of any errors.

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