



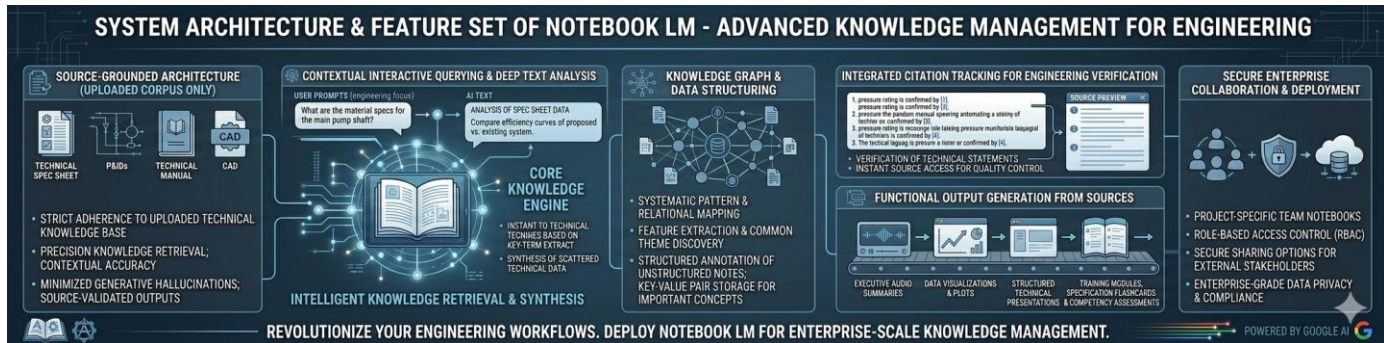
The AI Workbench: Using NotebookLM for Reliable AI

As projects continue to grow in size and complexity, the amount of information required to design, coordinate, and document them has increased significantly. Codes, specifications, meeting minutes, equipment data, and narratives are often spread across many files, making it difficult to quickly locate and verify information. **NotebookLM** provides a practical way to address this by turning project documents into a searchable, interactive knowledge base.

NotebookLM is a Google-developed tool that is available at no cost with a standard Google account. Unlike traditional AI chatbots such as ChatGPT, Claude, or Gemini, which generate responses from general knowledge or web-based research, NotebookLM works directly from the documents you provide. It functions more like a document search and analysis tool with an AI interface layered on top. When a question is asked, it retrieves relevant content from your files and builds a response from that material.

This difference addresses one of the biggest limitations of typical AI tools, known as “hallucination.” Chatbots are designed to generate answers, and when they do not have enough information, they may produce responses that sound correct but are not. In engineering work, that risk is unacceptable. NotebookLM is designed to minimize this by grounding its responses in your documents rather than guessing. It is not telling you what it thinks. It is explaining what your documents say.

A key feature that reinforces this reliability is how NotebookLM handles references. Responses include footnote-style citations that can be clicked to show exactly where the information came from. The system takes you directly to the source document and highlights the relevant text, allowing you to verify the answer immediately. There is no uncertainty about the source or accuracy. Every response can be traced back to the original material quickly and easily.



NotebookLM is most effective as a project or discipline-specific knowledge base. By loading standards, manufacturer data, specifications, and past project documents into a single notebook, it creates a curated set of trusted information that can be queried directly. For example, a notebook can be developed for refrigeration design, energy code compliance, or central plant systems, allowing engineers to quickly retrieve and apply relevant requirements without relying on general AI responses.

It also supports communication by generating summaries, outlines, and presentation content from those documents, and can produce audio summaries that present key information in a conversational format. This allows complex technical material to be reviewed and shared more efficiently. The free version includes fairly generous limits on the number of documents (50 sources per notebook), daily queries, and generated outputs such as audio summaries (3 per day) and are generally sufficient for typical use.

To get started with NotebookLM, go to <https://notebooklm.google.com> in your web browser. You will be prompted to sign in with a Google account. Any standard Google account can be used, including a personal Gmail account. After signing in, you will land on the NotebookLM home screen where you can create your first notebook. Click “Create notebook,” give it a name, and begin adding sources. Documents can be uploaded directly from your computer including website URL’s, PDFs, and other supported formats, even YouTube videos.

Once documents are added, the notebook becomes a searchable knowledge base. You can begin asking questions immediately, and NotebookLM will retrieve and summarize information from your sources. No installation is required. The entire platform runs in the browser, and access is tied to your Google account, so notebooks can be accessed from any device where you are signed in. There is even a mobile app. Give it a try and you’ll quickly see the powerful benefits of this free AI tool.



The Sage Report

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Understanding Section C406 in the 2025 NYS Energy Code

The most significant change in the 2025 Energy Conservation Construction Code of New York State (ECCCNYS) is **Section C406 – Additional Efficiency, Renewable, and Load Management Requirements**. [Section C406](#) introduces a mandatory credit system that applies to many commercial projects. Instead of relying only on prescriptive code compliance, projects must now earn efficiency credits through specific design measures. To simplify the concept, C406 can be understood as two categories:

Category A – Energy Efficiency Credits ([Section C406.2](#))

Category B – Renewable and Load Management Credits ([Section C406.3](#))

Determining the Requirement

The first step is determining the project type and required credit target. Key factors include: Occupancy group, Climate zone and Project type (new building, addition, alteration, core and shell). Then required credits are established based on the Code Tables. For example, 71 Category A credits in Climate Zone 5 for a B Occupancy. New Buildings over 5,000 square feet must also meet a Category B requirement, typically 38 to 44 credits.

Important Note – Per [Exception to C406.1.2](#), Surplus credits from Category A Tables may be carried over to meet the Category B points if the minimum Category A. So, it is possible to achieve all Category A + B credits by exceeding Category A minimums alone.

New Buildings

For new commercial construction:

Over 2,000 SF – Category A credits are required

Over 5,000 SF – Both Category A and Category B credits are required

Category B introduces measures such as renewable energy systems, energy storage, and HVAC load management.

Existing Buildings

Requirements are different for additions and alterations.

Additions ([Section C502.3.7](#)) must achieve 50 percent of the required Category A credits. Category B does not apply.

Substantial Improvements ([Section C503.6](#)) occurs when the alteration cost exceeds 50 percent or more of the building [market value](#). In this case, the project must achieve the credit target from [Table C406.1.1\(1\)](#). Credits may come from Category A, Category B, or a combination of both.

Unlike new buildings, there is no separate Category B minimum for substantial improvements. Designers have flexibility in how the required credits are achieved.

Category A – Energy Efficiency Credits

Category A focuses on traditional efficiency measures including the building envelope, HVAC systems, service water heating, and lighting. Many options are mutually exclusive, meaning designers must select a pathway rather than combine all options.

Examples include:

Envelope: Either a 15 percent UA reduction or a component-based approach

HVAC: Either system modeling (TSPR) or prescriptive system improvements

Service Water Heating: Typically limited to one generation measure and one distribution measure

Lighting: Credits are limited to prevent double counting

These limitations make early coordination between disciplines essential.

Category B – Renewable and Load Management

Category B primarily affects new buildings over 5,000 square feet and includes:

On-site renewable energy, Electric energy storage, Cooling energy storage and HVAC load management

COMcheck

A New York specific version of COMcheck was only made available in early March 2026. Users MUST register for the New COMCHECK Web [here](#). Older versions and older login credentials DO NOT allow access to the NYS 2025 Energy Code. All the requirement of Section C406 are included in this version of Comcheck. Note that compliance must be proven in COMcheck by completing **ALL** portions of Envelope, HVAC, Service Heating and Lighting in the **SAME** Comcheck file meaning architects and engineers will need to share the project file across disciplines to verify compliance. This will require more designer coordination than previous code compliance measures.

Future newsletter articles will delve into methods of achieving the required credits in each category.



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What's wrong with this picture?



At first glance, this pump installation looks clean and coordinated. The piping is insulated, valves are accessible, and the assembly appears well supported. However, two seemingly minor details create long-term reliability concerns that should not be overlooked.

The first issue is the independent motor support installed using **Unistrut framing in direct contact with the motor housing**. These are close-coupled pumps. In this configuration, the motor shaft is directly connected to the pump impeller, and the motor face registers precisely to the pump volute. The entire assembly is designed to be supported at the pump base only. When independent structural framing contacts the motor, unintended external loads are introduced into a precision alignment condition. Even slight structural loading can distort the motor frame, shift shaft alignment, and increase bearing and seal stress. The result is often cumulative wear that manifests later as vibration, seal leakage, bearing noise, or premature motor failure. The motor is not intended to function as a structural support member. Any supplemental framing installed near the motor shall not contact the motor housing or transfer load to the assembly. The pump and motor shall remain supported solely as intended by the manufacturer. This reinforces an important design responsibility. The engineer's pump details should include a clear note stating: **NOTE: INSTALL PUMP IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.**

During design, the engineer should review the manufacturer's installation requirements and confirm that the standard detail conforms to them. If the detail implies independent restraint, piping strain, or structural loading that conflicts with manufacturer guidance, the detail requires revision.

The second issue involves the pressure gauge piping. The gauges are connected using copper tubing directly threaded into steel pump fittings with steel nipples and couplings, without dielectric separation. This creates a **galvanic corrosion** condition. In a hydronic system, water acts as an electrolyte between dissimilar metals. When copper and steel are directly connected, the steel becomes the anode and corrodes at an accelerated rate. Over time, this can lead to rust buildup, thread degradation, leakage, and gauge failure.

The correct approach is to avoid dissimilar metal connections wherever possible. The piping specifications should clearly address this requirement, and a general piping note can be provided on the drawings similar to the following:

AVOID DIRECT CONNECTION OF DISSIMILAR METALS. WHERE DISSIMILAR METAL CONNECTIONS ARE UNAVOIDABLE, PROVIDE SUITABLE DIELECTRIC FITTINGS OR APPROVED TRANSITION FITTINGS. REFER TO PIPING SPECIFICATION SECTION 23XXXX FOR SPECIFIC REQUIREMENTS.

Neither of these conditions appears dramatic. There is no visible failure and no immediate shutdown. Yet both represent deviations from fundamental engineering principles: respect the designed load path of rotating equipment, follow manufacturer installation requirements, and ensure material compatibility in piping systems. Mechanical systems rarely fail because of a single major mistake. They fail because small details are ignored. The difference between short service life and long-term reliability is often found in these details.



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UPCOMING LIVE WEBINARS AND SEMINARS

This month’s lists of free live webinars and seminars are below. Each offers at least one PDH and qualifies as a *Course of Learning* – a format that includes traditional classroom-style courses or live webinars with real-time interaction with an instructor. As a reminder, New York State requires that 18 of the 36 total continuing education hours for professional engineers be completed through *Courses of Learning*.

All webinars listed below are free. The ASHRAE and ASPE meetings are in-person and have a cost of \$50 reimbursed by Sage for Sage employees.

Date	Topic	Host	Time (ET)	Registration Link
March 10	Engineering Ethics: Willow Island Cooling Tower Collapse	NoonPi	12:00 PM – 1:00 PM	Register
March 10	Aqua-Barrier Overview	HSI Services (Aqua-Barrier)	3:00 PM – 4:00 PM	Register
March 11	Engineering HDPE Projects: Top Ten Questions	Plastics Pipe Institute (PE Pipe)	2:00 PM – 3:00 PM	Register
March 12	Detecting & Measuring Compressed Air Leaks	Air Best Practices	2:00 PM – 3:00 PM	Register
March 12	Constant Spring Supports Design & Application	Piping Technology & Products	11:00 AM or 3:00 PM	Register
March 17	Vibration Isolation 101	Mason Industries (ASHRAE Northeast Chapter Meeting)	12:00 PM – 1:00 PM	Register
March 19	Conserving Water with Dry Vacuum Pumps	Blower & Vacuum Best Practices	2:00 PM – 3:00 PM	Register
March 19	Understanding Emergency Equipment	Haws (ASPE Meeting)	11:30 AM – 1:15 PM	Register
March 25	High-Pressure Atomization (HPA) Humidification Design for Commercial and Healthcare HVAC Systems	NoonPi	12:00 PM – 1:00 PM	Register





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Residence Hall Modernization Program University at Albany, Albany, NY

For more than 20 years, Sage Engineering has served as a lead mechanical, electrical, plumbing, and fire protection engineer for the comprehensive modernization of residence halls across the University at Albany's Uptown Campus. What began as targeted infrastructure upgrades has evolved into a coordinated, campus-wide transformation of building systems, aligning mid-century residential facilities with contemporary performance, safety, and sustainability standards. For all of these projects Sage acted as a subconsultant to Architecture+ who provided architectural design services and overall project management.



The residence hall program has required careful integration with UAlbany's interconnected high temperature hot water distribution system and central plant operations. Each project has included detailed evaluation of existing heat exchanger plants, pumping configurations, controls, and metering strategies to ensure compatibility with campus standards while improving efficiency and reliability. Redundant shell-and-tube heat exchangers, upgraded control valves, and BACnet-based building automation interfaces tied to central "head end" systems have become standard components of the design approach.

Mechanical upgrades across the projects have included ventilation system modernization, air handling unit replacement, zoning improvements, targeted cooling solutions for critical spaces, and enhanced temperature control. Electrical work has encompassed service replacements, feeder upgrades, distribution equipment modernization, LED lighting and controls, emergency power systems, telecommunications infrastructure, and addressable fire alarm systems integrated into campus monitoring networks. Fire protection scopes have consistently included full NFPA-compliant sprinkler installations coordinated within constrained ceiling spaces typical of original residence hall construction.

Several early projects in the program achieved LEED Gold certification under LEED BD+C: New Construction. Herkimer Hall, Onondaga Hall, and Beverwyck and Schuyler Halls were formally certified, reflecting the University's initial emphasis on documented certification. Following Ten Eyck Hall, which was completed in August, the campus discontinued formal LEED submissions after determining that the filing fees did not provide proportional value. However, the design standard has not changed. Current and future projects continue to incorporate LEED Gold-level features, including energy modeling, optimized HVAC system performance, improved indoor environmental quality, lighting power density reductions, and comprehensive controls integration, even without pursuing formal certification.

The program remains active. Montauk Hall is entering design, continuing the phased modernization strategy. Van Cortlandt Hall is currently out to bid, representing the next construction phase in the sequence. Bleecker Hall is approximately 85 percent complete in construction and nearing turnover. Each successive project benefits from the institutional knowledge developed through prior phases, including refined heat exchanger plant layouts, optimized control sequences, and coordinated construction phasing strategies within occupied residential buildings.