

Mathcad® Optimize your design and engineering process.



PTC®

Where
engineering
excellence
begins.

ENGINEERING CALCULATION SOFTWARE



Solve, document, share and reuse vital engineering calculations.

Engineering excellence is paramount for a wide range of organizations in a multitude of industries, from aerospace to automotive to pharmaceuticals and beyond. In product design, “engineering excellence” means creating the best design in the least amount of time. Engineering excellence ultimately speeds products to market and improves product quality, so you can outperform your competition.

In your quest for engineering excellence, you’re already investing considerable sums in detailed design development and prototype testing. Yet, you could be missing the most essential ingredient in this important investment: engineering calculations.

- Are you capturing the valuable calculation information created in every engineering project?
- Can you tell, at a glance, what the critical parameters or design constraints are for your project?
- Are you reusing your engineering calculations in subsequent projects?
- Do you need to reduce the number of design iterations or prototypes required for each design?
- Are you identifying best engineering practices, or relying instead on the judgment of individual engineers on a case-by-case basis?



Engineering calculations are used to predict the behavior of designs early in the product development process, and those results often drive critical parameters and dimensions of the design. Calculations are the heart of your engineering information, and yet, too many companies can't answer "yes" to any of the questions above. Consequently, they are failing to properly create, document and share their engineering calculations. Inevitably, they are losing valuable intellectual property, not only with every new project, but with every resignation or retirement within their engineering organization, as well.

Discover why leading companies standardize on Mathcad

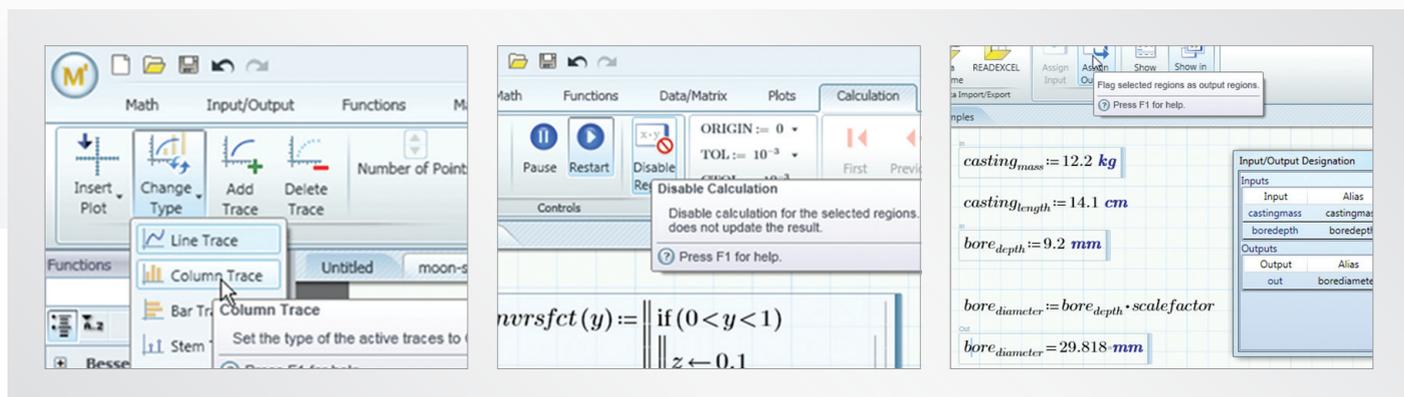
As the industry standard for engineering calculations, Mathcad takes engineering excellence to a whole new level.

Mathcad enables engineers to easily perform, document and share calculations and design work. Its easy-to-use, live mathematical notation, powerful capabilities and open architecture allow engineers and organizations to streamline critical design processes. Mathcad presents calculations, text and images in an understandable format, enabling knowledge capture, data reuse and design verification. The result is faster time-to-market, higher product quality, easier compliance with regulations, and seamless integration of Mathcad into existing engineering applications.

Capture and share valuable engineering IP and knowledge.

Companies of all sizes, across all industries, risk errors and undertake unplanned redesigns that can cost substantial revenue, potential customers and lost productivity. Organizations are suffering these costs unnecessarily because they are unable to successfully capture and share valuable engineering calculation information.

Virtually every industry today generates a wealth of valuable engineering calculation data, including specifications, formulas, diagrams and test results. Accuracy and timeliness of this information are vital for accelerating products to market, reducing costs, and eliminating the risk of design failures. Unfortunately, this valuable information is either hidden from view, or lost in filing cabinets, on notebook paper, in computer code, or behind spreadsheet cells. Too often, the data simply walks out the door when an employee leaves the company, never to be used again.



Mathcad captures all of the text, live math and graphics needed to clearly communicate the assumptions, equations and results of critical engineering calculations.



Mathcad – by the numbers.

Any way you add it up, Mathcad stands alone when it comes to functionality, performance and ease-of-use. That's why it's the industry standard solution for engineering calculations.

60 built-in signal processing functions in the Mathcad signal processing extension pack.

600 built-in engineering calculation functions, plus automated units management.

4,000 validated worksheets, in US customary and metric units – all from Knovel.

250,000 engineers worldwide choose Mathcad because it combines text, live math and graphics in a single worksheet.

Traditional methods.

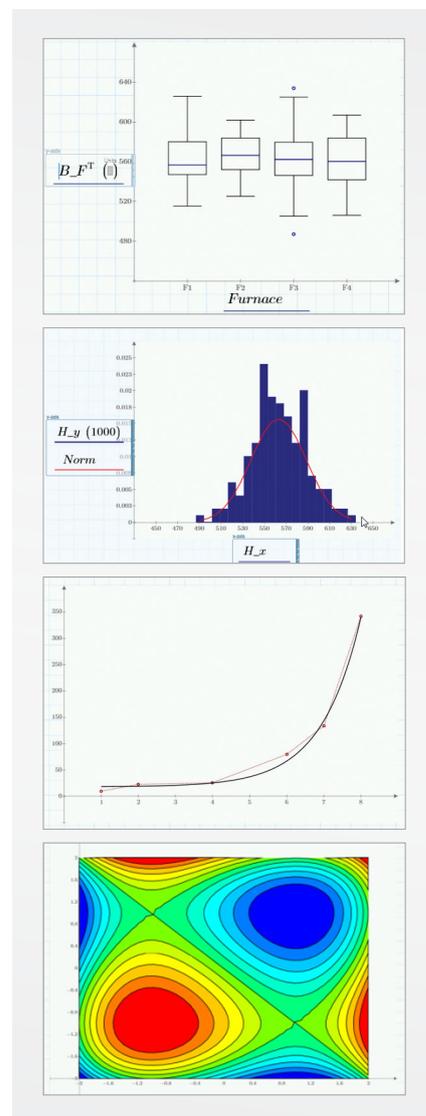
Current methods used by engineers to perform calculations are often disparate, offline, and outdated:

- Physical handbooks remain an important, yet cumbersome tool for estimating, validating and early sizing
- An ad hoc collection of calculators, spreadsheets, programming languages and paper notebooks are amassed to solve and document engineering calculations
- Typically, engineering calculation knowledge is either lost, not easily understood by others, or locked up in the physical product
- Spreadsheets: Still pervasive, but...
 - Spreadsheet equations are not expressed in standard math notation, and are hard to read and understand
 - Spreadsheets lack automated units management
 - Spreadsheets are difficult to audit or reuse
 - Spreadsheets provide little or no support for advanced math calculations, such as derivatives or differential equations

The result: spreadsheets often contain errors that can decrease design quality and hinder the product development process.

Power and ease of use, all in one

Unlike other calculation solutions, Mathcad is the first solution that enables engineers to simultaneously create and document engineering calculations in a single worksheet, reducing costly, time-consuming errors and redesigns, while promoting true engineering collaboration. Requiring no special programming skills, Mathcad's intuitive interface combines live, standard mathematical notation, text and graphs—all within a format that is easy to read and understand.



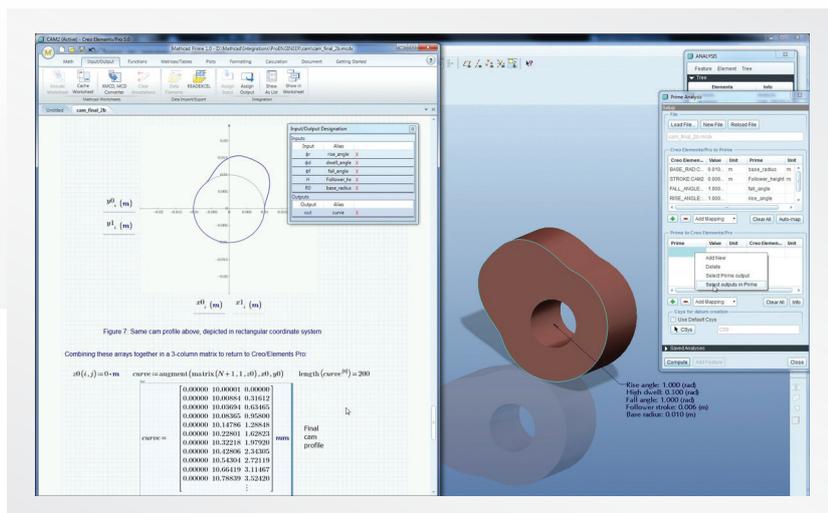
With Mathcad's intuitive interface, engineers can combine text, live math and graphics in a single worksheet.

Comprehensive capabilities to help automate the product development process

- Mathcad simultaneously creates and documents calculations
 - Live calculations are in the document
 - All equations, text, graphs and data are captured in the same worksheet
 - Integrated numeric and symbolic math shows both the reasoning behind the design and the results
- Provides intelligent, automatic units management
- Produces repeatable engineering calculations—standard and proprietary—that can be easily iterated, audited, shared and reused

Extensive collaboration throughout the organization

- Calculations, expressed in standard math notation, can be easily read and understood by others
- XML format enables automated publishing in downstream documents
- Clear documentation of all methods, equations and assumptions enables traceability between:
 - Calculations and design geometry
 - Design geometry and customer requirements



Leverage the bi-directional integration between [Mathcad](#) and [Creo™](#) to enable predictive engineering and reduce inefficient design iterations.



The industry standard for engineering calculations.

Mathcad is a highly intuitive design environment that enables engineers to quickly create, document, share and reuse critical engineering calculations, including product requirements, critical data, methods, equations and assumptions.

Intuitive calculations

Mathcad's intuitive interface accepts and displays standard mathematical notation using keystrokes or menu palette clicks – with no programming required.

Collaboration enablement

Mathcad's flexible formats enable engineers to share the fully documented worksheet – including the concept and implementation, not just the code.

Systems engineering workflow

Within Mathcad you can capture product and system requirements, decompose those requirements into their functional areas, support detailed design and analysis, and provide an intuitive environment for design verification and validation.

Productivity-enhancing integration

As an integral part of PTC's Product Development System, Mathcad, with its open architecture, integrates seamlessly with PTC's Creo, market-leading, integrated 3D CAD/CAM/CAE software. This powerful, bi-directional integration provides unique predictive engineering capabilities. Mathcad can be used to predict the behavior of designs, and the results can be used to drive parameters and dimensions in Creo CAD models.

Mathcad enables companies to automate the creation and documentation of engineering calculations, and to deliver higher quality designs faster. Mathcad is used by more than 90% of the Fortune 1000 companies, representing a broad range of industry verticals.

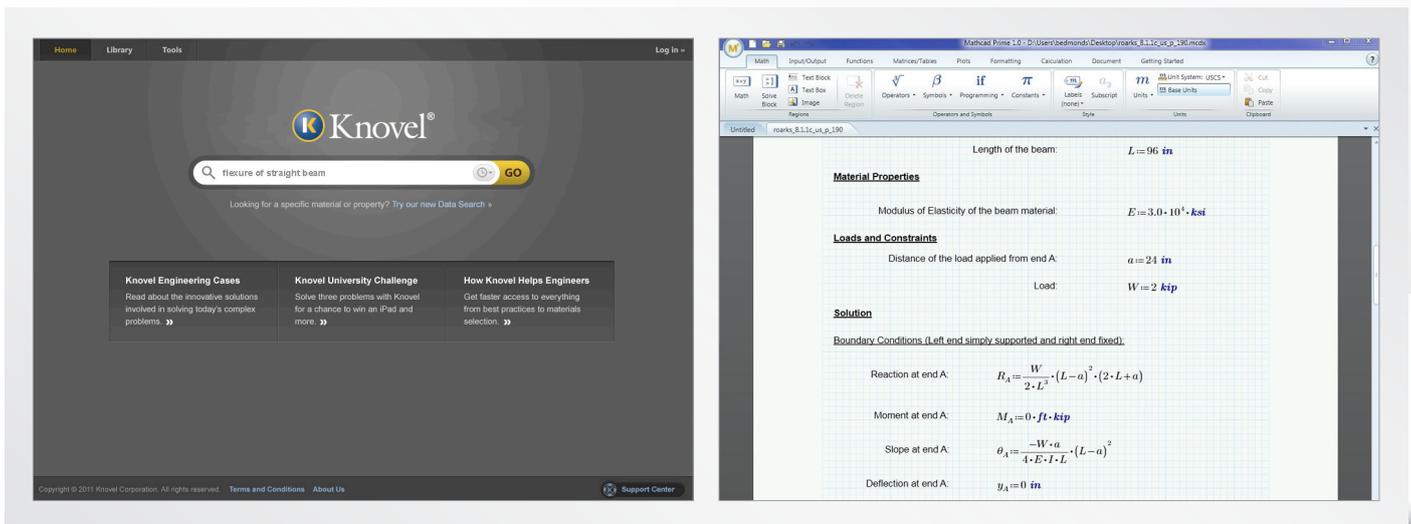
Mathcad worksheets from Knovel®

Extend Mathcad with Knovel Math – trusted reference content

Knovel Math provides fully documented, validated Mathcad worksheets for engineering calculations from trusted reference works, reducing the time it takes to find, solve and document equations. Knovel Math includes worksheets for thousands of Mechanical, Civil and Structural Engineering topics, including full-text content from the original works, helping you to select and apply the equations you need.

- Web-based for easy 24x7 access
- Use Knovel's powerful search to find the calculations you need
- Includes full-text content from the original works, helping you to select and apply equations
- Provided in U.S. Customary and Metric Units

Unlike other calculation solutions, Mathcad is the first solution that enables engineers to simultaneously create and document engineering calculations in a single worksheet.



The Knovel Math subscription enables you to quickly access a comprehensive list of fully documented Mathcad worksheets. For more information, please visit Knovel.com.



Powerful resource for engineering calculations.

Mathcad delivers a wealth of benefits to every major stakeholder in the engineering organization. For senior management, Mathcad ensures maximum productivity, helping deliver better products more quickly to market at a lower cost, while preserving intellectual property. Mathcad also helps engineers more efficiently perform all phases of their work, reducing errors, increasing collaboration with colleagues, and encouraging greater reuse of approved calculations in future projects.

DESIGNED FOR ENGINEERS

Engineering focused

Mathcad, the most widely used engineering calculation software, is designed to meet the challenges of engineers who need to accomplish tasks faster, with higher quality.

Intuitive

Mathcad's easy-to-use interface is not only simple to learn, but it also leverages standard math notation, ensuring that work can be easily read, understood, shared and reused by others.

Comprehensive

Mathcad combines text, live math, graphics and annotations in a single worksheet. Its unmatched breadth of application, including powerful mathematics functionality and unit awareness, provides all the capabilities needed in one comprehensive application.

Interoperable

Mathcad easily integrates with Creo and Microsoft Share-Point®, as well as other engineering applications, enhancing its power by leveraging tools and results from PTC and third-party applications.

Scalable

Mathcad's power and reach extend to desktops and across the enterprise.

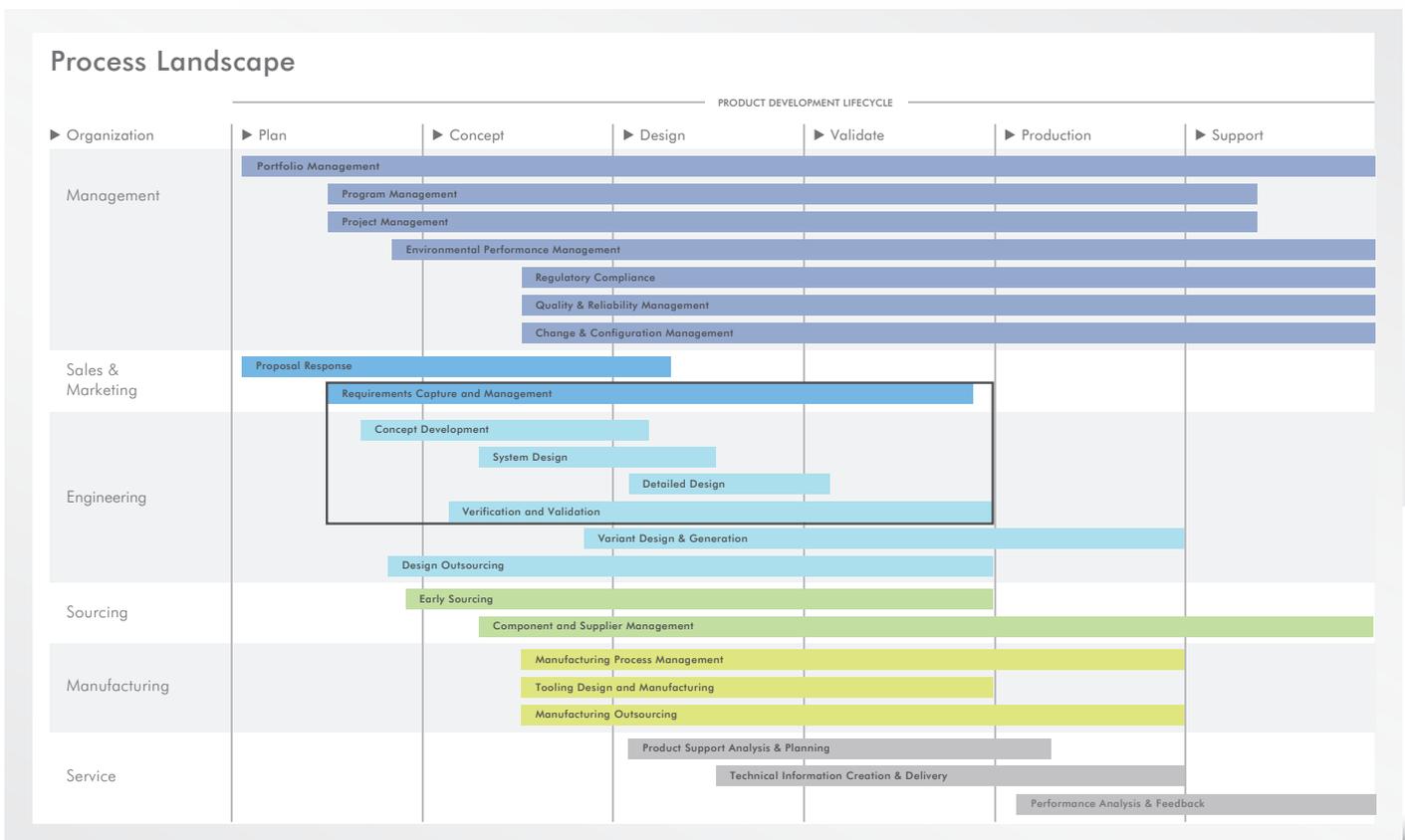
Optimize key product development processes.

Process improvement is pivotal to supporting product development, and ultimately to helping drive business success.

PTC has a comprehensive point of view of product development, and it is represented here, in our process landscape. We recognize that product development is a set of highly cross-functional and distributed processes that span the life of any product, from planning through support.

Mathcad can help optimize a host of product development processes including:

- Requirements Capture and Management
- Concept Development
- System Design
- Detailed Design
- Verification and Validation



The power of PTC

PTC PROVIDES LEADING PRODUCT DEVELOPMENT SOLUTIONS TO MORE THAN 25,000 CUSTOMERS WORLDWIDE.

Software products

- Broadest integral suite of solutions that enable companies to:
 - Create product information
 - Collaborate in a globally distributed environment
 - Control product development processes
 - Configure product content
 - Communicate product information to multiple systems and audiences
- Rigorous testing to ensure that products work together—and work for you
- Designed for incremental deployment to ensure successful adoption

Product development processes and initiatives

- Unique process-oriented approach to product development to deliver maximum value
- Technology-enabled process optimization to advance defined customer business initiatives
- Product Development System supports end-to-end processes to accelerate deployment time and reduce cost

Industry solutions

- Extensive expertise across a broad range of industries
- Demonstrated customer success in providing tailored solutions for specific industry needs
- Solutions support industry-specific business processes both within the enterprise and across the supply chain

Services & support

- Product development consulting to define and develop best-in-class processes
- Assessments and implementation services to deploy technology with minimum disruption
- Education curricula to accelerate adoption and boost productivity
- Global maintenance support that delivers the right team, tools and technology—available anytime, anywhere you need them for product development success

To learn more, please visit our website at: PTC.com/mathcad.

Complete Product Development System

PTC's integral Product Development System delivers the key capabilities manufacturers need to realize more value from product development. And our proven, incremental implementation approach can help companies of any size accelerate adoption, minimize risk, and speed time-to-value.

Creo™
Design Software

Windchill®
Product Lifecycle Management (PLM) Software

Arbortext®
Dynamic Information Delivery Software

Mathcad®
Engineering Calculation Software



Mathcad[®]

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