



Elsevier R&D Solutions  
FOR OIL & GAS

## Knovel<sup>®</sup>

An engineering decision-support solution that delivers trusted answers to technical questions.

### INFORMATION ESSENTIALS

Multi-disciplinary and specialized technical content for industry needs

### MATERIAL SOLUTIONS

Data resources that support productivity and aid in material analysis and selection

### SMART CONTENT & ANALYTICS

Interactive analytical tools and specialized data search

### WORKFLOW INTEGRATIONS

Connections with engineering software and information discovery platforms



ELSEVIER



# Provide engineers with the know-how and tools to unearth and seize opportunities



**Get answers to engineering questions:** Over 80% of Knovel users find information that is directly applicable to a project



**Reach market faster and increase efficiency:** Knovel users reduce project completion and rework time by 8-9%, and avoid spending 3-15 hours per month looking for information



**Solve design and development problems and meet specifications using trusted data:** Knovel users more easily find ways to innovate, meet specifications, and cite trusted sources in documentation



**Build technical knowledge on current industry topics:** Knovel provides a wide range of essential technical information so that getting up-to-speed on new topics is easier

## MINIMIZING RISK WHILE MAXIMIZING OUTPUT AND EFFICIENCY

Fluctuations in oil prices, harsh environments, health, safety and environment concerns, additional infrastructure demands, unplanned equipment outages, and shortage in experienced, qualified staff. These business challenges in a volatile industry constantly put pressures on engineering teams in oil and gas companies.

To support business growth and profitability, engineers require reliable insights on new technologies and applications as well as best practices on optimizing production and ensuring safety throughout upstream, mid-stream and downstream phases of their operations. In particular, engineering design and development projects have some of the biggest demands for technical information. For example:

- Design and development decisions that can be traced back to **reputable sources**
- **Immediate answers** for engineering problems with expensive stakes and consequences
- **New insights** for exploring innovative solutions and approaches
- **External, validated best practice information** that enhances internal information and models

## A SOLUTION THAT SUPPORTS ENGINEERING DECISIONS AND PRODUCTIVITY

Knovel is an engineering decision-support solution that enables confident answers to technical questions by drawing upon trusted data from more than 120 providers through a cloud-based platform with powerful search and interactive analytical tools.

Engineers at top Oil & Gas companies worldwide turn to Knovel for best practice and technical application insights, validated equations, and substance and material properties data to innovate and solve a range of technical problems such as those related to drilling techniques, fluid dynamics, rig and pipeline construction, material strengths and process design, plant safety, environmental impacts and compliance.

With over 15 years in the market and repeated recognition as an awardee and finalist for the Software & Information Industry Association's (SIIA) CODIE Awards, Knovel offers:

- **Information Essentials** – Multidisciplinary and specialized technical reference content curated for industry needs
- **Material Solutions** – Data resources that support productivity and aid in material analyses and selection
- **Smart Content and Analytics** – Interactive tools that enable data analysis, and specialized data search and taxonomies that make it easy to discover answers to technical questions
- **Workflow Integrations** – Connections with engineering software and discovery platforms allow users to benefit from Knovel where and when they need it

“Knovel not only makes available many of engineering’s sacred texts but also includes interactive tools that can extract data from tables, charts, graphs and mathematical equations to shorten the time spent on looking up information and testing ‘what if’ scenarios.”

– Director of Global Engineering Standards, BP



## INFORMATION ESSENTIALS

Knovel offers a broad and deep coverage of content needs through partnering with 120+ publishers and societies. Over 35 subject areas and premium content offerings are available, and top subject areas curated for engineers in the Oil & Gas Industry include:

- Mechanics & Mechanical Engineering
- General Engineering & Project Administration
- Industrial Engineering & Operations Management
- Electrical & Power Engineering
- Chemistry & Chemical Engineering
- Oil & Gas Engineering
- Civil Engineering & Construction Materials
- Safety & Industrial Hygiene
- Metals & Metallurgy
- Sustainable Energy & Development
- AIChE/CCPS Chemical Process Safety

## TOP KNOVEL SEARCHES

extraction **process hazard analysis** horizontal drilling  
pumps and compressors **pressure** instrumentation  
**chemical properties** corrosion control fluid dynamics  
equipment design process optimization reservoir engineering  
subsurface engineering **materials properties** risk assessment





“Knovel supplies us with a vast number of resources that we utilize when we’re looking at any type of engineering: environmental, mechanical, civil, project solution, even troubleshooting.”

–Jeff Warmann, President and CEO,  
Monroe Energy

#### ENGINEERS USE KNOVEL TO:



Research substance and material properties and suitability for applications and process improvements



Perform calculations to solve process and application challenges



Troubleshoot issues and failures



Develop design, guidelines and criteria for equipment, maintenance and processes



Assess safety and risks with potential and existing processes and systems



Get up to speed on unfamiliar topics

#### MATERIAL SOLUTIONS

Through Knovel’s exclusive critical tables and materials and substance databases, engineers have critical property data at their fingertips. Some examples of Knovel substance and materials data resources for Oil & Gas industry customers are:

- **Yaws’ Critical Property Data for Chemical Engineers and Chemists**  
Available to subscribers of the Knovel Oil & Gas Engineering and Chemistry & Chemical Engineering content offerings, this resource provides access to properties for 35,000+ organic substances and over 5,000 inorganic substances and elements. The largest bank of correlations online, this compilation features measured and calculated data, validated by subject matter experts.
- **Crude Oil Assay Database**  
Available to subscribers of the Oil & Gas Engineering content offering, this is a unique, interactive compilation of physical and chemical properties of over 500 assays, covering over 340 crude oils commonly available on the world market. It contains over 4,700 data records collected from crude producers, government agencies, and other authoritative sources.
- **Knovel Critical Tables**  
Available to all Knovel subscribers, this resource includes – but is not limited to— physical, solvent, and thermodynamic properties. The physical property tables alone include over 21,000 inorganic and organic compounds, and pure substances.
- **COMING SOON: Knovel Substitute Chemical Database**  
To be available as a premium content offering, this is a comprehensive, essential decision-support resource designed to help companies identify, evaluate and substitute auxiliary chemicals in their design or process based on environmental, health, safety, and performance factors.

## SMART CONTENT AND ANALYTICS

Engineering search capabilities and analytical tools enable users to discover new insights and related information, deepening the value they get from Knovel.

### Multi-faceted Keyword Search



**Figure 1:** Knovel's basic search results views offers multi-faceted refinement options for easy discovery of related insights across content types and resources.

### Data Search



**Figure 2:** Knovel's data search feature is a must-have for precise material/substance or property data search.

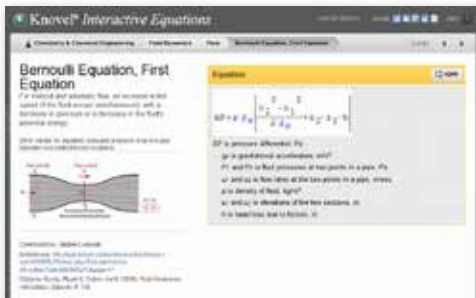
## Optimized Search for Engineers

Knovel's specialized search is extremely simple yet powerful, built upon a deep understanding of the engineer's 'language' to deliver relevant results. It finds data hidden in tables, graphics, and equations, allows numeric range search, automatically performs unit conversion and performs multivariable searches.

## Interactive Content and Productivity Tools

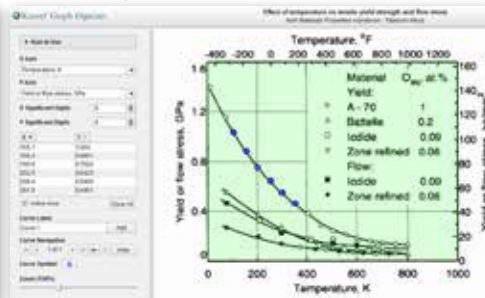
Knovel offers easy-to-use tools for initial calculations and information validation, as well as a breadth of interactive content that allows users to customize data before integrating into their work.

### Interactive Equations with equation solver



**Figure 3:** Knovel Interactive Equations features over 500 equations paired with worked examples from multiple engineering disciplines and a web-based equation solver that allows users to calculate online and export your calculation in PDF, Mathcad, or HTML formats.

### Interactive graphs and tables



**Figure 4:** Knovel offers more than 100,000 interactive tables and graphs with 'live' data, allowing users to easily customize data.

### Unit Converter



**Figure 5:** Knovel's Unit Converter enables users to quickly convert any unit of measurement—or any combination of units—into another unit. Users can choose from a list of over 1,000 unique units for approximately 90 properties.



“[Knovel] is a great tool to find answers. It’s a good first place to look for material on a variety of subjects important to the professionals at our company.”

– Phil Schenewerk, Engineer at Apache

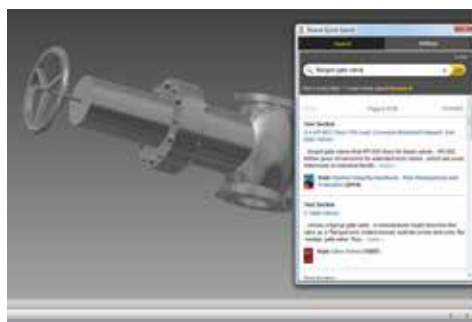
### WHO USES KNOVEL?

Chemical, Mechanical, Petroleum, Structural, Environmental, and Manufacturing engineers from Oil & Gas companies use Knovel. Knovels global customer base include:

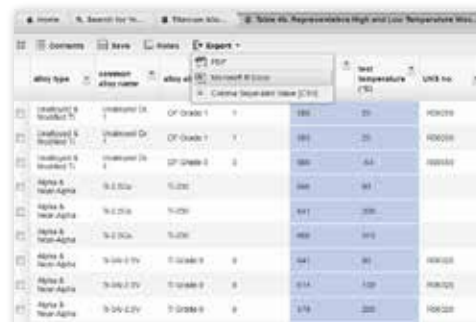
- **Engineers from ~700 organizations worldwide**, with an average of 2,400+ users per company
- **70+ Fortune 500 companies**
- **7 of the top 10 Chemical companies** in the world
- **12 of the Top 15 US Engineering Schools** and **10 of 15 World’s Best Universities** for Mechanical, Aeronautical & Manufacturing Engineering

### WORKFLOW INTEGRATIONS

Knovel offers mobile capabilities as well as integrations with engineering software, applications and information discovery platforms, so engineers can benefit from where and when they need Knovel.



**Figure 6:** Knovel offers search integration plugins for users of industry-standard engineering software such as Autodesk Inventor and Revit.



**Figure 7:** Knovel data is easy to export into standard engineering desktop tools like MS Excel and MCAD programs.



**Figure 8:** Knovel supports integrations with key information platforms such as Sharepoint and the EBSCO Discovery Service. It also offers search widgets that can be embedded onto a user’s desktop and websites to provide convenient access to technical insights, materials data and interactive content.



**Figure 9:** Knovel’s product website is optimized for mobile browser access and the My Knovel ToGo application provides users with mobile and offline access to content titles that are saved to a user’s online profile.

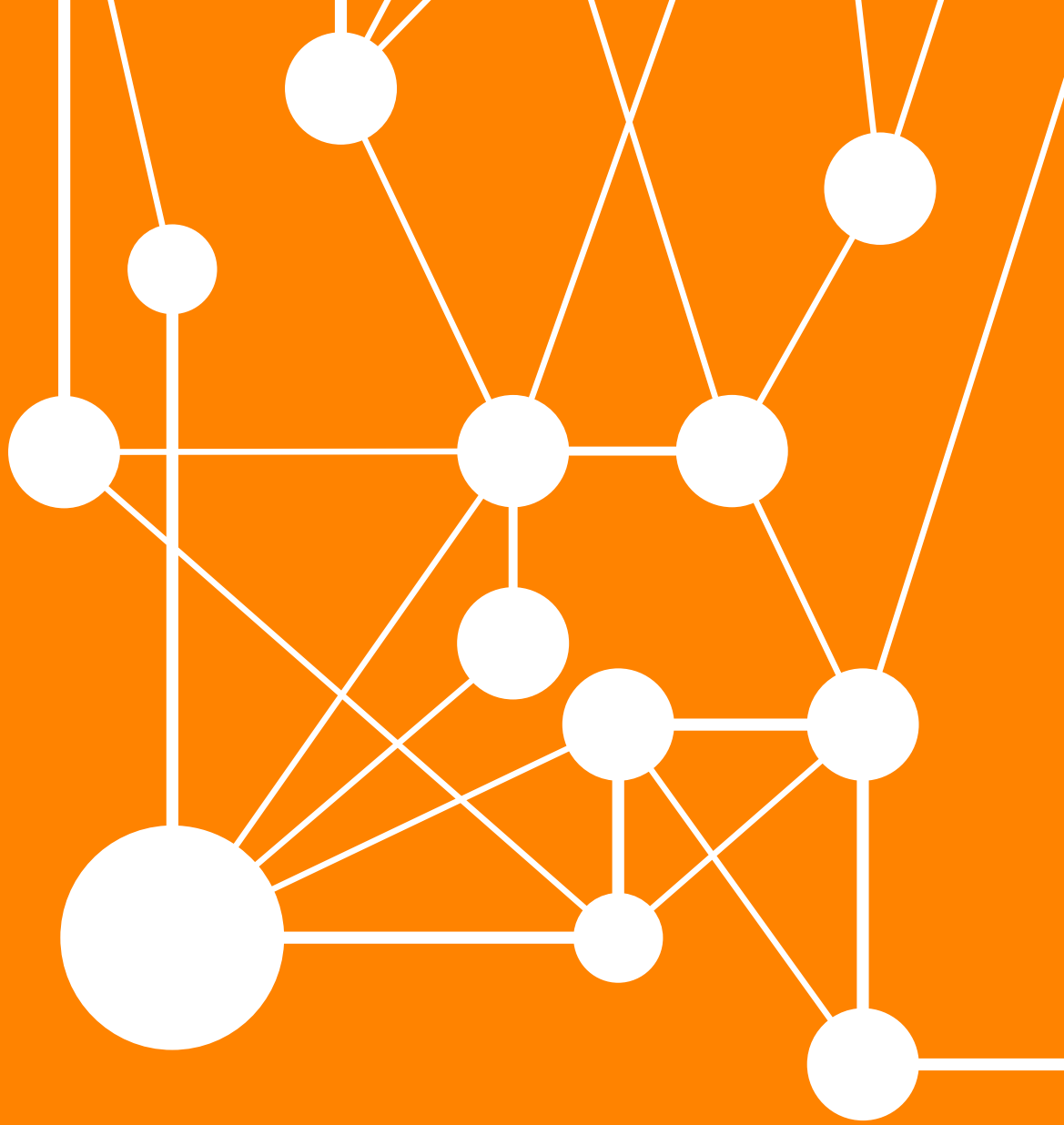
## GET STARTED

To learn more about how Knovel can help position your company for success in the Oil & Gas Industry, contact your Elsevier sales representative or request for more information or a product demonstration by visiting [elsevier.com/knovel](https://elsevier.com/knovel)

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“Knovel makes our people much more effective in their jobs. They can spend their time analyzing what is going on in the field...rather than spending valuable time trying to find a formula or a process description. It’s an innovative solution to helping us research technical facts quicker.”

– Jeff Warmann, President and CEO, Monroe Energy



## LEARN MORE

Contact us to discover how Elsevier's information tools and trusted content can help your company save time and gain cutting-edge insights to drive innovation.

Visit <http://www.elsevier.com/rd-solutions/oil-and-gas> or contact your nearest Elsevier office.

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