Today’s chemical companies are quickly adapting to the digital world, recognizing the power of “connection” among products, production equipment and personnel. However, with transformation also comes challenges. Major challenges that Chemicals companies are facing in order to stay competitive are access to actionable information and best practices.

Knovel quickly delivers trusted, accessible and relevant engineering answers and insights to help Chemical companies optimize materials input, mitigate risks, and meet manufacturing & compliance goals.
“[Knovel] gave guidance in process implementation”
—Process Safety Director, Dow Chemical Co.

**SUPPLY**
- Source sustainable materials that meet performance criteria
- Swap feedstocks to improve product quality or extend product life cycle
- Implement materials with reduced environmental footprint

**MANUFACTURING PROCESSES**
- Improved processes that minimize energy and feedstock input
- Novel syntheses that minimize by-products, waste, hazards and toxicity
- Operational improvements to streamline workflows and shorten turnaround and delivery times

**MANAGEMENT & LOGISTICS**
- Thorough risk management to avoid delays or limit health and safety impacts
- Agile processes that respond quickly and fittingly to customer demand
- Efficiency planning to optimally employ personnel and financial resources

**CONSUMPTION & DISPOSAL**
- Products that meet the critical-to-quality requirements of end users
- Products that comply and evolve to remain in compliance with regulatory requirements
- Products designed for an extended life cycle and/or for introduction to a second life cycle
- Products that reconcile demands of a growing world economy and goals of sustainable development
“Knovel has excellent selection of process safety’s information”

—Chemical Engineer, Nalco Holding co.

Over 65 Million interactive and searchable data points spread over 40 engineering subject areas PLUS Material databases covering everything from mechanical to chemical properties data, corrosion data and material properties.

Faster path to results by highlighting and suggesting a focused set of concepts, letting users narrow down from large, unfiltered Search Results.

With 100,000+ interactive content objects, Knovel allows engineers to manipulate and extract data for further analysis.
“With new product introductions there are usually multiple design loops that are time-consuming and costly to the project. Having [Knovel] helps me reduce the number of design loops, thus reducing project cost and lead time.”

—Design Engineer

Knovel supports Chemical R&D with essential, data-rich answers

Informed product innovation uses research resources more efficiently through:

- Informed material selection
- Efficient feasibility & analytical testing
- Reduced raw materials input

80% Chemical R&D users say Knovel saves at least one day of project time.

Source: 2017 Knovel User Survey

Expedite time to market

“[We use Knovel for] proper selection of piping and equipment materials for construction, so we do not need to reinvent the wheel.”

—Process Engineer

Reduce design & development costs

“(Knovel helps) reduce man-hours (and hence, cost) for searching information from elsewhere. The reliable sources from Knovel also help to reduce the need to crosscheck with external consultants for our engineering design.”

—Customer Project Engineer
Knovel empowers Chemical Manufacturing with operational insights

The right knowledge supports smart design change and rapid problem-solving

With relevant information at their fingertips, process engineers and production staff have the tools to maximize operational efficiency. They can explore alternative ways of meeting safety requirements at reduced cost and minimal impact on production. They can accurately diagnose problems, find the best solutions and mitigate risks associated with implementing changes.

Knovel delivers:

• Operational best practices from across industry to create optimal plant designs and systems
• Examples of process design changes to avoid costly mistakes and anticipate risks
• Tools and content to rapidly perform calculations that support informed decision-making

Save costs through:

Problem-solving based on industry data & insights
Assessment & management of EHS issues
Continuous process improvement

Meet EHS & regulatory demands

“[Knovel helped select] the more appropriate choice of system design [which] had a strong impact on reliability of facilities operations”
—Sr. Process Safety Engineer

Achieve operational excellence

“[Knovel helped] save money by finding out that a proposed idea had already been attempted at a different facility, and the results were not as high as expected. This caused us to utilize a different idea that has been working well.”
—Mechanical engineer

“Finding chemical properties to quickly make engineering calculations on a recent project. It was nice to have nearly all of the major chemicals in the process in one location with all of the properties we needed”
—Project Engineer, 3M Company
“Was able to quickly access information and data to solve a problem, eliminating downtime”

—Applications Engineer, Praxair Inc.

How Knovel delivers

Essential answers: relevant, tailored content throughout the search journey

The rich content of Knovel is accessible through streamlined workflows. The user interface gives immediate and persistent access to powerful Knovel search capabilities and productivity tools, including user activity tracking, annotations embedded directly in resources, and dynamic content to test and validate ideas.

Accelerated discoveries: powerful search and processing capabilities

A user interface designed for engineers makes discovering insights quick and easy. The drag-and-drop query builder of Knovel’s Property Search accepts various inputs and helps target queries. The “Refine by” tool extracts engineering concepts from search results to narrow down answers, declutter results, and discover connected content.
How Knovel delivers

**Continuous access:** using Knovel content when and where needed

Knovel is designed for using information. Thus, plug-ins enable content interoperability with essential engineering tools and software, like AutoCAD, Inventor and Excel. Furthermore, Knovel ToGo grants mobile access to results, extending the reach of insights beyond the office and eliminating project delays.

![MyKnovelToGo app](image)

**Figure 4.** The MyKnovelToGo app for Tablets & Smartphones is available on iOS (App Store) and Android (Play Store)

**Users agree:** Knovel advances their engineering work, providing answers and insights with high business impact

<table>
<thead>
<tr>
<th>Knovel</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a trusted resource for chemical companies</td>
<td>80%</td>
</tr>
<tr>
<td>Eases adherence to EHS and regulatory demands</td>
<td>72%</td>
</tr>
<tr>
<td>Reduces engineering risks, including roadblocks in scaleup</td>
<td>76%</td>
</tr>
<tr>
<td>Helps plan and implement updates to facility designs</td>
<td>65%</td>
</tr>
<tr>
<td>Enables bringing products to market faster</td>
<td>59%</td>
</tr>
</tbody>
</table>

Source: 2017 Knovel User Survey
KNOVEL

Knovel is an engineering decision-support solution enabling engineers to solve problems faster. With powerful search and interactive analytical tools, engineers can confidently find answers to technical questions through best practice insights, validated equations and materials and substances data from more than 140+ providers. For more than 15 years, Knovel has helped thousands of engineers and researchers from leading companies and institutions around the world enhance research and productivity, achieve operational excellence, reduce costs and time to market and build expertise.

Learn More

To request information or a product demonstration, please contact us at elsevier.com/knovel/contact-sales.

Visit elsevier.com/rd-solutions or contact your nearest Elsevier office.

ASIA AND AUSTRALIA
Tel: +65 6349 0222

JAPAN
Tel: +81 3 5561 5034

KOREA AND TAIWAN
Tel: +82 2 6714 3000

EUROPE, MIDDLE EAST AND AFRICA
Tel: +31 20 485 3767

NORTH AMERICA, CENTRAL AMERICA AND CANADA
Tel: +1 888 615 4500

SOUTH AMERICA
Tel: +55 21 3970 9300

Copyright © 2017 Elsevier B.V.
September 2017