

Engineering Questions?

SME has the answers with Knowledge Edge

Matthew Jaster, Senior Editor



The Society of Manufacturing Engineers (SME) has been gathering, validating and sharing manufacturing knowledge for more than 80 years. Traditionally, SME resources were purchased by individuals for their own personal use or by colleges and universities as textbooks. Recently, these same colleges and universities were looking for digital resources to provide to their instructors and students. Companies were requesting SME content digitally for their employees as well.

“In response to this demand, SME involved several key manufacturers and educators to help frame the idea of Knowledge Edge back in 2010,” said Kris Nasiatka, senior manager-certification, books and video for Tooling U/SME. “The development of the system architecture took more than two years; additionally we digitized more than 1,100 books and chapters, over 700 videos and related clips and 10,000 *Tool and Manufacturing Engineers Handbook* series entries for the new Manufacturing Knowledge Base Wiki. Plus, we transferred over 16,000 already-digital technical papers into the system. Our original advisors provided feedback every step of the way — from system prototype to final launch of the product.”

Online Advantages

With content created and validated by SME members and industry experts, the advantages of an online database from SME gives engineers, educators and the manufacturing community the greatest gift it can give in our short-attention-span society in 2013; the gift of flexibility.

“A user can access only as much as they want, when they want it (It is available 24/7). If someone needs just a chapter of a book, or only needs to see a portion of a video, they can consume just that portion. Plus, they can still access the entire original work if further information is required,” Nasiatka said. “Instructors, trainers, leaders, etc..., can assign content to students and employ-

ees through playlists. If you want everyone in a class or on a team to review a common set of materials, you can organize the content and assign it to them. For example, if a plant is preparing for TPM kaizen event, you could assign videos and/or book chapters to help the team prepare, which will reduce the amount of time spent in kaizen training spent covering basic concepts and get right to the work at hand. If you’re a college instructor, you can pace when students access content by assigning playlists with video, books and/or technical papers that correspond to the topic at hand or potentially push out content on a weekly basis for them to review.”

As mentioned earlier, users also have access to SME’s long-standing *Tool & Manufacturing Engineer’s Handbook series (TMEH)*. “This nine-volume encyclopedic reference set for manufacturing has been digitized and converted into a wiki environment and is now known as *The Manufacturing Knowledge Base*. It is fully searchable. Content is being added and edited by SME members, peer-reviewed, and polished editorially before the new material is released, ensuring content is valid and accurate,” added Nasiatka.

The Go-To Guide for Manufacturing and Engineering

Knowledge Edge was built *by* manufacturers and educators *for* manufacturers and educators and can be adapted to accommodate different workforce needs. “Employers may need resources to help new hires with cross training or provide opportunities for continuing education through self-paced study. Depending on job roles, employees may also need access to both legacy and contemporary resources, and want access to new releases as soon as they’re available.

“For example, one company cited the case where a young engineer was looking for information on particular materials for a product developed in the 1950s still being produced today. One mate-

rial was no longer available and this new engineer has to quickly identify the properties of each material involved as well as how the material properties change and react as part of an alloy. They turned to SME for both the legacy information and contemporary resources. Plus, with Knowledge Edge, once new books, videos, technical papers, and wiki content are completed, they’re added as available resources in the system so subscribers have immediate access to new sources of information, job aids and training content,” said Nasiatka.

Just like Tooling U online classes, Knowledge Edge content is now mapped to various manufacturing competencies, according to Nasiatka. “Subscribers can review these competency maps and select all or just a few of the Knowledge Edge resources that support that competency development. They can push the resources out through playlists and formalize the informal learning process. The competency mapping is another resource to help educators and manufacturers develop the skilled workforce in demand today.”

What’s next for Knowledge Edge?

“Our current focus is to continue to evolve the user experience by adding new capabilities, including enhancements to search, cloning playlists and more. We are actively collecting feedback from users of Knowledge Edge for new features and functions they would like incorporated and including those in our continuing development efforts. We are also adding new content — each new book, video, technical paper or *Manufacturing Knowledge Base* entry is added into Knowledge Edge as the projects are completed, and made available to subscribers.”

Putting Knowledge Edge together required relentless focus on the customer and translating their ideas online, said

Nasiatka. "It has required us to team differently, implement agile methods for development and testing, and utilize new technologies to bring this project to market. I am extremely proud of everyone on the project team for rallying behind a common vision, challenging convention, stretching themselves further than they thought they could go, and for ultimately launching this new product," Nasiatka said. "We've lived through a time of incredible technological change, increasing access to resources, constant communication and the ways in which work and education happen are radically changing."

For more information:

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 Phone: (866) 706-8665
www.toolingu.com/knowledge

Knowledge Edge Basics

Knowledge Edge is an online service that provides access to the greatest depth of peer reviewed and validated manufacturing engineering educational material. Developed to aid on-the-job manufacturing industry employees and students engaged in higher education, it includes the following resources:

This screenshot shows a video presentation accessed on the Knowledge Edge website (courtesy of SME).



- 10,000+ Manufacturing Knowledge Base wiki entries
- 16,000+ technical papers (peer-reviewed and validated content by subject matter experts)
- 1,200+ SME books and chapters
- 700+ industrial training videos and clips
- Former nine-volume *Tool & Manufacturing Engineers Handbook*
- Useful information is provided for everyone studying and engaged in manufacturing including, technicians, management, administration, sales and marketing. Subject specific content covers manufacturing fundamentals, advanced concepts, leadership, project management and more:
 - Material removal
 - Forming and fabricating
 - Tool design/die design
 - Materials
 - Lean
 - Process design
 - Continuous improvement
 - Manufacturing management
 - Product development
 - Quality
- Core topics include:
 - Machining
 - Forming
 - Materials, finishing and coatings

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- Available on demand 24/7
 - Less time searching for answers. More time building on them.
 - The exact information you need, exactly when you need it.
 - A multi-media approach for learning taught the way students learn - best.
 - Content is reliable — provided by subject matter experts
- Provides useful structure to educational process:
 - Individual Development
 - Formalize Informal Learning

- Standardize Materials and Resources
- Supplement to Tooling U Classes
- An abundance of updated reference material includes:
 - Case studies and information sharing
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- Knowledge edge is a subscription-based service supporting professional development.

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Trial Run

Gear Technology was given a free trial of Knowledge Edge to browse the information available. My “gears” playlist included a 22-minute *Gears and Gear Manufacturing* video that introduced primary gear terms and definitions including involute curve, base circle, pitch circle, pitch point, etc. It also gave a brief overview on the various gear forms, functions, axis positions and gear machining and was a very good starting point for anyone interested in gear manufacturing.

After downloading a PDF version of Chapter 28 of *Manufacturing Processes and Materials*, I browsed through 40-pages of material on Thread and Gear Manufacturing. It included 40 questions to help learn the material and 24 problems to solve using the information presented. Again, a great overview on some of the most commonly used processes for manufacturing threads and gears.

The database continued to impress with information on inspection, powder metals and ebooks on hobbing, shaping and shaving. As Tooling U/SME continues to update the website with more material, I’m sure the technical papers, videos and articles on gear manufacturing functions and processes will grow.

Currently, they have put together a great balance for students and new employees to gain access to a large amount of manufacturing data. The website is user-friendly and lets you bookmark and customize the most important information easily and efficiently. As a subscription-based service, Knowledge Edge offers years of SME data 24/7 and is a much needed resource in the manufacturing community online. ⚙️