

FIELD CREW TRAINING:

MidAmerican Energy uses innovative technology to modernize field crew training with eBooks

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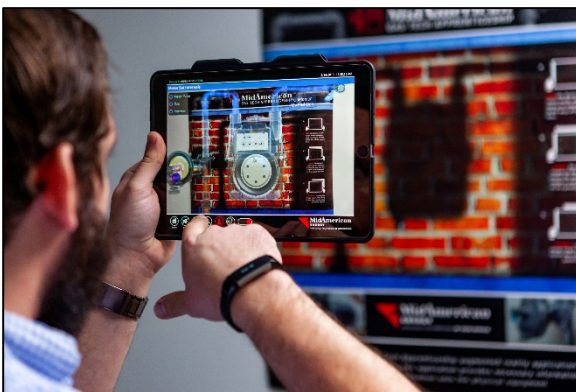
In 2018, [MidAmerican Energy Company](#) partnered with augmented reality (AR) vendor [Index AR Solutions](#) on a series of eBooks to modernize the utility's gas apprenticeship training program. Before the project, the classroom materials used to train incoming apprentices consisted largely of three-ring binders and VHS tapes that were noticeably out of date. MidAmerican's work to digitize and update these materials culminated in a series of eBooks that contain interactive AR visualizations, new training videos, and frequent quizzes so apprentices can track their progress through the program on their company-issued iPads.

Wave of retirements, widening skills gap prompt training improvements

Like most utilities, MidAmerican has sought ways to effectively train a new generation of field crew workers as it faces the dual challenges of a widening skills gap among entry-level employees and a wave of retirements leading to valuable knowledge walking out the door. Traditionally, MidAmerican has had two separate gas field technician apprentice programs, each lasting three years and focused on a different type of field work. One program explored the construction side, such as installing underground pipe, while the other trained apprentices on customer-facing duties like start service and gas leak response.

A few years ago, MidAmerican combined these programs into a two-year apprenticeship to allow for increased flexibility and versatility in its workforce. Opting for a merged, but shortened, program necessitated the creation of a new education curriculum.

"We knew there was a lot of overlap in these programs, but we were still asking our apprentices to learn almost twice the material that we were before. The only way we could make this possible was a revamped curriculum with improved classroom education materials," said Mike Hoff, MidAmerican Energy's Director of Business Optimization and Innovation.



Images courtesy of MidAmerican Energy

MidAmerican Energy trainers report high levels of engagement from apprentices as they work through AR diagrams and lessons. Above, screens help users visualize gas meter internals and gas pipeline routing.

The utility decided that a major part of the new education curriculum would move away from text-based classroom materials to more interactive and digital-focused tools. “All levels of education, from elementary school on up, have been moving away from textbooks for 10-plus years,” Hoff said. “When young people enter our program, often they haven’t seen a textbook in years. It doesn’t make sense for us to put a massive three-ring binder in front of them and tell them to memorize it all.”



Hoff initially discovered Index AR Solutions at a user conference aimed at highlighting innovative uses for augmented reality in the utility industry. While training was not a major theme of the conference, Hoff saw an immediate connection with the interactive diagrams of electric and gas meters being demonstrated and MidAmerican’s desire to digitize and modernize the education materials in its apprentice program.

Program combines written material, videos and AR-enabled visualizations

In 2018, MidAmerican embarked on a pilot program with Index AR Solutions to test the feasibility of digitizing the utility’s education materials. The initial eBook would consist of written materials, most of which were gathered from the old binders, several supporting videos and multiple interactive AR-enabled visualizations. The initial pilot was completed in six months and included several trips to MidAmerican’s headquarters by the Index AR team to collaborate with trainers from the apprentice program on the content of the eBook and record footage for various videos.

Gaining buy-in from the gas trainers responsible for overseeing the apprenticeship program was essential to the success of this project. While there was some initial hesitancy, the trainers were consulted at every step of the process and played a key role in determining the content of the eBooks. Having ownership over the content and being featured in many of the eBook’s videos played a key role in getting trainers excited for the new approach.

Trainers also were won over by the flexibility of the eBook format. Being able to dynamically push content has allowed trainers to ensure students are exposed to the most up-to-date educational materials. On numerous occasions, Index AR videotaped retiring gas technicians as they shared insights and stories on obscure topics acquired after years in the field. These videos were then easily uploaded to the appropriate section of the eBook.

The trainers also have benefited from dynamic feedback given by the quizzes at the end of each eBook chapter. If trainers see many apprentices missing a certain question, for example, they’re able to examine the wording of the question or determine if there wasn’t enough material teaching the concept. Also, if leadership wants to add something to the training program, it is not difficult to go in and update the eBook. Updates are then pushed out to all apprentices electronically regardless of their training locations.

Technology makes it easier for trainers to track student progress

The team at Index AR Solutions sees the versatility of the eBook as its primary strength.

“People learn in different ways. Some are auditory, some verbal, some tactile” said Scott Somers, Senior Vice President at Index AR. “The eBooks allow the apprentice to learn however best suits them. If they want to mostly read, there’s plenty of text explaining the material. If they want to watch videos, we’ve got those, and if they want to interact with the 3D and AR visualizations, they can do that. The eBook gives the apprentice tons of different ways of approaching this material, along with embedded quizzes that ultimately determine whether or not they learned the information.”

Feedback from current students has been positive, and trainers report higher levels of engagement from the apprentices as they work through the “video game-like” AR diagrams and lessons on everything from how to assemble a gas meter set to how to safely inspect a home for a gas leak.

In addition, students are encouraged to take their iPads home, meaning they can access the entire range of the program’s educational materials wherever they go – a practice that promotes learning and furthers engagement outside the classroom.

eBooks also have made it easier to follow students’ progress through the class. Instructors are able to keep track of the scores students receive on their diagnostic quizzes to see which students are excelling and which need extra attention. Students cannot proceed to the next section until they have achieved a certain grade on the previous section’s quiz.

MidAmerican is excited for the way the eBooks are preparing students for success outside the classroom. Students keep their iPads after they leave the classroom, enabling them to brush up on material as they begin the field work portion of the program. MidAmerican believes the recently graduated apprentices will be well prepared to work in a field environment where new technology, particularly around communication and work planning, is playing an increasingly important role.

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Company Profile

MidAmerican Energy Company, headquartered in Des Moines, Iowa, is a subsidiary of Berkshire Hathaway Energy and provides electricity and gas to more than 1.5 million customers in Iowa, Illinois, South Dakota and Nebraska.

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