



Repowering Southern California with Exceptional Training Delivery

CASE STUDY

Committed to clean energy, AES embarked on an ambitious, multi-billion-dollar project to replace aging and inefficient critical power generation resources in Southern California with state-of-the-art highly efficient alternatives.

Challenge



AES needed a full staff, but most importantly, a fully trained staff. With a workforce averaging 25 years of experience on the old conventional power plant, it was critical for the training program to be customized not only to the AES site and new equipment but to the needs of the AES team.

Solution



A collaborative training partnership between AES and TTP. Leveraging custom, site-specific 3D animations and models of the new AES site and equipment, TTP built an integrated training program with eLearning courses, on-site and remote instructor-led training (ILT), training manuals, job aids, competency assessments, and more.

Results



- Shortened Onboarding Time
- Improved Cross-Training Opportunities
- Reduced Costs
- Increased Efficiency
- Met Demand For Increased Production Needs



In the first three years of operation, the first plant implementing the new program is producing an Equivalent Availability Factor (EAF) of 98% compared to the industry average of 87-90% - potentially millions of dollars in annual savings.

Complicated Challenge

Background

AES built two modern gas-fired power plants at Alamitos and Huntington Beach, CA in response to new regional laws requiring reduced ocean water use for cooling. The new technology presented challenges as AES's local talent had experience with older conventional gas-fired units.



People + Technology - Time

Putting their people first is always a top priority for AES. Dozens of employees would be affected by the change and they averaged 25 years or more of experience operating and maintaining the existing conventional gas-fired units.

The highly automated, state-of-the-art technology in the new combined-cycle gas turbine (CCGT) facilities would require them to learn completely new processes and specialized systems. All while continuing to operate and maintain the existing facility during the construction and transition to their new facilities.



AES needed a program to compile the overall training content necessary to fill in the knowledge gaps, provide a qualification process and develop the team to be cross qualified on both systems.

AES' Ambitious Goals

- Develop, replicate, and scale a world-class training program for all new AES power generation facilities across the globe.
- Meet or exceed aggressive and financially critical reliability and availability required in the Power Purchase Agreement (PPA).
- Evaluate existing employee skills and capabilities to identify existing strengths and gaps.
- Improve workforce competencies in the areas of environmental compliance, safety, operations, and maintenance.
- Fully trained, competent, and qualified Control Room operators onboard for first fire and start of commercial operation.
- Cross-functional technicians with the ability to operate and monitor all outside equipment and systems safely and effectively.



Innovative Solution

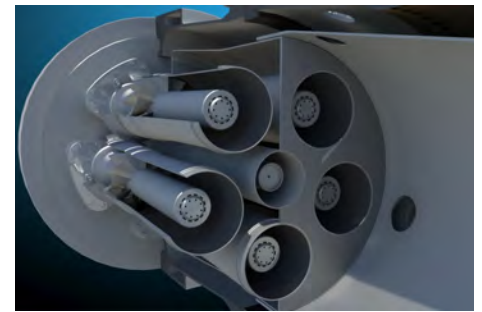
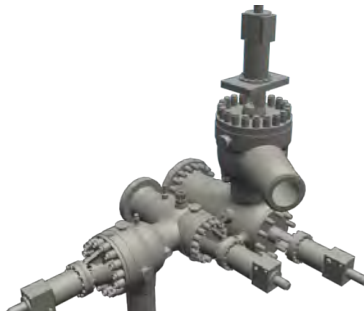
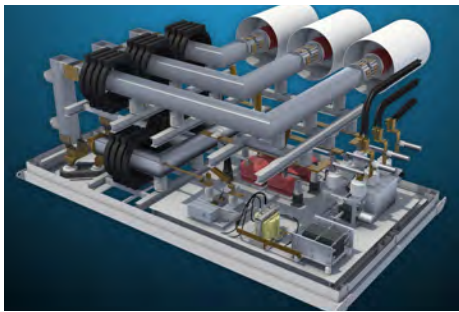
Integrated, Engaging Training

TTP was founded on the principle of developing engaging training content through visual presentation of technical information. Building on decades of experience, TTP provided an innovative and customized solution for AES by combining detailed site- and equipment-specific 3D visuals with a blended learning training model supported by extensive training materials.

Detail



The animations, models and renderings created by TTP are nothing like what is available in other training programs. TTP is one of the only providers in the world that creates detailed 3D visualizations animating and modeling of every piece, part and process of major equipment and locations for technical industries.



Customization



From the creation of new 3D animations and models to the integration of OEM manuals, every piece of material used in training was customized to the exact specifications of the AES facilities.

Partnership



TTP worked directly with the owner representative, as well as coordinating with plant employees, OEM contacts, vendors and other key players to ensure the most accurate and comprehensive product possible.

“ TTP built a comprehensive training program that engaged our team whether they were on a computer, reading a training manual, or walking around with an instructor learning in their actual work environment.

Ron Rodrique, AES Clean Energy Vice President of Project Management

Flexibility



Through project modifications, particularly during the pandemic, TTP was able to quickly adjust including moving all ILT to a web-based platform without missing a single deliverable timeframe.

Efficiency

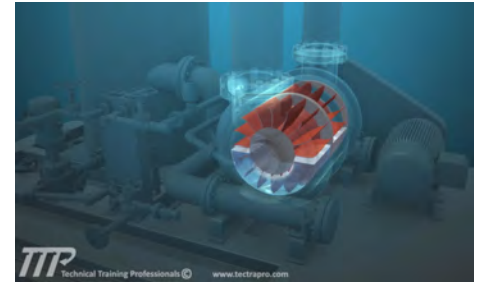
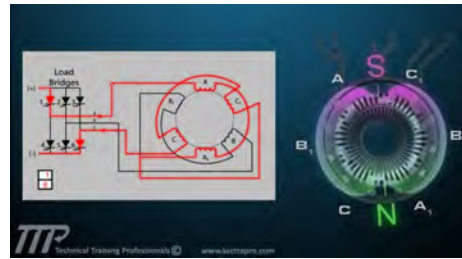
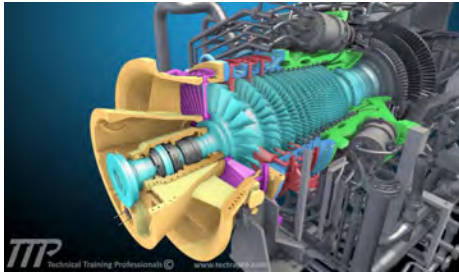


Reduced training cost by deploying a training program lasting six weeks' versus the previous six months.

Award-Winning Hybrid Approach

Leveraging custom, site-specific 3D animations and models of the new AES site and equipment, TTP built an integrated training program with eLearning courses, on-site and remote instructor-led training (ILT), training manuals, job aids, competency assessments, and so much more.

Animations were contained within interactive eLearning courses, to help learners see all parts of a plant and learn about the complex equipment without having to take anything apart. Essentially, the team was getting hands-on experience and evaluating competency before the equipment was even delivered for installation.



TTP provided an LMS solution that drove effective and efficient cross-training opportunities. Using an LMS allowed learners to immediately engage with content and prepare for the ILT. With the base of knowledge provided through LMS content and site-specific manuals available on the plant employees' tablets, a six-week-long ILT was facilitated by TTP. For context, the former training for a plant startup was six months in length, lacked competency testing, and oversight.

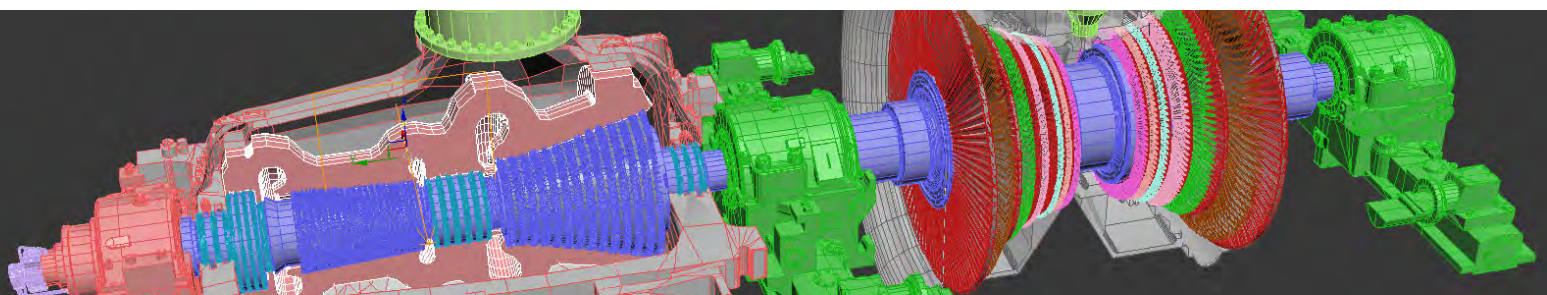
On-site Application of eLearning and ILT

Instruction was done in segments, focusing on specific operations across the plant. Videos or interactive animations of the plant would start each segment. Followed by the TTP facilitator walking through key details of operations of the given segment and necessary safety and quality measures to ensure the highest level of performance.

From this facilitation, active learner discussion deployed. The facilitator-led discussion kept the learners engaged and often resulted in evaluation comments like: "I have been working with this equipment for 23 years and never knew it worked that way."

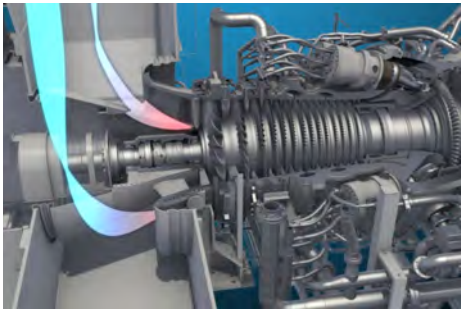
Finally, throughout each week, the facilitator would walk the learners through the plant to engage with their actual work environment. At these points of the training, TTP's facilitator had ensured the learners knew exactly how to operate within their role and understood the bigger connections of their role within the plant. Thus, the plant walk-downs provided the learners the atmosphere to integrate their LMS, 3D animations, plant P&ID's, and classroom training together in a holistic approach. This ensured the learners would retain more information than the standard training environment.

"I have been working with this equipment for 23 years and never knew it worked that way."



Key Differentiators

TTP's solution for AES' training challenges replaced the basic training of year's past, with more applicable, engaging, and innovative content, led by a facilitator with a wealth of experienced knowledge in this industry. The training materials and classroom content transitioned seamlessly into daily operation and had high ratings from trainees.



3D Animation & Models in All Training Materials

Connecting the content across all means of delivery was essential for employee engagement and knowledge retention. The custom, site-specific 3D visuals served as the key connection between eLearning courses, instructor-led training, and static documents such as operations or maintenance manuals.



Accessible & User-Friendly New LMS

The AES learning management system (LMS) was updated to provide a central location for all training courses and materials. Technicians and instructors had easy access to everything they needed including full eLearning courses, operations and maintenance manuals, qualifications assessments and so much more.



ILT & Job Aids

In past projects, staff gained overall plant knowledge through construction vendor training. Most construction vendors are not professional trainers, which causes gaps in critical skills. TTP worked with AES to understand the gaps and planned accordingly to close those gaps by working to develop appropriate ILT and job aids available at the time of need.



Site Walk Downs

Training modules included extensive site walk downs in the field to expose learners to their real-world working conditions. This exposure is key to the success of TTP's ILT model. It exposes the learners to the specific area they will work in, which connects the CBT and ILT content for the learner.

Meaningful & Measurable Results

Immediate Impact, Long-Term Benefits

By equipping the workforce with a training program focused on critical skills and competencies in the areas of compliance, safety, operability, and maintainability, the plants are consistently exceeding expectations and requirements. This includes meeting their short-term Power Purchase Agreement (PPA) objectives, internal business objectives and local, state, and federal safety and environmental compliance standards.

Based on having higher qualified technicians operating the plant over the 10 years following implementation, AES is **budgeting an expected reduction of 1% Equivalent Forced Outage Rate (EFOR)** - a potential **Net Present Value (NPV) of millions of dollars.**

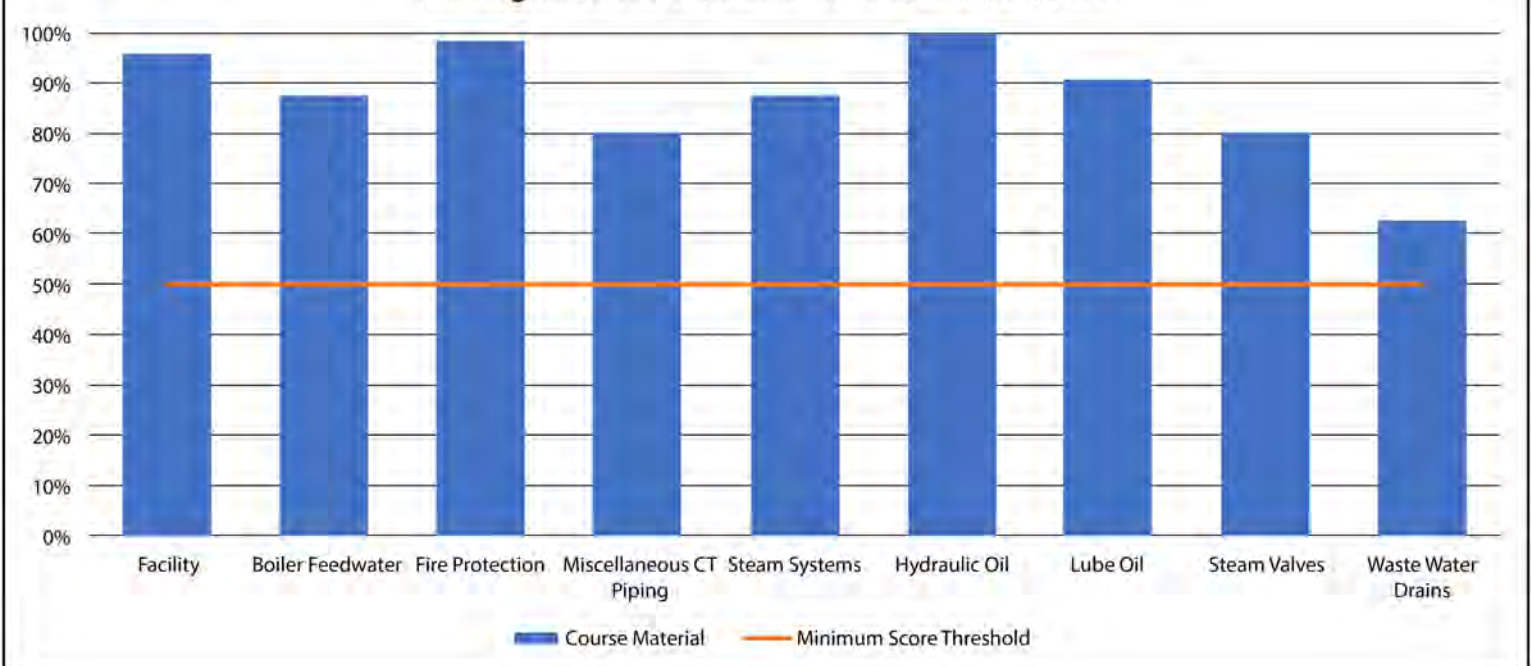
“ The results at AES show how a well-designed training program facilitates efficient and cost-effective operation of the facilities crucial to America’s infrastructure.”

Kelsey Gamble, Technical Training Professionals CEO

Learner Satisfaction = Outstanding Performance

Often overlooked or undervalued, learner satisfaction is a critical factor in a successful training program. AES participants gave overwhelming praise and positive feedback throughout the program - including an unprompted recognition and celebration of the TTP facilitator complete with a customized appreciation award. Their satisfaction is evident in assessment and qualification scores which were consistently well above the minimum goals.

Huntington Beach Maintenance Scores 04/05/2019



Looking to the Future

Reskilling at Scale

AES continues to prioritize workforce development as they support the world's power generation needs and by their commitment to building cleaner and renewable generation assets. The ability to update content, deploy quickly and provide direct access to new and existing staff allows for smooth onboarding and continued cross-training opportunities. This has proven to be a key part of the solution to help AES' reskill at scale to increase their efficiency and exceed output goals across the globe.



Ongoing Partnership

This model now serves as the blueprint for the AES and TTP training partnership in support of AES' vision of being the world's leading power company and their commitment to improving lives by delivering the greener, smarter energy solutions to meet the world needs. TTP is currently working with AES on reskilling their workforce to operate facilities providing new methods of power production including developing state-of-the-art technician programs for renewable energy.

AES

The AES Corporation (NYSE: AES) is a Fortune 500 global energy company accelerating the future of energy. Together with our many stakeholders, we're improving lives by delivering the greener, smarter energy solutions the world needs. Our diverse workforce is committed to continuous innovation and operational excellence, while partnering with our customers on their strategic energy transitions and continuing to meet their energy needs today. Learn more at www.aes.com.

Technical Training Professionals (TTP)

Technical Training Professionals turns complex technical information into dynamic, visually engaging training for the industries that keep America, and the world, running. Our training solutions combine our in-depth subject matter expertise with detailed, state-of-the-art 3D animations to produce the best training on the market today. We offer both off-the-shelf and fully customized computer-based and instructor-led training for multiple industries, including but not limited to: power generation, oil and gas, marine and aerospace, water and wastewater and chemical manufacturing. No matter how big or small, we can develop the perfect solution for your operations, equipment and employee needs. Learn more at www.tectrapro.com.

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