

Palomar Energy Project

Chief Building Official adopts Adobe® Acrobat® and Adobe PDF to accelerate review and approval of more than 30,000 design documents

Streamlining building permit processes

The power shortages experienced throughout California in 2000 were unprecedented in the scope of their coverage and duration. Since then, government organizations and private industry have been working together to prevent future power shortages from disrupting the lives—and livelihoods—of Californians. The building of the Palomar Energy Project in San Diego County is a case in point.

Situated on 20 acres in an industrial park north of San Diego, the state-of-the-art facility will use natural gas to generate more than 546 megawatts of electricity, enough to power approximately 550,000 homes receiving services from San Diego Gas & Electric (SDG&E). The energy-generating and environmental systems at Palomar are impressive. Two combustion-turbine generators, two heat recovery steam generators, a steam-turbine generator, and hundreds of other critical systems.

“It’s a large project on an ambitious schedule,” explains Kevin Wedman, chief building official (CBO) at Bureau Veritas, the consulting firm acting on behalf of the State of California and the California Energy Commission (CEC) to approve thousands of building permits for Palomar’s electrical, civil, mechanical, plumbing, and structural systems. “Our goal is to quickly and reliably permit the project to get Palomar up and running for SDG&E customers as soon as possible.”

For Bureau Veritas, SDG&E, and the project’s engineering and construction firms—Bibb & Associates, Inc. and Kiewit Industrial Co., respectively—one of the main challenges is managing the huge volume of engineering plans. Both Bibb & Associates, Inc. and SDG&E deliver design plans to Bureau Veritas for approval. Once approved, plans have to be sent to Kiewit Industrial Co. to use during construction. “Project delays are unavoidable if we can’t efficiently track, review, and manage engineering plans,” says Kelly Zullig, CBO coordinator at Bibb & Associates, Inc.

Too many documents, too many formats

A conservative estimate places the number of engineering documents associated with the project at more than 30,000. Documents include .DWG and .DGN CAD file formats, project schedules, environmental impact studies, and hundreds of other materials. Traditionally, managing engineering and compliance documents for a project of this size has required dozens of dedicated administrative staff collaborating across firms to copy and route paper.

“We knew there had to be a smarter way to handle the exchange of documents,” says Wedman. “The problem was finding a common application and file format for electronically managing so many design and construction plans.” After meeting with North Valley Graphics (NVGI), a Northern California consulting firm specializing in drafting and delivering electronic engineering plans, Wedman selected Adobe Acrobat Professional software and Adobe Portable Document Format (PDF) to streamline the management of Palomar documents.

Working with Bureau Veritas and staff at the engineering and construction firms, NVGI trained teams on how to electronically mark up and sign engineering drawings in Adobe PDF. “By establishing procedures for reviewing, revising, and digitally approving plans in Adobe PDF, we provided the foundation for greatly streamlining this project’s administrative processes,” says Lance Williamson, principal at NVGI.

PALOMAR ENERGY PROJECT

www.energy.ca.gov/sitingcases/palomar

BUREAU VERITAS

www.bureauveritas.com

SAN DIEGO GAS & ELECTRIC

www.sdge.com

BIBB & ASSOCIATES, INC.

www.bibb.com

NORTH VALLEY GRAPHICS INC.

www.nvgi.net

INDUSTRY

- Public Utilities
- Government
- Architecture, Engineering, & Construction

CHALLENGES

- Adopt a standard, electronic format for handling engineering documents
- Establish controls over approved engineering documents to prevent changes
- Eliminate costly paper-based review cycles

SOLUTION

- Adopt Adobe Acrobat Professional software and Adobe PDF to submit, review, and archive engineering plans.
- Convert design plans to Adobe PDF for collaborative review
- Add comments to engineering documents using Adobe Acrobat mark up tools
- Digitally sign documents using Adobe Acrobat

RESULTS

- Reduced costs to manage Palomar engineering documents by more than \$100,000
- Accelerated plan review cycles by 95%
- Improved quality and clarity of reviewer feedback sent to engineers
- Enhanced document control by digitally signing document in Adobe PDF

“With Adobe Acrobat Professional and Adobe PDF, we can review materials up to 95% faster—in hours instead of days or weeks.”

Kevin Wedman,
Chief building official,
Bureau Veritas

Minimizing project costs and delays

Previously, when engineers at Bibb & Associates, Inc. or SDG&E worked on a large project like Palomar, they would have to plot, collate, and deliver thousands of pages of design plans to Bureau Veritas for permit approval. The engineer designing the plan also had to sign it before multiple copies of the plan were produced and sent for review. As a result costs and delays could mount as plans were returned to engineers for changes because they did not comply with code requirements. “We can often go through five rounds of review cycles with engineers before getting code-compliant plans,” says Wedman.

If plans were approved, Bureau Veritas staff would sign and date the materials and send them back to Bibb & Associates, Inc. or SDG&E. The originating firm would then forward the approved plans to Kiewit Industrial Co. to use when building the plant. “Managing paper for a project of this size can cost hundreds of thousands of dollars,” explains Wedman. “And this is only part of the problem. Project delays due to lost documents, confusion over which documents are approved, or simply waiting for mailed documents to arrive create additional headaches.”

To further complicate the process, California regulations require that final plan documents be converted from paper to an electronic format for archiving. This means that for each project Bureau Veritas had to scan thousands of approved engineering plans to generate TIFF files for storage on disk. “Scanning documents involved weeks of work,” explains Wedman. “Unfortunately, the resulting TIFF documents were of little value because they were not searchable.”

Secure, easy-to-manage Adobe PDF files

By adopting Adobe Acrobat Professional and Adobe PDF, Bureau Veritas is bringing new efficiencies to engineering and design. CAD drawings created in Autodesk AutoCAD or Bentley Microstation software, project plans, and other supporting documents can be converted to platform- and application-independent Adobe PDF files. The compact Adobe PDF files are much smaller than CAD files in native applications, making it faster to download and store files. At the same time, design details are clear thanks to the ability to use Acrobat software to zoom in or out when viewing plans in Adobe PDF.

With Adobe Acrobat software, engineering documents in common design formats, many of which were previously distributed only on paper, can be converted easily to compact, platform- and application-independent Adobe PDF files.



“By digitally signing Adobe PDF files, we can reliably monitor if any unapproved changes were made to engineering plans.”

Kelly Zullig,
CBO coordinator,
Bibb & Associates, Inc.

“We can more efficiently manage documents in Adobe PDF than as paper blueprints,” says Alan Colton, electric project manager at SDG&E, which is designing the connector valves to deliver natural gas from SDG&E lines to Palomar generators. SDG&E is also developing the electrical transmission lines interconnecting with Palomar generators to deliver power to the company’s service territory. “Tracking reviews and verifying who has approved content is also streamlined because engineers can digitally sign Adobe PDF files using the Self Sign feature in Acrobat or digital signature solutions from companies like VeriSign.”

Review materials in hours, not weeks

Instead of receiving stacks of engineering drawings on paper, Bureau Veritas staff now receive e-mails alerting them when plans in Adobe PDF are posted to the company’s extranet. Reviewers can download the plans and comment electronically using engineering mark-up tools in Acrobat Professional software such as redlining, clouding, and notes. After reviewers have commented on the Adobe PDF file, all feedback is merged into a single file associated with the plan. The submitting engineer is then notified by e-mail that the edited plan is available from Bureau Veritas.

“The improvements are dramatic,” says Wedman. “With Adobe Acrobat Professional and Adobe PDF, we can review materials up to 95% faster—in hours instead of days or weeks.” At the same time, engineers receive feedback that is easier to read and easier to implement. For approved documents, Bureau Veritas reviewers add digital signatures using Acrobat Self Sign, enabling the firm to instantly create a legally binding plan, ready for archiving.

Vital control over document processes

When all plans—structural, plumbing, civil, mechanical, and electrical—are approved and permitted by Bureau Veritas, the multiple Adobe PDF files are combined into one file. “We can take plan information in any file format and combine it into a single, indexed file,” says Wedman. “The documents are easy to manage, and finding information is fast because the file can be searched electronically.” Now, if a question arises about a plan, staff can find the details in seconds, instead of having a clerk spend hours searching through paper archives or a disk full of TIFF files.

Digitally signed Adobe PDF files offer the added benefit of aiding document control because if content is changed after a file is signed, the electronic signature is invalidated. Even slight plan modifications made after approval could have disastrous effects, possibly weakening the structure and resulting in the need to rebuild sections. “Protecting plan content is crucial,” says Zullig from Bibb & Associates, Inc. “By digitally signing Adobe PDF files, we can reliably monitor if any unapproved changes were made to engineering plans.”

A foundation for the future

Based on the success of using Adobe Acrobat Professional on the Palomar project, Wedman is requiring Adobe PDF for design review and approval on future projects. “By adopting Adobe Acrobat Professional and Adobe PDF as a standard, we can reduce document management costs for large projects by more than \$100,000,” says Wedman. “At the same time, we free up more time and resources to ensuring that building projects always meet the highest safety standards.”

SYSTEMS AT A GLANCE

- Adobe Acrobat Professional

Better by Adobe.™

Adobe Systems Incorporated
345 Park Avenue, San Jose, CA 95110-2704 USA
www.adobe.com

Adobe, the Adobe logo, Acrobat, and Better by Adobe are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries. All other trademarks are the property of their respective owners.
© 2005 Adobe Systems Incorporated. All rights reserved.
Printed in the USA.

95004787 04/05 R 1.1

