

Quanex Uses Adept Engineering Document Management to Achieve Lean Manufacturing Processes

Quanex designs and manufactures door and window components and related building products for the largest OEMs in the country. The company is known for their ultra-high performance integrated door thresholds and astragals, window and door screens, patio door assemblies, wood window grilles, and architectural wood moldings.

To improve quality and time to market, the company applies problem solving as a mechanism for change and process improvement. They've organized a problem solving team from Engineering, Quality Assurance, IT, and other staff to improve engineering processes and to steer the company's adoption of new technology using Lean and Six Sigma methods and strategies.

"We've always had a problem solving team working with engineering," explains Jeff Sawyers, Engineering Manager. "It started out with drawing standards. Everyone was doing things just a little differently and we wanted to formalize naming and dimensioning conventions and how people stored information. Then it was on to improving our ECO and ECR process. After that, we entered the realm of controlling our data."

Years of drawings—without controls

As members of the problem solving team, Jay Lovelady, Senior Drafter in Product Development and James Hulleman, Quality Assurance Supervisor, were familiar with the challenges of managing and controlling documents.

Quanex's engineering department uses SolidWorks, Autodesk Inventor, and AutoCAD Lite to generate models and assemblies of all of their doors, screens and other products. But managing all these files became more difficult over the years.

"We were using Windows Explorer to manage all of our CAD files, ECOs, ECRs, ISO documentation—

and anything else we could think of," explains Lovelady. "We had over 6500 different Windows folders where we stored our work. Our CAD files were being moved in and out of a 'controlled' folder, which made it nearly impossible to know which revision we were working on and who else was working on the same file. Documents were getting lost on people's desks or not being completed on time. We had no way to know if people were accessing the most current version."

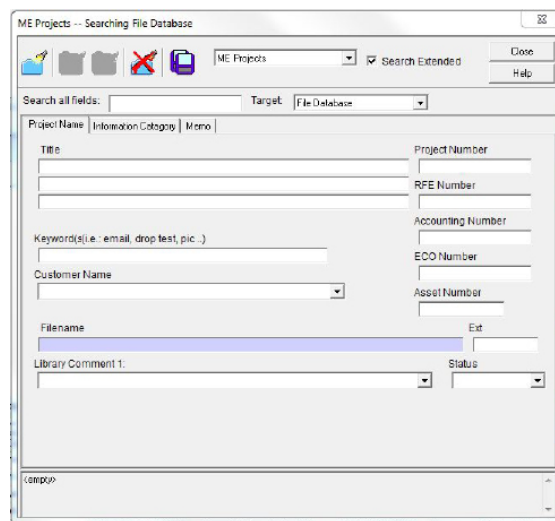
Quality documentation had its own hurdles. "We pride ourselves on being ISO- 9000 certified," states Hulleman. "If you don't pass the audit then you're not certified. During several of our internal quality management system audits and external ISO audits, we found wrong documents in places they weren't supposed to be—or they were the wrong revision. That was really our biggest headache."

Problem solving as a mechanism of change

Over the years, Quanex had automated many processes, but they really needed a way to tie all of the disparate systems together. "We had automated our systems as much as we could—each time taking them to a new level of technology," explains Sawyers. "We had parallel systems, but we wanted

some kind of 'tie at the top' that could integrate our ECR and our ECO system with our CAD system and our code system. We wanted a system that could manage all of our separate databases and all our activity and give us the confidence that we weren't going to breakdown and lose our history. That's why we were interested in document management."

"There were other benefits, too," states Sawyer. "A document management system could also help us in doing more with less people and increasing quality, reducing lead time, decreasing waste of traveling, or having manual papers travel around."



Quanex has designed Adept Library or Project Cards to conform to their ISO processes.

To set their course, the problem solving group examined current processes, looking for ways to automate.

“We went through a process map of how things flow,” explains Sawyers. “We looked at the time it took to copy papers and specifications; control them through a matrix; and walk out on the floor and put them in books. That, plus our supervisors were spending a lot of time on custom orders from clients who wanted a wide range of components in different sizes and colors. We simply did a Lean, Kaizen-type exercise and determined our flow and how many hours per year we could save if we did it electronically.”

The group agreed they could justify a document management system within a year’s time and green lighted the project.

Finding the solution to the problem

The next step was researching document management vendors and systems. “We evaluated several systems in parallel to Adept from Synergis Software,” explains Lovelady. “We were looking for a solution that had the capability to take what we were doing and make it better. Being ISO certified, we have many defined process that we follow, but we needed a better way to do them.”

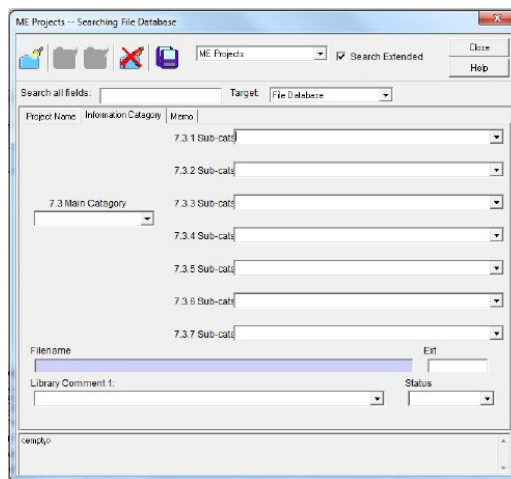
“We selected Adept because it was cost effective, easy to use, maintain and administer,” says Lovelady. “We also liked its ability to handle multiple sites—since whatever system they chose in Rice Lakes would eventually be rolled out to their seven other facilities across the country.”

A window of opportunity

In a less than promising economy, Quanex’s investment in document management was a strategic move toward process improvement. “We were probably just a little bit unique in the fact that we did make a commitment in a down economy to do something like this,” observes Sawyers. “As far as being able to do more with less resources or helping to free up existing resources—that was definitely a positive.”

“It turned out to be a really good time to implement a new system,” agrees Lovelady. “Instead of being buried in work, we had the time to go deep and learn the system.”

They hired Synergis Software to provide on-site Administrator training to their key staff. “During that time, we set up the Adept



Using selected metadata fields in the Library/Project Card, users can quickly search through thousands of documents in Adept for a specific file.

server, learned the system, and formulated a plan to move all their files into Adept,” recalls Lovelady.

After a week of mentoring, Lovelady and two other engineers started moving all their CAD files and QMS documentation into Adept. “We created PDFs of all our old electronic data—ECOs, ECRs, and more—and moved them into Adept. Then we moved our entire PDF vault of CAD drawings into Adept. As a result, we have access to our entire pre-Adept history of documentation.”

During a second visit on-site, a Synergis Software implementation specialist completed user training and assessed

the implementation with Lovelady and his team. “While training our 43 users, we reviewed everything we’d accomplished to date; created a short to-do list; and focused on best practices for accomplishing our goals.”

Managing more documents in less time

Adept now manages, tracks and controls all of Quanex’s CAD files, ECOs, ECRs, Deviations, Quote/Order Acceptance meeting forms, QMS documentation, ISO documentation, and all their Material Safety Data Sheets electronically. Lovelady also set up secure vaults so each department could store information for their eyes and access only: formula sheets for Engineering; personnel lists for Human Resources; and special forms for Purchasing.

Using Adept also eliminated all the “hand carry” processes that had been in place. “Now, documents flow through the system electronically, and everyone knows where they are at all times,” smiles Lovelady. “We know who has done what to them and if someone needs a document, they can find it easily. There’s no more endless searching through Windows files, hoping to find the correct version.”

“Because we no longer have to move our CAD files from folder to folder, we’ve eliminated the task of opening every assembly and drawing to make sure all their file references have been maintained or to fix those that haven’t,” remarks Lovelady. “And since we automatically maintain past revisions of CAD files, we don’t need to create PDF copies anymore.”

Meeting the Quality Challenge

Achieving and maintaining ISO certification is a huge competitive advantage for Quanex, and is a process that Adept has helped streamline. “Being ISO certified we have many defined processes that we need to follow. We knew Adept could take our

existing processes and improve upon them,” comments Lovelady. “We have structured our projects in Adept according to our ISO documentation and Adept allows us to quickly locate specific engineering drawings for a product and then find all related documentation using the project number.”

“Since using Adept, we’ve eliminated incorrect documents and wrong revisions in our internal audits,” reflects Hulleman. “In the past, we might have had one document in 20 different places in the plant. If there was a change, we’d have to make 20 different copies and distribute them on foot to the shop floor or somebody’s office. It was quite cumbersome. Adept has helped cut down on all our work.”

With Adept, the Quality documentation department is confident that only the latest and the greatest versions are in the system. “With Adept, there is no making copies and putting them out on the network or having the wrong revisions,” says Hulleman. “Those problems have been reduced dramatically by switching from paper to electronic copies.”

Adept’s workflow also helps Quality with formal approvals. “We have several workflows and they touch many people,” explains Hulleman. “The most basic is when an initiator generates a document, checks it into Adept and then it’s routed to me for corrections. I make sure that the dates are right and formatting is right. Then the document is either accepted into the system or routed to the next person. If it’s rejected it goes back to the originator to fix and start all over.”

Realizing Productivity Gains throughout the Company

With Adept being used in Quality Assurance, Customer Service, Human Resources, Purchasing, Scheduling and other departments, there’s more opportunity for improving processes in other facilities. “We are beginning to roll out Adept to our Chatsworth, Illinois and Dubuque, Iowa facilities. We’re also starting to look at how we can leverage Adept and give our sales force access to drawings from the field.”

In engineering, Adept has delivered measurable increases in productivity. “All of our processes are faster and less complex,” notes Lovelady. “No more hand carries of ECOs means that changes are completed and delivered to the shop floor much quicker. Engineering can find, use, and share files without the fear of losing them or losing references when they move assemblies in SolidWorks. We’re providing better service to our internal and external customers because we don’t have to chase down information. Our productivity is up and so is business.”

Concludes Sawyers, “We’re going to continue to look at our systems and roll them into the framework of Adept like we’ve done with our ECR and ECO processes. Adept is an output of our problem solving and our Lean and Six Sigma methodologies. It’s definitely a tool to help us get better as a company.”

What to look for in an engineering document management system

Having gone through the process of evaluating and selecting a system, here’s some advice from the Quanex problem solving team on what to consider in selecting a document management system.

Identify Your Processes

“Look at what you are doing; map it out; figure out where you want to get to and try to define your process as best you can before you move into a system. If you don’t know where you want to go, there’s not a system in the world that will help you. The more defined you are when you start—even though it will be a lot of work—the easier it will be to get where you are going.”

Find a Good Fit

“Make sure the solution can do what you want based on the process that you define. You want to find a solution that is a good fit for what your company expects to use the system for. It should be easy to maintain and administer and be able to handle whatever you throw at it. At the same time, you don’t want a cumbersome giant of a system that has lots of bells and whistles that you will never use. You also need to anticipate as much as possible all the types of files you might be maintaining and make sure the system can handle them.”

Transparency and Customer Service are Key

“The vendor should treat you like they really care and not treat you like you are just another meal ticket. You should be able to see demos of their products as part of your fact finding and they should be able to freely and willingly answer any questions you may have along the way. If a vendor’s customer service isn’t great, I don’t feel their product will be great either.”