



Integrating Document Control into your Core Business

White Paper



Abstract

Organizations across the energy sector face growing challenges, from higher costs and risks, to more stringent regulations and the always-present need to find and deliver new sources of energy. Collaboration is a crucial element in any successful energy business, and to encourage productive sharing across the value chain, forward-looking firms are now leveraging a new generation of document control solutions.

In this collaborative paper, OpenText and PennEnergy explore the rationale, requirements and benefits of an integrated approach to document control.

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Introduction

Today's energy sector confronts a range of serious challenges, from the rising cost of engineering and operations, to higher risk and more stringent regulatory pressures. All of those trends come at a time when energy firms struggle to find new sources of energy and to meet growing global demand.

Companies at every point in the energy sector value chain – from oil and gas companies to mining and utilities firms, engineering, procurement and construction contractors, and equipment manufacturers and suppliers – must address those powerful forces.

In response, many energy-oriented organizations are forging more collaborative ties, including complex joint ventures and more extensive and reliant global supply chains. But to fully realize the advantages of a more collaborative environment, those organizations must ensure they have secure and efficient control over a wide range of mission-critical documents.



PennEnergy Petroleum Editor, Hilton Price, adds *'If there ever was a "go it alone" edict in the energy sector, it is not one commonly touted now. Cooperation and agreement between companies is vital for any organization interested in exploring, producing, or providing the world's energy resources. Mergers and acquisitions are common, as companies grow and develop new means of profitability. However, not every financial move involves buying and selling. Oftentimes, it's the metaphorical handshake of joint venture or strategic cooperation agreements that provides companies with the resources, technology, and finances to reach the planet's untapped power potential.*

Be it Russian petroleum giant Gazprom working with the Japanese Parliament, or Eni partnering with Rosneft to explore the Black and Barents Seas, often it takes the equipment and manpower of more than one company to reach the next big energy find. And it isn't just big companies or big challenges spurring these partnerships. In the span of one week, Foster Wheeler signed an agreement with Shell, Kinder Morgan announced a planned merger with El Paso, and Stone Energy and Anadarko partnered up to work an offshore field. All businesses in the energy sector can benefit through cooperation, but agreeing to work together is only the first step.

Often in the rush to pool resources, a simple concern is overlooked; Are both companies prepared to share information, and is that information readily available to be shared? In the case of equipment and infrastructure, detailed management of information relating to these pieces is essential, and having access to this information can prevent the worst of mistakes or disasters. The trend of cooperation will continue, and will likely increase as costs do. Content Management solutions will continue to be a necessary reality.

In this paper, OpenText and PennEnergy examine the emergence of next-generation of ECM-based (Enterprise Content Management) document control solutions. The paper explores the business and regulatory drivers pushing firms towards enterprise-class document management. We then address the technology and process requirements of a robust ECM-based approach, including real-world examples of content management in the energy industry.

Trends in Content Management

The cost and associated risks for capital projects in the energy sector continue to rise dramatically, a trend that is amplified by limited resources and rising commodity prices. Over all industries, the cost of a large capital project has increased over 2.5 times in the last five years, driving the cost of a \$3 billion project in 2006 to almost \$8 billion today.

More stringent regulatory compliance requirements now apply to energy firms worldwide. The failure to implement appropriate project controls – including the documentation of critical activities – could result in serious legal and regulatory implications.

At the same time, many energy-oriented companies now face flat or reduced operating budgets. Increased pressure on CIO's and IT managers to reduce operating costs, and in response, many are moving away from costlier and more vulnerable purpose-built systems and towards the deployment of fewer-but-more-effective core business platforms.

The growing use of joint ventures to deliver large capital projects has increased the need for close, secure collaborative capabilities. Joint ventures also create new legal entities, which typically must meet their own regulatory compliance requirements, and which must manage risk, controls, and reporting for its partner organizations.

Many large projects in the energy sector require the participation of multiple contractors, subject matter experts, vendors, and partners across the energy value chain. Large, globally-distributed project teams must collaborate on the design, engineering, construction, and operation of massive industrial facilities. Concurrent design and engineering efforts complicate the process.

For these reasons, professionals in the sector, including engineers, contractors, suppliers, manufacturers and others, need secure and convenient ways to work with large numbers of complex documents under strict document control. Those items may include CAD drawings and large image files, PDF's of system specifications, Microsoft Office spreadsheet or word processing documents, and information in other specialized formats.



Project teams need fast and precise ways to manage the complex relationships between engineering drawings and related documents within enterprise business processes. Energy firms increasingly need better ways to create, share, and track mission-critical documents across dynamic and far-flung project and partner ecosystems.

The good news is: modern engineering document control systems now provide a single, authoritative repository for storing, organizing, and sharing technical content. Project teams can now leverage secure, collaborative web-based content environments to create, capture, review, transmit, and manage work-in-progress and completed documentation. Advanced transmittals capabilities give stakeholders the ability to route documents for review and approval, while web-based interfaces provide secure, global, anytime access to those vital materials.

To effectively support document control processes, a world-class ECM system should:

- Interface with leading CAD-authoring tools for document creation and revision with advanced processing and data mapping capabilities.
- Create and number documents and assets in accordance with project and corporate naming conventions and standards.
- Manage document revision requests and track minor revisions through various stages such as “issued for construction” and “as-built”.
- Manage the promotion of completed revisions to documents-of-record and maintain a complete history of these documents.
- Support concurrent revisions of documents by multiple teams.
- Provide secure visualization and annotation capabilities to support engineering content access and review by users without desktop engineering applications.
- Integrate with asset management and master data management systems, such as SAP® solutions, to support a constant state of operational readiness.

Single-point-of-truth. Given the pace and complexity of many large projects, concurrent engineering activities can make it hard for all parties to have access to the latest version of key documentation – such as CAD drawings, specifications, inspection reports, or maintenance schedules. Participants need proven, automated systems to manage, organize, and disseminate information across a distributed project team, while avoiding delays or duplication. Once a capital project is commissioned, owners and operators must have a correctly-documented “as built” state of the asset.

Of course, document control is much more than version management. True enterprise-class document control must provide the ability to manage a “vault” with the current state (i.e. revision) of the process or asset design or as-built condition. A document control solution should be capable of pre-allocating blocks of drawings and deliverables to specific teams, allowing concurrent design and review, and readily merging and check-in of these documents to the vault or latest revision.

Secure collaboration. Energy firms need a secure and efficient way to share and track information between various project team stakeholders, both internally and with external partners, customers, and vendors. Often, to protect intellectual property, organizations may want to prevent content from being copied or edited – and this can be accomplished by marking documents read-only, watermarking pages, preventing hard-copy printing, or setting content to expire after a review period – all while still allowing users to review or annotate the content. Also, because players are typically in geographically and legally disparate groups, a document control system must include a robust audit trail to document the creation, transmittal, receipt, approval, and revision of any document.

Transparent and compliant. In today’s highly-regulated energy sector, companies must ensure they are properly documenting all critical activities. A transparent and compliant content

management system will retain and protect crucial information. This allows stakeholders to maintain an audit trail of all content-related activities, and to prove their due diligence in the event of conflicts, claims or disputes.

Quality management. Suppliers are rightly concerned about the quality of their products, and the associated technical documentation. Enterprise-class document control can help ensure that parts, components, and products meet the performance and safety standards required in the harsh energy industry environment.

An Enterprise-Class Solution

For organizations across the entire energy sector, managing content is an increasingly important and complex challenge. Companies operating in this highly-regulated industry must manage content related to compliance, risk assessment and control, corporate governance, and operational, financial, and engineering performance.

OpenText has evolved their industry-leading Enterprise Content Management suite to suit the specific needs of oil and gas, mining and other energy industry requirements. Organizations across the energy sector have deployed the OpenText ECM suite to accelerate revenue performance, improve exploration and production efficiencies, reduce costs, strengthen the governance of information, and meet today's more stringent regulatory compliance requirements.

Forward-looking firms can leverage this core suite to better manage the entire lifecycle of mission-critical content, including document and records management, auto-classification, rights management, email administration, electronic discovery, and archiving. Related business applications are available for compliance and governance, accounts payable, contract management, enterprise search, library and knowledge management, file transfers, and program management.



To encourage secure, enterprise-class engagement, the OpenText ECM suite also incorporates advanced solutions for social media and web content management, digital asset management, semantic navigation, and ecosystem portals. Shared services solutions are available for enterprise library and process services, content analytics, mobile applications, and end user experience support.

The OpenText Suite provides integration for core business systems running on SAP, Microsoft, and Oracle infrastructure – providing a platform for managing information across an entire enterprise.

Energy Applications

Beyond the broad capabilities of an enterprise content management system, energy-oriented firms can now also implement specialized applications to help integrate people, processes and content across a global enterprise. Exploration and production firms, in particular, can leverage

advanced content management technologies to connect remote sites and disparate systems, to streamline internal processes, to improve the productivity of workers and partners, and to better meet regulatory compliance requirements and their own bottom-line business goals.

ECM is foundation which you can extend with industry solutions that better manage and control unstructured content in your complex business processes such as: design and engineering; contract and bid management; supply chain management; plant asset management and maintenance.

The OpenText ECM Suite solutions for the energy sector include:

- Capital Projects – to manage content and collaboration between project teams, engineering, procurement & construction (EPC) contractors and vendors.
- Plant Asset Management – to manage technical asset documentation and maintenance projects supporting operational excellence, and total lifecycle asset management of your plants.
- Contract Management – to standardize and monitor contracts through the full lifecycle, from creation, negotiation, and review to fulfillment and retention
- Controlled Engineering Records – creates a secure, collaborative web-based environment where engineers and others can create, capture, review, and manage CAD drawings and other technical documents.
- Document Control (Transmittals) – builds on the core capabilities of document management to support the more complex content management requirements of the concurrent design, review, and distribution of documentation and transmittals.

Transmittals

Energy industry companies must share content related to planning, engineering, construction, and operation of large-scale infrastructure. Yet few of those organizations are equipped with a secure and collaborative computing environment.

The transmittal of drawings, specifications, calculations, and other key information assets between engineering, operating and partner organizations, typically for the purposes of review, comment, and approval, can be particularly troublesome. Poorly managed transmittals can lead to wasted time and money, communication errors, compliance and documentation issues, contractual liabilities, and other serious risks.

To address these issues, forward-looking companies now seek more advanced solutions for content collaboration, document control, and transmittals. Today's most advanced transmittal solutions leverage process automation to manage the creation, review, retention, and auditing of these crucial collaborative exchanges. By deploying a secure and standardized system to manage transmittals, organizations can improve transparency, productivity, and cost-efficiency across the lifecycle of shared content.

Organizations should look for a transmittal system that meets their specific content sharing requirements. Software wizards, for example, can simplify the process of basic content transmittals, allowing users to quickly and easily specify recipients, delivery methods and formats, and other variables such as project names, reason for issue, and attached or associated content. Transmittals can be shared via email, workflow systems, or secure file transfer. Advanced features can include the electronic management of transmittal receipts, acknowledgements and responses, edit and deletion protections, permanent documentation, and audits.

Automatic Document Numbering

While an obvious and required practice for any engineering-related organization, the numbering of critical documents can present especially complex and difficult challenges to energy-sector firms. To manage content in a dynamic, high-volume environment, many oil and gas organizations are now adopting automated systems for the generation and tracking of document numbers.

Depending on the requirements of a given company, document numbers can be generated by category, and for standard documents, CAD documents, physical records, or assets. A workable approach will support various numbering schemes, from the simple to the complex, based on document or object types, forms, workflows, or categories. This sophisticated automated numbering approach also allows the use of prefix, suffix, structured and sequential numbering components, extended attribute descriptions, and filters.

Those advanced capabilities can be used to control unique numbering at an application, facility, or global level – giving oil and gas firms the flexibility needed to better manage content across the enterprise and the wider partner ecosystem.

Controlled Revision Tracking

Oil and gas firms must ensure the accuracy, timeliness, and control of engineering records relating to exploration, plant and asset management, and construction projects. A robust controlled revision tracking (CRT) system provides full lifecycle management for controlled records – creating a master record environment for drawings, manuals, SOP's, and other content, and providing full visibility to ensure users are accessing the latest available revision.

This highly-structured CRT process tracks key information on each revision, including who requested and approved the action, personnel status, project associations, and workflow fit. By creating a centralized view for all controlled data, this CRT dashboard approach supports powerful and easy-to-use numbering schemas, reliable review and approval processes, markup and edit tracking, cross references to equipment tags or other variables, and updates to a master record list. A modern CRT will also integrate seamlessly with other crucial document management systems, including automatic document numbering, transmittals, controlled engineering records, CAD systems, and other tools.

Organizations can realize significant benefits by adopting this rigorous approach to the controlled revision tracking of critical engineering documents. An aggressive CRT program simplifies the revision process, strengthens controls, and ensures accurate and current information across a global energy enterprise. Next-generation document management

systems support concurrent multiple-party revisions, and can be scaled seamlessly to serve worldwide oil and gas facilities and projects.

Effective document control extends far beyond version management. Reliable document control allows organizations to manage a content “vault” containing current state of the design or as-built condition. A truly robust solution allows organizations to pre-allocate blocks of drawing numbers and deliverables to specific teams, and to easily merge and check those documents into the vault or the latest version.

Collaboration

Collaboration is an integral element in any effective energy-related content management solution. Energy-related organizations can have the best of both worlds – an open and collaborative environment for employees, customers, and partners and the security and control needed in a competitive industry – by deploying today’s most advanced collaborative systems. Those solutions can include secure-but-convenient environments that facilitate the sharing of knowledge and best practices within companies or across value chains.

Depending on the needs of a particular oil and gas organization, a collaborative environment may include virtual workspaces, communities of practice, FAQs, blogs, wikis, and other resources. As noted, energy firms can leverage robust content security measures to protect intellectual property, while allowing users to review and annotate key documents. The best of today’s collaborative solutions leverage advanced content servers and lifecycle management capabilities to manage access control, status updates, auditing, and other capabilities.

Document Management Benefits

Organizations across the energy sector can benefit from a robust, enterprise-class content management solution.

- Strong document management simplifies the packaging and distribution of information. Configurable process automation reduces duplication, the risk of errors, and delays associated with manual and disparate processes. Robust document management makes it easy to create transmittals and to track document progress and transmittals using email, secure file sharing and other distribution methods.
- A transparent and auditable process supports concurrent design and review. The document “vault” approach manages a single-point-of-truth, while permitting information to be concurrently edited and reviewed. Document controllers can pre-allocate blocks of numbers to specific deliverables to ensure effective document and project control. Transmittals capture information about: the recipients; transmittal activity such as receipt, response and acknowledgement; and protects the transmittal and documentation from unauthorized editing or deletion. All information is fully auditable.
- Collaboration with external parties is both convenient and secure. Customers, partners and others can receive or transmit documentation packages via email or secure file

sharing. Secure viewing and annotation technologies prevent unauthorized changes and protect intellectual property.

A comprehensive Enterprise Content Management solution can provide these additional advantages:

- Enforces rigorous audit procedures, including the capture of information on the creation, transmittal, receipt, response, and acknowledgement of documents – to ensure full compliance with regulatory and business requirements.
- Supports close coordination between project participants, by ensuring transparency while allowing multiple parties to revise a document concurrently.
- Allows energy-oriented organizations to manage structured and unstructured data through the entire document or asset lifecycle.
- Integrates seamlessly with office productivity, enterprise resource planning (ERP) and database systems.
- Scales smoothly to support engineering projects and facilities across regional or global energy operations.
- Drives productivity, reduces risk, and improves information management.

Conclusion

Driven by cost and regulatory pressures, the energy industry continues to seek more efficient and productive ways to find, process and deliver products and services worldwide. Many now seek to create more agile and collaborative businesses, and to open secure-yet-collaborative ties between customers, partners, employees, and vendors.

To improve performance and profitability in this more collaborative environment, energy firms must have firm control over crucial engineering and business documents. A modern Enterprise Content Management system, as we have seen, allows individual organizations and joint-ventures to securely create, share, review, and manage key documents – all under strict document control.

By automating many key document control tasks, today's newer generation of content management systems allows organizations to link globally-distributed project teams. A robust ECM solution establishes a single-point-of-truth, reduces both risk and cost, and allows organizations to meet today's more stringent regulatory requirements.

True enterprise-class content management can be used to protect and manage structured and unstructured information through the entire content lifecycle. By understanding the components of a modern ECM solution, organizations can gain a secure, collaborative competitive edge in tomorrow's energy sector.



About OpenText

OpenText is the world's largest independent provider of Enterprise Content Management (ECM) software. The Company's solutions manage information of all types for business, compliance and industry requirements in the world's largest companies government agencies and professional service firms. OpenText supports approximately 46,000 customers and millions of users in 114 countries and 12 languages. For more information about OpenText, visit www.opentext.com.



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