



When Recognition Matters



WHITEPAPER


ISO/TS 29001:2010

PETROLEUM, PETROCHEMICAL AND NATURAL GAS INDUSTRIES
SECTOR-SPECIFIC QUALITY MANAGEMENT SYSTEMS
REQUIREMENTS FOR PRODUCT AND SERVICE SUPPLY ORGANIZATIONS

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A photograph of a red oil pumpjack (jackal) in a field. The pumpjack is the central focus, with its long arm and counterweight. In the background, there are some white storage tanks and a line of trees under a clear sky. The foreground is filled with tall, dry grass.

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INTRODUCTION

Ever since the first oil-well was drilled in 1859, oil production has become a continuously complex and detailed process.

The ISO/TS 29001:2010 is quality management system that provides requirements for the design, development, production, installation, and service of products for the petroleum, petrochemical, and natural gas industries. This standard is designed to help these organizations ensure that they meet all requirements of customers and stakeholders.

The ISO/TS 29001:2010 standard is based on ISO 9001, and includes supplementary requirements highlighting defect prevention and the reduction of deviation and waste from service providers.

The ISO/TS 29001:2010 was developed as the result of cooperation between the American Petroleum Institute (API) and ISO technical committee ISO/TC 67.

The ISO/TS 29001:2010 is applicable to the following organizations:

- Organizations involved in exploration, production, pipelines and transportation, and refining of petroleum and natural gas products;
- Organizations involved in the design, manufacture, installation, service and repair of equipment used in the exploration, production, transportation and refining of petroleum and natural gas products; and
- Organizations that provide technical, operational and support services to the various industry sectors identified above.

*Ed Durante, project leader of the ISO/TC 67 working group, declared that:
"ISO/TS 29001 has now been accepted as the baseline requirement for quality management systems in the exploration and production sector of the petroleum and natural gas industry."*

This Technical Specification is intended to avoid multiple certification audits and provide a common approach to a quality management system for the petroleum, petrochemical and natural gas industries.



An Overview of ISO/TS 29001:2010

ISO/TS 29001 specifies technical specification requirements for a quality management system in an oil and gas industry where an organization needs to demonstrate its ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements. Its aim is to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and assurance of conformity to customer and applicable statutory and regulatory requirements.

All requirements of ISO/TS 29001 are generic and are intended to be applicable to all organizations, regardless of type, size and product provided

Quality standardization for petroleum evolves with ISO/TS 29001 by adding:

- Greater emphasis on setting the objectives, monitoring performance and metrics;
- Clearer expectations on management;
- More careful planning for and preparing the resources needed for ensuring quality in oil and gas industry.

ISO/TS 29001 applies to all types and sizes of organizations that wish to:

- Establish, implement, maintain and improve a quality management system in an oil and gas industry;
- Assure conformity with the organization's stated quality policy;
- Demonstrate conformity to others;
- Seek certification/registration of its quality management system by an accredited third party certification body; and
- Make a self-determination and self-declaration of conformity with this International Standard.

KEY CLAUSES OF ISO/TS 29001:2010

ISO/TS 29001 is organized into the following main clauses:

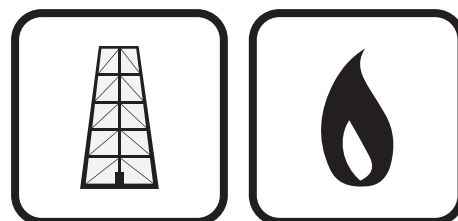
Clause 4: Quality management system

Clause 5: Management responsibility

Clause 6: Resource management

Clause 7: Product realization

Clause 8: Measurement, analysis and improvement



Each of these key activities is overviewed below:

Clause 4: Quality Management System

The organization shall continually improve their quality management system by complying with the following requirements of this International Standard. They shall:

- Determine the sequence and interaction of processes to ensure that both the operation and control of these processes are effective;
- Provide necessary resources and information to support the operation, monitoring, measuring and analyzing of these processes; and
- Implement necessary actions to achieve planned results and continual improvement of these processes.

Clause 5: Management Responsibility

It is the responsibility of top management to demonstrate their ongoing commitment to the development and implementation of the quality management system of oil and gas, and continually improve its effectiveness by:

- Communicating to the organization the importance of meeting customer, statutory and regulatory requirements;
- Establishing the quality policy and ensuring that quality objectives are established;
- Conducting management reviews; and
- Ensuring the availability of resources.

Clause 6: Resource Management

The customary management of an effective quality management system relies on using the appropriate resources for each task. These resources include competent staff with relevant (and demonstrable) training and supporting services, awareness and communication.

To achieve conformity to product or service requirements, it is important to provide and maintain an appropriate infrastructure.

The work environment is also another critical factor, which must be managed by the organization in order to achieve conformity to product or service requirements.

Clause 7: Product Realization

The processes that relate to product realization are:

- **Planning of product realization:** During this stage the organization must plan and develop all processes necessary for product realization.
- **Customer-related processes:** It is important to manage processes that relate to customers, in order to ensure that the organization is determining and meeting their requirements.
- **Design and development:** The design and development processes of the final product must include the following:
 - Design and development planning,
 - Inputs,
 - Outputs,
 - Review,
 - Verification, and validation and control of design and development changes.
- **Purchasing:** It is important for the organization to ensure that purchased products conform to specified purchase requirements.
- **Production and service provision:** The processes that associate with the production and service provision are:
 - Control and validation of production and service provision,
 - Identification and traceability,
 - Customer property and preservation of product.
- **Control of monitoring and measuring equipment:** The organization is responsible for determining the requirements for monitoring and measuring equipment needed to provide evidence of conformity of product. The results from the conducted measurements and monitoring activities shall be recorded and maintained.

Clause 8: Measurement, Analysis and Improvement

Once the quality management system is implemented, ISO/TS 29001 requires permanent monitoring, measurement, analysis and improvement to:

- Demonstrate conformity to the product;
- Ensure conformity of the quality management system in an oil and gas industry; and
- Continually improve the effectiveness of the quality management system.

An organization can continually improve the effectiveness of its management system through the use of the quality policy, objectives, audit results, analysis of data, corrective and preventive actions.

Continual improvement can be defined as all the actions taken throughout the organization to increase effectiveness (reaching objectives) and efficiency (an optimal cost/benefit ration) of quality processes to bring increased benefits to the organization and its stakeholders.

LINK OF ISO/TS 29001 WITH OTHER QUALITY MANAGEMENT METHODS AND TECHNIQUES

Apart from the ISO/TS 29001, there are other methods and techniques related to quality management that are used to enhance quality and productivity in organizations, such as:



ISO/TS 29001 OPPOSED TO ISO 9001

ISO/TS 29001 and ISO 9001 are both quality management standards designed to complement each other, however can also be used independently.

ISO/TS 29001 was developed as a result of the need for a more rigorous sector-specific quality management system that provides additional assurance relating the processes of product and service suppliers. The improvements to the basic ISO 9001:2000 are necessary and beneficial to all members of an oil and gas industry.

What are the Benefits?

Gradually, organizations within the supply chain will need certification against this standard in order to secure their contracts.

Commitment to health and safety - Oil and gas industries deal with hazardous fluids and gases through a variety of processes, which makes the safety of personnel and public of primary importance.

Protection - The environment needs a high level of protection to assure business continuity and operational integrity.

Integration - ISO/TS 29001 incorporates the requirements of ISO 9001 and includes detailed, sector-specific requirements for design, development, production, installation and service of products.

The monitoring of performance and continual improvement is based on the principles of ISO 9001.

Better understanding of the organization	Regulatory compliance	Cost reduction
Confidence of client	Contract compliance	Competitive advantage
Increased efficiency	Legal compliance	Respect of the interested parties

The adoption of an effective quality management process within an organization will have many benefits in a number of areas, such as:

1. Increase of efficiency;
2. Increase in revenue;
3. Increase of employee morale;
4. International recognition;
5. Establishment of a factual approach to decision making;
6. Strengthen supplier relationships;
7. Support the proficiency of documentation;
8. Build consistency;
9. Increase customer satisfaction; and
10. Improve processes.

Oil and Gas Quality Management Principles

Similar to ISO 9001, ISO/TC 29001 is also based on the eight quality management principles that can be used by the top management to lead the organization towards improved performance.



- **Customer focus:** Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.
- **Leadership:** Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
- **Engagement and competence of people:** People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.
- **Process approach:** A desired result is achieved more efficiently when activities and related resources are managed as a process.
- **Improvement::** Continual improvement of the organization's overall performance should be a permanent objective of the organization.
- **Evidence-based decision making:** Effective decisions are based on the analysis of data and
- **Relationship management:** An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

WHY IS PECB A WORTHY CHOICE?

Implementation of a QMS in an Oil and Gas Industry with IMS2 Methodology

Considering the well documented benefits of implementing a Quality Management System based on ISO/TC 29001, makes the proposal easier to decide on.

Most companies now realize that it is not sufficient to implement a generic, "one size fits all" quality plan. For an effective response, with respect to maintaining the quality management system, such a plan must be customized to fit to a company. A more difficult task is the compilation of an implementation plan that balances the requirements of the standard, the business needs and the certification deadline.

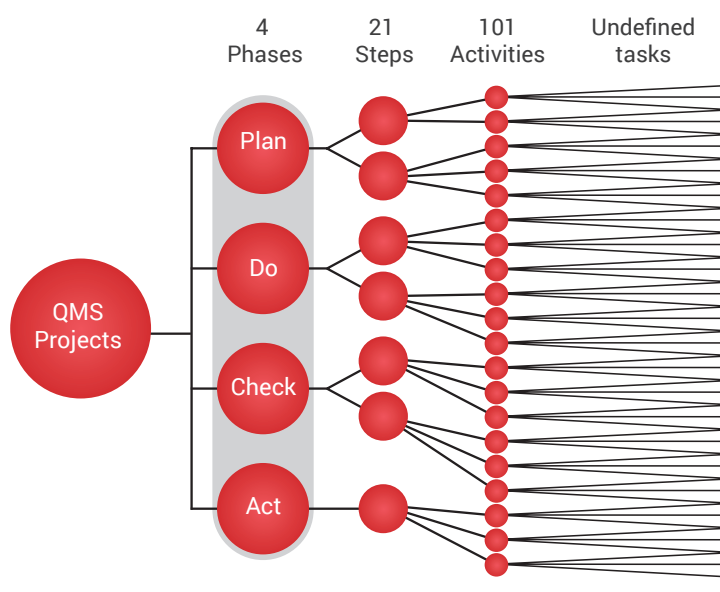
There is no single blueprint for implementing ISO/TC 29001 that will work for every company, but there are some common steps that will allow you to balance the frequent conflicting requirements and prepare you for a successful certification audit.

PECB has developed a methodology (please see example below) for implementing a management system; the **"Integrated Implementation Methodology for Management Systems and Standards (IMS2)"**, and it is based on applicable best practices. This methodology is based on the guidelines of ISO standards and also meets the requirements of ISO/TC 29001.



1. Plan	2. Do	3. Check	4. Act
1.1 Initiating the QMS	2.1 Organizational Structure	3.1 Monitoring, Measurement, Analysis and Evaluation	4.1 Treatment of Non-conformities
1.2 Understanding the Organization	2.2 Document Management		4.2 Improvement
1.3 Analyze the Existing System	2.3 Design of Controls and Procedures	3.2 Internal Audit	
1.4 Leadership and Project Approval	2.4 Communication	3.3 Management Review	
1.5 Scope	2.5 Awareness and Training		
1.6 Safety Policy	2.6 Product Realization		
	2.7 Operations Management		

IMS2 is based on the PDCA cycle divided into four phases: Plan, Do, Check and Act. Each phase has between 2 and 8 steps for a total of 18 steps. In turn, these steps are divided into 101 activities and tasks. This 'Practical Guide' considers the key phases in your implementation project from start to finish and suggests the appropriate 'best practice' for each one, while directing you to further helpful resources as you embark on your ISO/TC 29001 journey.



The sequence of steps can be changed (inversion, merge). For example, the implementation of the management procedure for documented information can be done before the understanding of the organization. Many processes are iterative because of the need for progressive development throughout the implementation project; for example, communication and training.

By following a structured and effective methodology, an organization can be sure it covers all minimum requirements for the implementation of a management system. Whatever methodology used, the organization must adapt it to its particular context (requirements, size of the organization, scope, objectives, etc...) and not apply it like a cookbook.

STEPS FOR OBTAINING A PECB CERTIFICATION

For organizations:	For individuals:
1. Implement the management system	1. Participate in the training course
2. Perform internal audit and reviews	2. Register for the certification exam
3. Select preferred certification body	3. Sit for the certification exam
4. Perform a pre-assessment audit (optional)	4. Apply for the certification scheme upon successful completion
5. Perform the stage 1 audit	5. Obtain certification
6. Perform the stage 2 audit (on-site)	
7. Perform a follow-up audit (optional)	
8. Register the certification	
9. Assure continual improvement by conducting surveillance audits	

For further details relating the types of trainings and certifications that PECB offers, please visit our website: www.pecb.com



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