

# A structured approach to demonstrating competence

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Defining, measuring and proving competence is an increasingly important issue in the pipeline industry, especially for engineering professionals. This paper discusses Rosen’s initiative to provide a structured approach to demonstrating competence through standards, learning programs, competency assessments and qualifications.

Pipeline standards and regulations require pipeline engineers to be both technically competent in and qualified for all the tasks they perform. As organisations and individuals, we try to ensure we can demonstrate competence in accordance with regulations and best practices.

But how does this work? What do regulations and standards say, for example, about the specific competency requirements for an engineer performing crack assessments in a pipeline? What recommended competency standard can we assess against and work towards satisfying? How can this be independently validated?

Most of the industry’s competence has been acquired through years of learning and experience and, for the most part, still resides with the experts. As a junior pipeline engineer it is not always straightforward to access the knowledge, and, more critically, the experience you need to help you in your day-to-day job. So, how do you access them?

## RELIABLE AND STRUCTURED APPROACH

The Competence Club, developed by the Rosen Group, is a response to the need of pipeline professionals for a reliable and structured approach to acquiring and demonstrating their competence. Connecting engineers with industry experts, the club provides its members with access to up-to-date and relevant content, competency standards and assessments, professional qualifications and learning programs.

Key benefits to members are:

- » becoming a member is simple and free
- » complimentary access to expert videos, e-learns and resources – routinely updated
- » access to more than 50 e-learning courses



FIGURE 1: An example of complimentary expert videos.

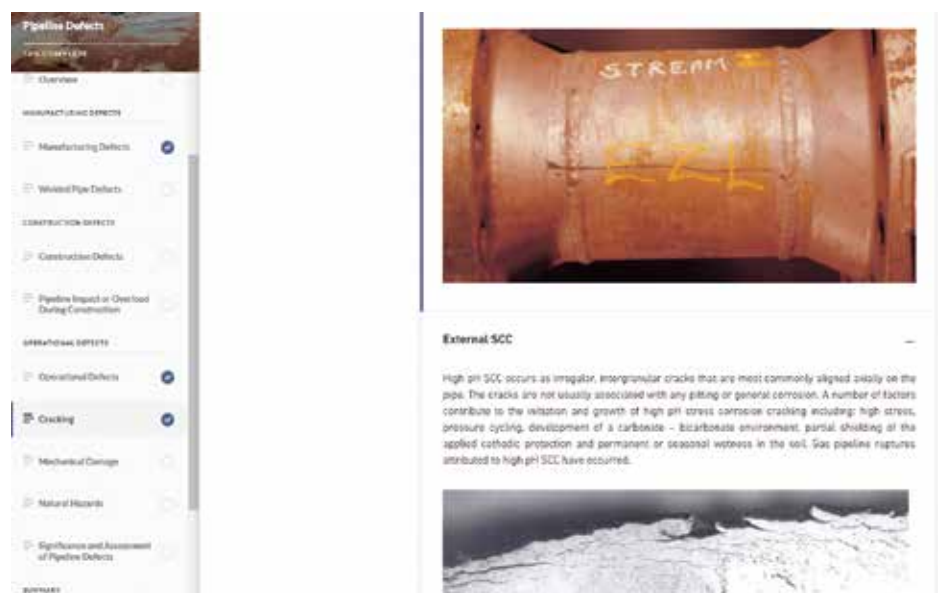


FIGURE 2: A screenshot of the pipeline defects e-learn.

# QUALITY MANAGEMENT AND COMPETENCE

Competency Elements ("Tasks") and Assessment				
Skills (ability to do a task)	Is aware of all the elements comprising pipeline integrity management and pipeline integrity management systems.	Arrange typical integrity management activities under supervision (use risk assessment outputs to develop integrity management plans, manage programmes, interpret results).	Design, propose and apply pipeline integrity management systems without supervision.	Teach the competence.
Knowledge (understanding the task)	Pipeline integrity management system.	Different approaches to pipeline integrity management.	Compliance vs. goal setting regulations, prescriptive vs. risk based programs, best practice.	Expert witness skills (giving evidence, writing reports, answering questions, preparing for Court).
	Safety Management Systems (SMS) and the role they play in Pipeline Integrity Management.	Codes and standards requirements (including ASME B31.8S, API 1160, API 1173, CSA Z662, DNV RP F116, BSI 8010-4, EN 16348).	Formulate a pipeline integrity management system, and develop and apply prescriptive or risk based pipeline integrity management programs.	Able to participate in industry working groups, or standard committees.
	Threats to pipeline integrity (pipeline defects and their causes).	Interpreting inspection and survey reports, and inspection, testing, maintenance, and surveillance options (all methods).	Specifications, and quality management, planning and spares.	
	Inspection, testing, maintenance, and surveillance options (focus on in line inspection, above ground surveys and patrols).	Risk reduction options, preventive measures and mitigations.	Damage prevention, stakeholder communications, one-call systems.	
	Risk assessment (probability of failure, failure consequences).	Establishing baseline inspection and testing intervals.	Optimise inspection and testing intervals based on condition assessment data.	
	Integrity management planning (prescriptive, risk based).	Defect assessment, including fatigue assessment.	Data analysis methods including corrosion and crack growth.	
	Pipeline integrity data management, data quality.	Pipeline repair and rehabilitation, and repair programme design.	Data management systems (inspection, maintenance, scheduling, geospatial systems).	
		Threats to pipeline integrity and the consequences of pipeline failure.	Advanced Safety Management Systems, and process management.	
		Critical data; missing data; treatment of uncertainty.	Management controls necessary for pipeline integrity management.	
	Emergency preparedness, emergency response, site investigation.	Failure statistics and sources (time dependent and stable threats, and random events).		
Supervising and/or training	None.	None.	Supervisor for this competence.	Trainer for this competence.
Assessment	Quizzes (self-marked).	Summative.	Formative and Interview.	Formative and Interview.

Mentoring and Experience Requirements				
Training	~2 hours	~18 hours	0	0

FIGURE 3: A screenshot of the Competency Standard – Pipeline Integrity Management.

- » to increase awareness of technical topics
- » more than 200 competency standards related to pipeline engineering
- » competency assessments for you and your team
- » professional qualifications for you and your team to help you identify competence needs, fill the gaps through training and coaching – demonstrably proving your competence
- » regular webinars, seminars and events
- » all activities are recorded and can be retrieved as part of personal development plan
- » all qualifications can be independently validated by the Qualification Panel for the Pipeline Industry (QPPI).<sup>A</sup>

## WHO IS THE COMPETENCE CLUB FOR?

The system is aimed at technical people involved in the pipeline industry, needing access to reliable training materials on a range of pipeline-related topics.

Examples of these include:

- » managers who want to provide just-in-time learning to members of their department
- » engineers who want to identify their competency needs, work on a plan and have the evidence of their competence
- » engineering managers who want to be sure and prove to their organisation and regulator that they are demonstrably competent to perform their jobs
- » experts who want to contribute and share their wisdom with the industry via free resources (see Figure 1).

## LEARNING

All members of the Competence Club have access to complimentary learning resources that are updated routinely. This includes training courses, e-learns, videos and more. There are also more than 50 training courses available, in the classroom and online (see Figure 2), to further increase your knowledge. These courses have been produced by Rosen experts and the company's partners.

## ASSESSMENT

Individuals must be competent to perform their job tasks and to provide evidence they possess the required technical skills, knowledge, experience and behaviour to perform their job role/function, as well as show that they can apply them consistently, safely and in accordance with relevant procedures and standards.

Rosen subject matter experts and partners are available to assess<sup>1</sup> both individuals' and companies' level of competence in a specific area of expertise against more than 200 competency standards (see Figure 3). The assessment is thorough and is conducted by examination, interview, performance and other criteria.

Assessments are carried out by qualified personnel following a rigorous, consistent and performance-focussed methodology that is managed by the platform. Based on the outcome of a competency assessment, an individual or company may receive guidance in the form of learning programs.

These provide the suggested next steps for the individual, who can then update their record



FIGURE 4: An example of a learning program, complete with competency assessment results.

	Individual A	Company B
<b>Title</b>	Individual Qualification: Pipeline Integrity Management	Organizational Qualification: Pipeline Integrity Practitioner
<b>Personnel</b>	1	8
<b>Online training courses</b>	12	24
<b>Competencies Assessed</b>	1 x Practitioner, 4 x Foundation	3 x Practitioner, 15 x Foundation
<b>Average Effort Per Person</b>	75 hours	50 hours
<b>Learning Program</b>	Public training courses	In-house training and coaching
<b>Coaching</b>	Ad hoc basis	Company experts receive training on coaching and mentoring
<b>Total duration</b>	3-12 months	12-24 months
<b>Independently validated?</b>	Yes	Yes

FIGURE 5: A table showing an example of the qualifications on offer for individuals and organisations.

once they have met the requirements (see Figure 4). When a candidate successfully passes a competency assessment, they receive a certificate with transcript detailing the evidence of how they meet the standard requirements.

**QUALIFICATION**

Rosen qualifications, available off-the-shelf and bespoke, have been created with support from the QPPI to provide a structured approach for individuals and organisations in order to satisfy the requirements of regulation and best practice.

Each qualification consists of a set of competencies that are assessed and acquired

through self-paced learning, training and mentoring – all of which is recorded through the Competence Club. The qualifications focus on the professional demands on engineers and are offered in the following fields:

- » Pipeline Integrity Engineer
- » Pipeline Inspection Engineer
- » Pipeline Corrosion Engineer
- » Onshore Pipeline Engineer
- » Pipeline Risk Engineer
- » Subsea Pipeline Engineer

Figure 5 presents a summary of two examples of how a qualification might be taken: the first by an individual and the second by an organisation.

Once an individual or organisation has been awarded the qualification it is possible for this process to be independently validated by a third party – the QPPI.

The certification route provides an additional level of confidence when asked to demonstrate you and your team’s competence. **P**

**REFERENCES**

<sup>1</sup> M Unger, P Hopkins, ‘A Qualification Route Map for the Pipeline Industry’. 29th International Pipeline Pigging & Integrity Management Conference Houston, USA, 27 February – 2 March 2017.

<sup>A</sup> The QPPI is an independent body, made up of industry experts, established to provide guidance on competence in the pipeline industry and certify engineers, programs and organisations.

**What next?**

The Competence Club truly belongs to its members and its aim is to bring together knowledge seekers and sharers. Why not take a few minutes to find out which one you are?

For more information and to sign-up for free visit [www.competence.rosen-group.com](http://www.competence.rosen-group.com)