



ISO 9001 Basics and its use in energy EPC business

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Agenda: Quality Management In an Energy EPC company

- The necessary people and systems
- Voice of the employee – deviation requests & continual Improvement
- Audit & assessment systems - trust everyone, verify what matters
- Continual improvement
- Cost of quality
- Enhancing client satisfaction



The necessary people & systems

Your clients

Your leadership

Your management system

Your process owners

Your project / process implementers



Client satisfaction and sustainability

Real profits are generated by loyal clients – not just satisfied clients

- Aguayo

Ensuring the client is getting what they need and want

- Knowing their current business and future needs, knowing legislation and future requirements, evaluating trends in the global market and providing recommendations in their best interest
- A QMS that is nimble but controlled which ensures client expectations and requirements are included and verified for incorporation into design through delivery

What your client wants and needs

- Ensuring that the clients requirements are determined and are met with the aim of enhancing satisfaction and future opportunities
- Asking
- Listening
- Document and submit
- Clarification
- Following through



Leadership's Role In the Quality Management System

Your leadership's role in quality management system

- Their authority, ownership and accountability in the quality management system
- Their support in the form of time, responsiveness, resources, and communication
- Provide support groups for the process owners and the implementers
- The quality department can not and should not own the entire QMS

Process owners (Leadership) and ownership

- Process owners manage their processes and communicate process knowledge to those expected to implement it
- Internal project teams receive and apply process knowledge as well as define process needs and improvement opportunities back to the process owner
- Together, all professionals help drive process improvement through the learning, understanding and sharing of information about effectiveness and efficiency back to the process owner

- Engineered system criticality: Acceptance criteria defined, review/inspect points, verify/test point, analysis by process owner or designee, and approval.

Process ownership – Managing your process

- Defining and documenting the process by developing templates, standards, guides, manuals or a process flowcharts to depict the key requirements, actions and attributes associated with their process and facilitate effective training
- QMS supports all elements of business, from the proposal review process, permitting, FEED, project reviews, engineering through the pre-commission, start-up and warranty periods

Process owner responsibility: Training to the QMS

- Global Basic QMS Training – Understanding the key processes within a QMS: Required training, deviation request, corrective and preventive process, creation, review and approval
- Project Specific Training – Global offices use of the computer applications, project personnel capability evaluation, project specific QMS requirements, project specific training plans, deviation requests



Your Support Systems

Your management systems

- Document Management system
- Training Management system
- Personnel Qualification management
- Review and assessment systems
- Corrective Action system
- Preventive Action: Continual Improvement
- Records Management

Managing your operational process procedures

- Document Management, having a means of controlling, maintaining and making your companies procedures available to those expected to follow them
- We have 850 Standards & Guides, so we have three tiers of governance document system
- 120 Process owners worldwide have been identified, these professional are the owners of the QMS Standards and Guides
- Required review cycle so that they are maintained
- Electronic Document Management System

Training Management System

- Training plans defined by role
- Required reading to QMS standards
- Technical training: classroom, e-learning
- Process owner responsibility to help define
- Electronic system to manage training

Personnel Qualification Management System

- Experience
- Education
- Training
- Skills
- Managed within an electronic system
- Access to project management team to help evaluate team readiness

Review, assessment and audits

- Project criticality: complexity, location, structure review and audit
- Engineered system criticality: Acceptance criteria defined, review/inspect points, verify/test point, analysis by process owner or designee, and approval. – Review and Audit
- Product criticality: Inspection and Test Plan



Your Project and Process Implementers

The professionals getting the deliverables ready
for your clients

Voice of the internal client Deviation Request Process

The key to making your system come to life

- Deviation requests are generated by the professionals using the QMS explains why and what will be done differently
- The owner of the process reviews and determines to allow or reject
- Deviations copies are maintained and made available to owner when it time to up-date process / procedure

Role of the Preparer

Ensure the information within the report / document is complete, accurate, suitable, meets both applicable internal QMS standard requirements and external client and code requirements prior to requesting internal review and comments



Review and verification

Role of the reviewer:

- Verify the **suitability, adequacy and effectiveness** of the subject report to achieve established objectives
- By signing it is meant to provide the preparer with assurance that the report has been reviewed and verified and found to be accurate, adequate and suitable for its intended purpose or provides comments to help it get there prior to seeking final approval



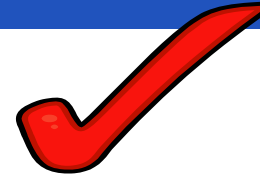
Reviewers methods of verification

Verification includes:

- Alternative calculations
- Comparing a new design specification with similar proven design specifications
- Undertaking test and demonstrations
- Reviewing documents prior to use: right charts or tables used, right template used, right criteria and assumptions



Approval purpose



- Ensure final design / reports are in a form suitable for use by the client
- Design / report outputs shall:
 - Meet the input requirements for the deliverable
 - Provides appropriate information
 - Contain or reference deliverable acceptance criteria and
 - Specify the characteristics of the deliverable essential for it proper use and its limitations

Role of the approver

- Read it as if you were the client reading it for the first time!
- Final product presents well
 - Grammar
 - Spelling
 - Format
 - Attachments
 - References
 - Page numbers
 - Correct level of Information
 - Applicable QMS Standards satisfied
 - Contract deliverable requirements satisfied





Continual Improvement

Audits

Root Cause Analysis

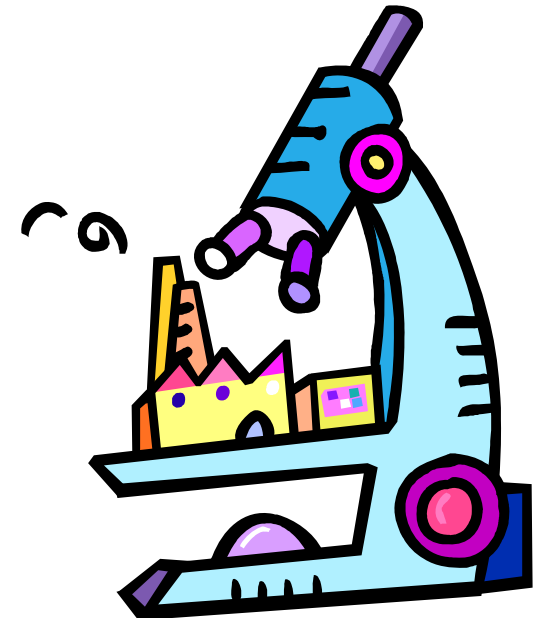
Process Ownership

Cost of Quality

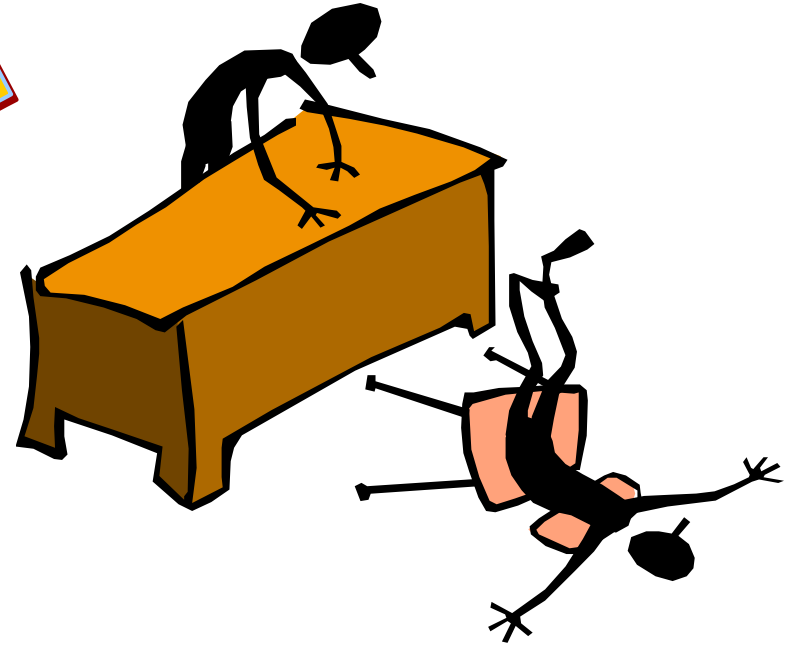
Quality System Audits

Trust Everyone, Verify Everything

Process and Compliance Audits



Audits Gone Bad!!!



Purpose of an Audit:

Audits are performed
for the sole purpose of determining
that **YOU** are doing things WRONG !!!

Audits Done Right!!!

Audits provide **process owners** with information about the health of their processes

- Implementation
- Suitability
- Effectiveness
- Adequacy



Process Owners and Audits

- Process owners involved in audit entrance meetings
- Process Owners are the ones that issue the audit generated Corrective Actions Request and follow-up on closure
- Process Audits – across projects, business lines and global offices. If trends show process gaps, process owners get CARs along with projects.

Audit Metrics

- Not the number of CARs issued
- Performance metric should be the duration that CARs remain open upon agreed closure date

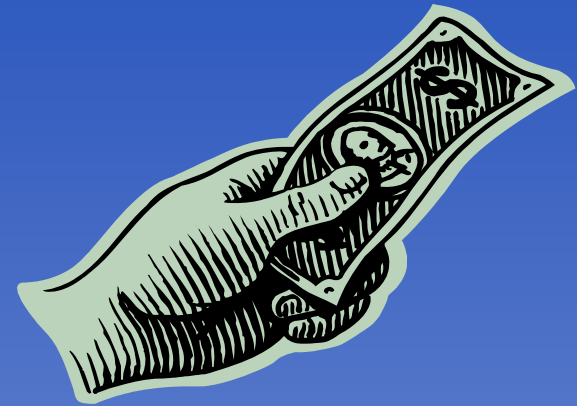


Root Cause Analysis

**The significant problems we face today can not be solved with the same level of thinking we were at when we created them.
Albert Einstein**

RCA process & results

- Problem statement created and agreed upon
- Time line – logic flow diagram created by those involved, not the process owner
- Solution owners are usually our **process owners**
 - solutions are tracked to ensure completion
- RCA solutions are one of the inputs to the next year's audit schedule to ensure the solutions were effective
- RCA reports are distributed and accessible on-line



Cost of Quality

Why care about Cost of Quality? It's all about the money!

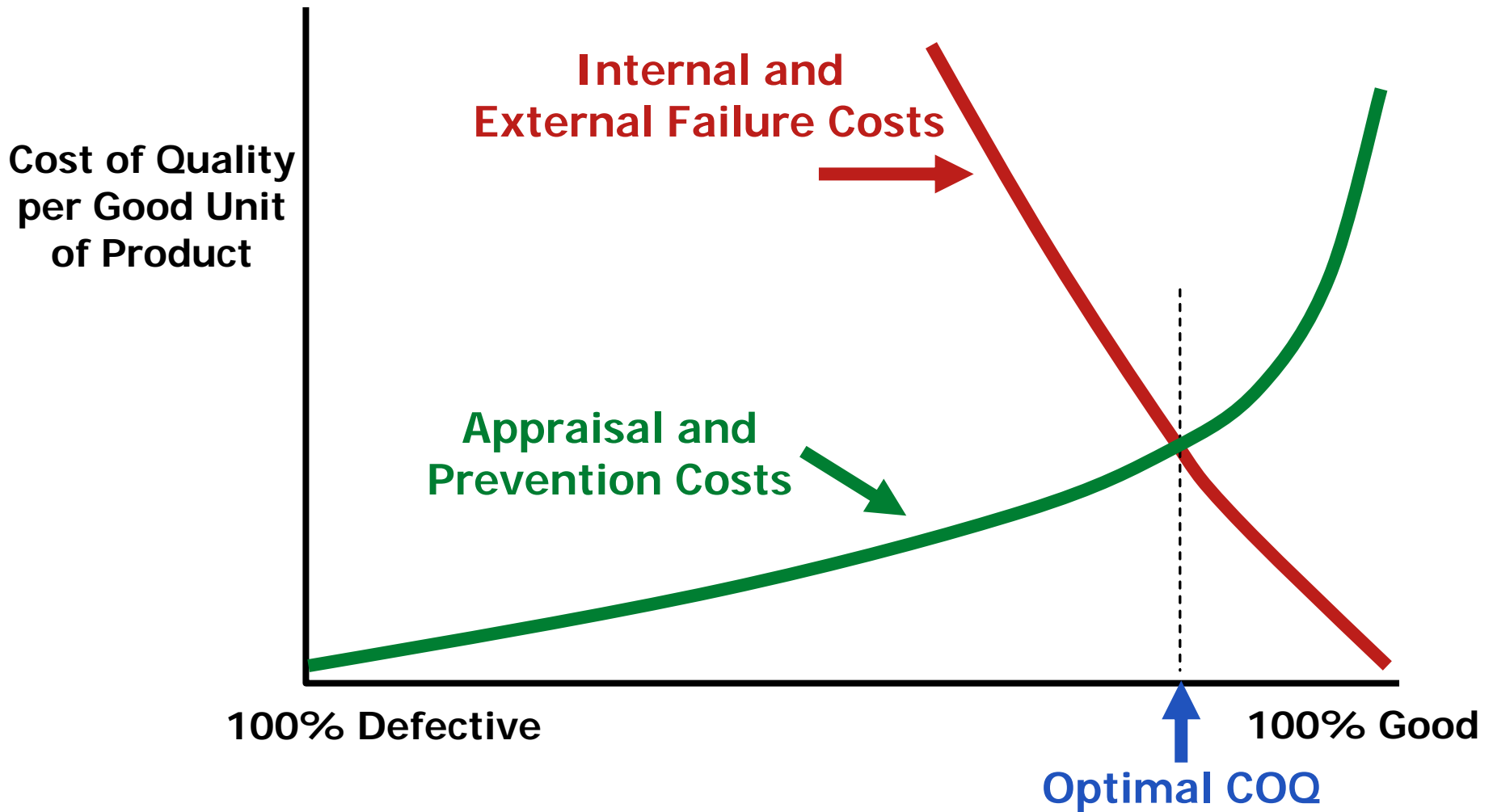
Cost of Conformance

- Prevention:
 - Policies and standards
 - Training
 - RCA
- Appraisal:
 - Inspections, assessments, reviews and audits
 - Design reviews

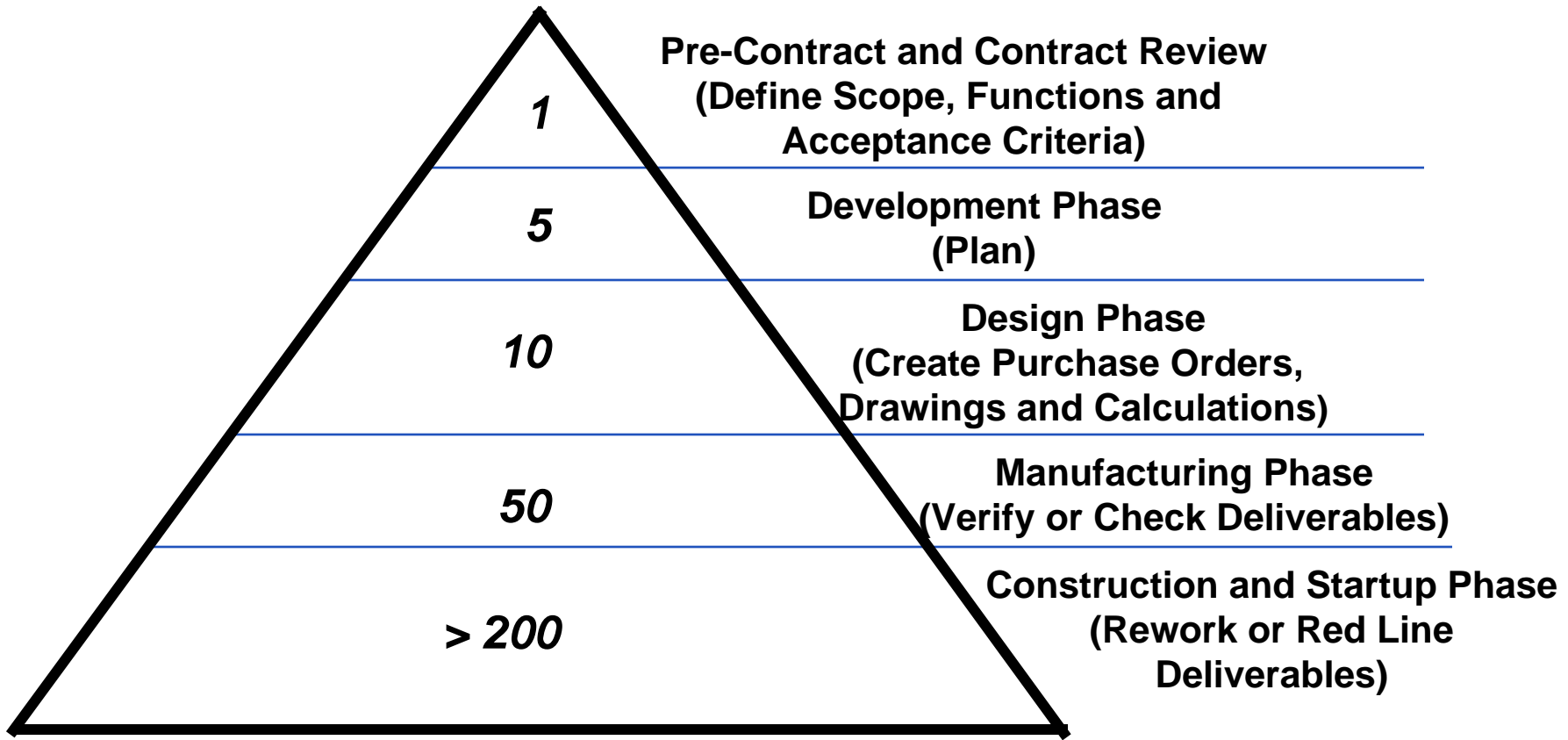
Cost of Nonconformance

- Failure:
 - Rework
 - Scrap
 - Repair
 - Higher insurance
 - RCA
 - CAR
 - *Our reputation – how much is that worth?*

Cost of Quality Goal: Balanced Performance



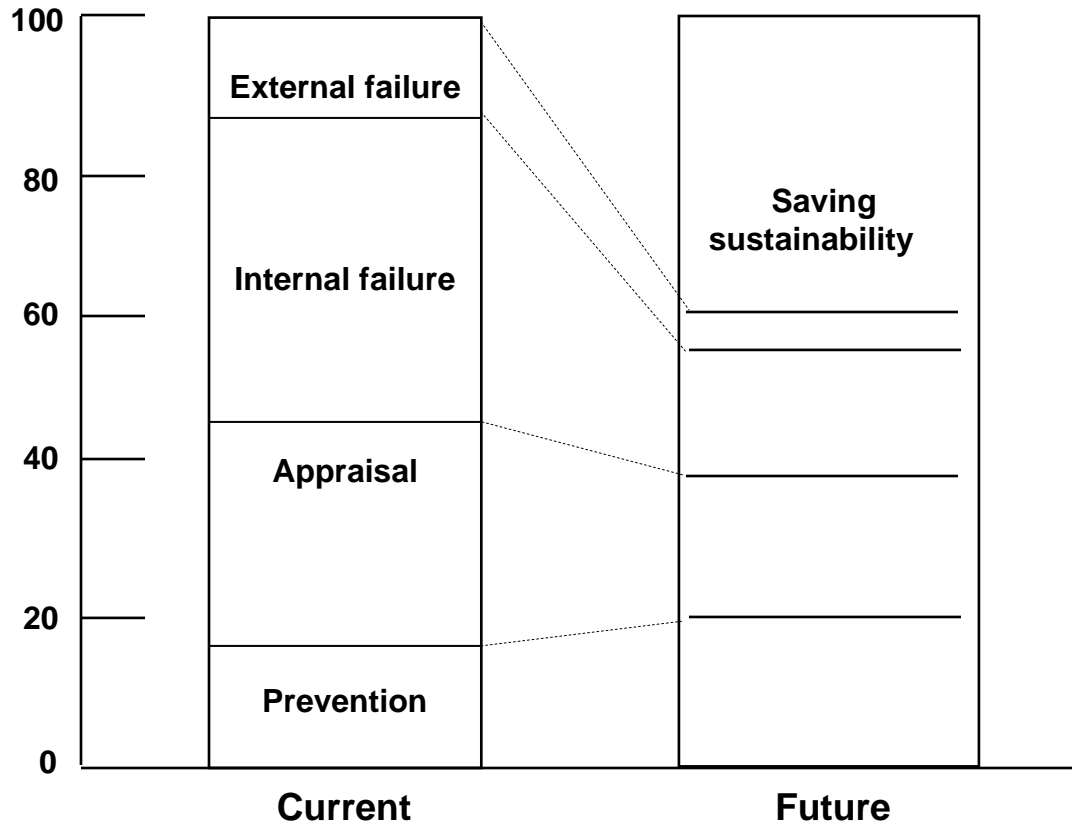
The cost of fixing errors



Total Quality Cost

Cost Category	Percent of Total
Prevention	0-5
Appraisal	10-50
Internal failure	20-40
External failure	20-40

Total Quality Cost





Questions & Comments

Thanks and I appreciate your attendance