



PAS 55 Turning Asset Management into a Strategic Capability

*Presentation to
Engineering Institute of Thailand
Forum
26 March 2011*

Chamni Mosagul

Operation Manger, ASME Authorized Inspector
Energy Business
Lloyd's Register International Thailand Ltd.

CHANGE TITLE IN SLIDE MASTER
LLOYD'S REGISTER (amend as req.)



Lloyd's Register.

- The world's first ship classification Society - founded in 1760
- We are not an insurance company and do not have any connections with Lloyd's of London
- We are a 'not for profit organisation' - we do not have any shareholders
- Our business is governed by our General Committee, the members of which are drawn from the industries which we serve
- Our purpose is to
 - to promote safety of life and property
 - to improve overall business performance in the industries we serve
- We achieve this by securing high technical standards of design, construction, maintenance and operation



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March 26th, 2011



LLOYD'S REGISTER CURRICULUM VITAE

Full Name	: CHAMNI MOSAGUL	Age	: 42
Nationality	: Thai	Date of Birth	: 20.12.1968
Passport No	: R728081	Country of Issue	: Thailand
Date	: 21 March 2011	Telephone	: +66 81 9552069



CURRENT DUTIES AND RESPONSIBILITIES

Operation Manager, Energy Business : Lloyd's Register International (Thailand) Ltd.
Bangkok, Thailand

Sales Executive : Lloyd's Register Capstone Inc. USA.
Senior Engineer Supervisor : Lloyd's Register Group.
ASME Authorised Inspector (A.I.) : LR Insurance Inc., USA.

Thai Senior Professional Engineer : Thai Council of Engineer.

- Duties:
1. Overall Management of Energy Business Operation for Thailand
 2. ASME Authorized Inspector (A.I.)
 3. National Board Commission Inspector, Registered in Ohio, USA.
 4. Thai Registered Senior Professional Engineer, Thai Council of Engineer.
 5. Ministry of Health, Labour and Welfare (MHLW) Japan: Designated Inspector.
 6. Ministry of Manpower (MOM) Singapore - Approved Inspector
 7. Pressure Equipment Directive (PED/97/23/EC) - Authorised inspector.
 8. Indian Boiler Regulations (IBR) India: Approved Inspector.
 9. Transportable Pressure Equipment Directive (TPED/99/36/EC) - Authorised inspector.
 10. Industrial Services inspections within the scope of Lloyd's Register normal services including inspection and certification of new construction boilers, pressure vessels, cookers, driers, reactors and all types of heat exchangers in accordance with the requirements of the relevant codes such as ASME VIII Div.1, ASME I, BS 2790, BS 1133, TEMA, EN, etc. at local manufacturers
 11. Quality inspection of all types of engineering equipments and industrial projects to ensure materials, construction and testing comply with the designed codes and client's specification.
 12. In-service/Periodical inspection of boilers, pressure vessels, heat exchangers, lifts and industrial cranes in accordance with Thai legislation safety law.
 13. Verification and certification for new fabrication of imported and local made boilers in accordance with Thai Boiler Regulations, Department of Industrial Works.
 14. Certify welding procedures and welder's performance tests to the ASME IX, BS, EN, API & AWS codes.
 15. Inspection and certification of plate materials, welding Consumables and pressure retaining components (pipes, fittings, etc.) to Lloyd's Register Rules/regulations, ASTM/ASME, BS, EN and all international standards.

QUALIFICATIONS:

Vocational Certificate in Machine Mechanic (Pre-Engineering Course) 1984 - 1987
King Mongkut's Institute of Technology, North Bangkok (KMITNB)
Industrial Technology College, Thailand

B.Eng. (Mechanical Engineering), Honour,
King Mongkut's Institute of Technology, North Bangkok (KMITNB)
Faculty of Engineering, Thailand 1987 - 1991

CAREER SUMMARY

July 2009 to date - Operation Manager, Energy Business
Lloyd's Register International (Thailand) Ltd.

July 2008 to July 2009 - Chemicals & Power Business Manager
Lloyd's Register International (Thailand) Ltd.

July 2005 to June 2008 - Asset Management Business (Industry) Manager,
Lloyd's Register Asia, Bangkok office, Thailand.

April 1998 to June 2005 - Engineer Surveyor/ASME Authorised Inspector (A.I.) to
Lloyd's Register Asia, Bangkok Thailand/LR Insurance Inc. USA : Industrial inspection
Services including boilers and pressure vessels constructions for exporting to USA, European
countries, Japan, Singapore, Malaysia, India, Australia, New Zealand and several countries and
manufacturing of various engineering equipments described above.

March 1995 - March 1998 - Senior Mechanical Engineer, Goodyear Thailand Public
Co., Ltd. : Manage and maintain/modify boilers, pressure vessels, air compressors, boiler feed
water system, cooling water system, mechanical parts of all machines in tire manufacturing
processes and control energy consumption, utility and mechanical parts/component of the plant.

April 1991 - March 1995 - Aircraft Engineer, Thai Airways International Public Co., Ltd.:
Central responsible engineer for line maintenance, condition monitoring, modification,
inspection and repairing of several types of aircraft engines.

PROFESSIONAL EXPERIENCE PRIOR JOINING LLOYD'S REGISTER 1991 - 1998

1995 - 1998 Senior Mechanical Engineer, Goodyear Thailand Public Co., Ltd.,

- Manage Factory Powerhouse which includes:
2 Steam Boilers capacity 24000 lbs/hr. (each)
5 Air Compressors
2 Deepwell pumps, 6 factory pumps and 1 chiller.
- Project Engineer for Factory expansion, contact and evaluate
contractors or Vendors.
- Handle factory energy consumption and energy projects for
performance improvement.
- Report to Government officials which includes:
Boiler Inspection, Boiler Operator Licences.
Pressure Vessel Inspection, etc.

1991 - 1995

Aircraft Engineer, Thai Airways International Public Co., Ltd.

- Prepare maintenance requirements, condition monitoring,
modification for aircraft engines of the aircrafts Boeing 747-200,
747-300, 747-400 and MD-11
- Supervise mechanics in line maintenances.
- Issue Technical investigation reports in case of accidents.

LLOYD'S REGISTER TRAINING COURSES

- | | | |
|--------|---|------|
| (i) | LR Initial Training Course, Materials & Welding Module (London, UK) | 1998 |
| (ii) | Non-Destructive Examination courses in UT, RT, PT, MT (London, UK) | 1998 |
| (iii) | LR Pressure Systems Course composed of inspection of ASME, BS 5500,
PED pressure vessels and piping systems (London, UK) | 1999 |
| (iv) | LR Offshore Course (London, UK) | 1999 |
| (v) | LR Industrial Training course (Mumbai, India) | 2002 |
| (vi) | LR Pressure Equipment Directive (PED) Training course (Malaysia) | 2003 |
| (vii) | LR Sales and Marketing Training course (Malaysia) | 2005 |
| (viii) | LR Capstone RBMI Sales Training course (Houston USA) | 2006 |
| (ix) | New Manager course (LR Asia Hong Kong office) | 2007 |
| (x) | ASME Continual training course (Malaysia) | 2008 |
| (xi) | ASME Sect. VIII Div.1 Training course (Thailand) | 2009 |
| (xii) | ASME AI/AIS Continual training course (Malaysia) | 2009 |
| (xiii) | Heat Management training course (LR Bangkok Thailand) | 2010 |
| (xiv) | AI/AIS Continual training course (Indonesia) | 2010 |

SPECIAL TRAINING COURSES (Other than LLOYD'S REGISTER COURSES)

(i)	Aircraft Airbus A300-600 basic courses for engineer (Thai airways Int. co., Ltd.) Compose of 4 weeks in house and on the job training about engine, all aircraft components and aircraft engineering systems.	1991
(ii)	Aircraft engine Pratt&Witney PW 4100 hardware familiarisation. (Bangkok)	1991
(iii)	Aircraft engine GE CF6-80C2 basic engine course. (Thai Airways, Bangkok)	1992
(iv)	Aircraft Boeing 747-400 basic courses (Thai airways Int. co., Ltd.) Compose of 6 weeks in house and on the job training about engine, all aircraft components and aircraft engineering systems.	1992
(v)	Steam fundamentals and distribution (Spirax Sarco, Bangkok, Thailand)	1995
(vi)	Energy conservation in industrial factory (Bangkok Thailand)	1995
(vii)	Powerhouse and engineering Management Training course. (Akron, USA.) comprising steam and utilities management, Tire manufacturing processes, Tire manufacturing machines, mould design, Aircraft tire making and retread.	1995
(iii)	Chemical for Boiler's Operator Training Programme, (NALCO Chemical Co., Ltd., USA.)	1995
(ix)	ISO 9000 Internal Auditor Course (Bangkok, Thailand)	1997
(x)	Boiler Operator Training Programme (Bangkok, Thailand)	1997
(xi)	Industrial water treatment processes (Rangsit University, Thailand)	1997
(xii)	Operating and maintenance of steam and hot oil boiler (KMUTT, Bangkok)	1997
(xiii)	Professional boiler inspector course (Bangkok Thailand)	1998
(xiv)	ASME Section I, II, IV, VIII Div. I and IX training course, Carroll Engineering, Boston, MA, USA.	2004
(xv)	' A ' Endorsement training course, National Board of Boiler and Pressure vessels, Columbus, Ohio, USA.	2004
(xvi)	Project Management for Engineer, Bangkok Thailand.	2005
(xvii)	Confine Space Training course (Thai Safety training, Saraburi)	2008
(xviii)	Tasks and Responsibilities of Welding Personnel Seminar (WTT, Thailand)	2009
(xix)	Defensive Driving training course (TT&T Training center, Ayuthaya Thailand)	2010
(xx)	Phased Array UT training course (TWI Training center KL, Malaysia)	2010
(xxi)	Asset Performance and Reliability Management Conference (Bangkok Thailand)	2010
(xxii)	PAS 55 Master class Training by Institution of Asset Management UK (KL, Msia)	2011

Content

PAS.55 Asset Management:

- What is it and why all the fuss ?
- PAS.55 in more detail.
- How to Approach
- Some early Lesson
- Other IAM initiatives

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What's at stake?

a view at asset integrity management in your industry



Business Issues

In a global world, brand and reputation are of growing importance

It is important to demonstrate good Asset Stewardship

- ▶ To gain stakeholder confidence
- ▶ To demonstrate long term focus and commitment to delivering product/service sustainably



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Investor Issues

Cost of Capital is high (and/or scarce) - Drives behaviours to squeeze additional revenue from existing assets to support business investment and growth. The corporate capex/opex tradeoff?

But:

- ▶ Investors have become more risk averse
- ▶ Whilst capital is flowing towards infrastructure, there is greater focus on Operational Risk and we are seeing greater emphasis on hands on management of infrastructure



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Asset Issues

Assets can operate in higher risk environments

Assets need to be available when required

- ▶ These can drive plant managers to focus on local fire-fighting
- ▶ Plant managers have their own trade-offs to perform between capital and operational expenditure



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So - what is Asset Management?



Maintenance

Reliability

Fault Rectification

Logistics

Asset Registers

Capital Programme

IT/ERP Systems

ROI

Spares

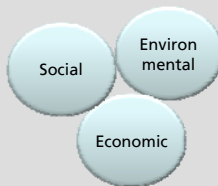
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Secure a place in the future

Use Business Excellence key practices to deploy a Balanced Strategy

Balanced Strategy:

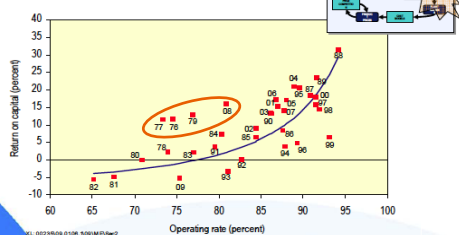


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Look out for the winners

Markets and Profits



CHEMSYSTEMS TRAINING

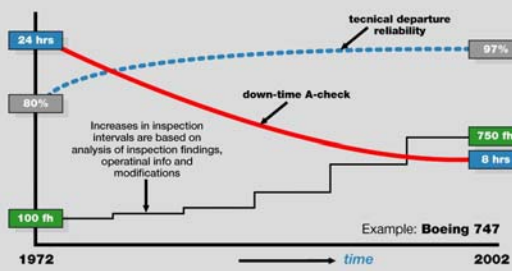


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Can asset owners respond to these challenges?

The contribution of a long term asset strategy to the 747's performance



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Put appropriate control system in place



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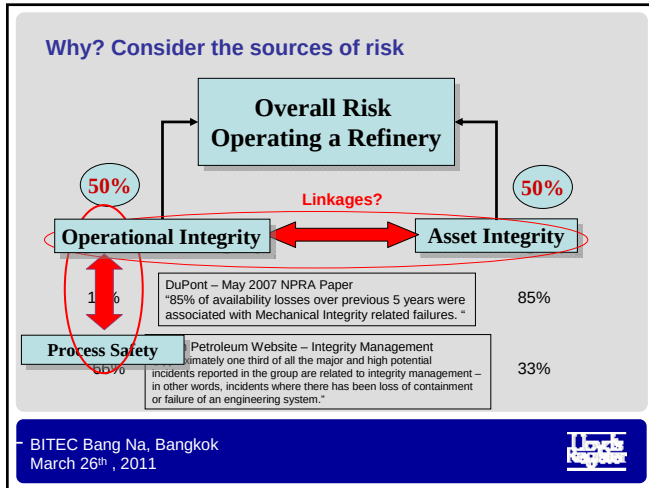


Managing the asset life cycle is managing Risk



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Overview of PAS 55 – The Process and Options

BSI PAS 55 – History

- Launched on 11th May 2004 in London
- Two parts:
 - Requirements (Part 1)
 - Guidance (Part 2)
- Lloyd's Register – principal sponsor plus key contributor
- 1st revision: end of 2008

See www.bsi-global.com

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Lloyd's Register

..... water industry

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Lloyd's Register

..... electricity industry



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..... gas industry

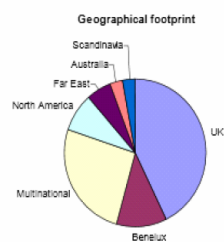
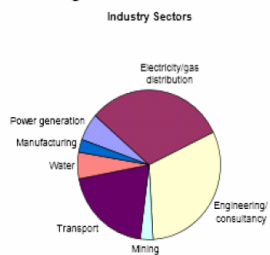


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PAS 55:2008 Sponsors and Review Panel

49 organisations from 15 industries in 10 countries



Source: The Institute of Asset Management

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Where does it live in the Organisation?



High level corporate direction and control



Must establish connection between top management and the asset base



Assets and Engineering Activity

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Do you recognise this problem?



Enterprise Level

Poor delivery of organisational value

Strategic Level

Collection of sub-optimised initiatives with no alignment to corporate objectives

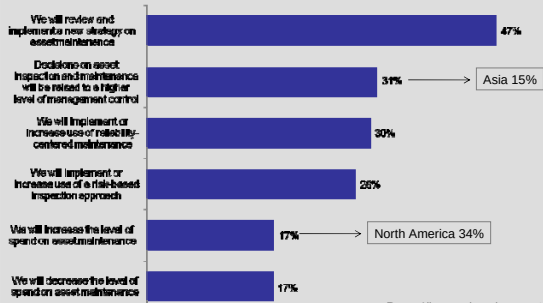
Tactical Level

Collection of unaligned performance cost and risk trade off and 'optimisation'

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Expected changes to plant inspection and maintenance as a result of the downturn

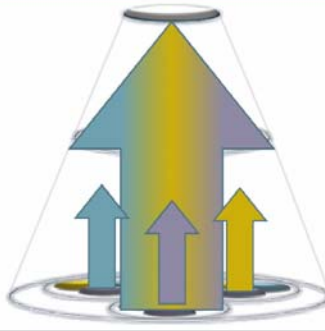


Q. Please indicate which of the following changes your organisation will make?

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Is this where you want to be?



Enterprise Level

Delivery of true organisational value

Strategic Level

More advanced optimisation with better alignment to corporate objectives

Tactical Level

Aligned performance cost and risk trade off and optimisation

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Case Study 1

A UK Power Generation company (part of an international power group) has completed the first 3 years of a major asset management change programme based around PAS55. They have quoted the following benefits at a high level:

- 20% reduction in Ops and Maintenance Costs
- 22% increase in plant availability
- 25% reduction in forced plant outage rates
- 10% reduction in Capital expenditure as a result of the application of consistent optimisation criteria

Additionally they have achieved the following benefits at working level:

- A move from 5% of all maintenance being planned preventive to one where 70% of maintenance is now planned preventive. This has reduced unplanned downtime (See above bullet); allowed better staff utilisation and reduced the use of contractors.

Source: Client relationship of Smart Asset Management Solutions Limited



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Case Study 2



MTR Corporation Hong Kong

At a recent asset management conference in the UK, MTR quoted the following changes when describing their asset management journey.

- Since certification compliant against PAS55 in 2005 their metrics for rolling stock reliability have improved from 1000 car Km/failure to 3500 car Km/failure
- Railway operating cost per revenue car Km has decreased by 20% since 2000

Source: IETIAM Asset Management Conference Presentation by MTR, November 2010

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Case Study 3

Diageo – St James Gate Brewery, Dublin

At a recent asset management conference in the UK, Diageo quoted the following changes when describing their asset management journey.

- Plant efficiency has increased from 66% in 2003 to 85% in 2009
- Decanted kegs reduced from 40k in 2003 to 1.5k in 2009

Source: IET/AM Asset Management Conference Presentation by Diageo, November 2009



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What is PAS 55?

- An organisational standard, developed by the industry.
 - ✓ It incorporates the best practice in asset management
 - ✓ It supports the implementation of best practice in your organisation
 - ✓ Flexible, focuses attention on the key issues
 - ✓ Practical, no nonsense
 - ✓ Clear and transparent, delivers management control
 - ✓ Cost effective
 - ✓ Good track record
- Certification supports implementation, and ensures good functioning

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What is Asset Management?



BSI PAS 55 definition:

"systematic and co-ordinated activities and practices through which an organisation optimally and sustainably manages its assets and asset systems, their associated performance, risks and expenditures over their lifecycle for the purpose of achieving its organisational strategic plan"

Source: PAS 55-1:2008

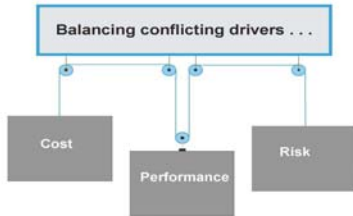
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The Balancing Act!

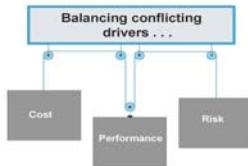


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Asset Management Objectives

PAS55 states that the objective of asset management is "to ensure (and to be able to demonstrate) that assets deliver the required function and level of performance in terms of service or production (output), in a sustainable manner, at an optimum whole life cost without compromising health, safety, environmental performance, or the organisation's reputation".



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Checklist

Does your organisation:

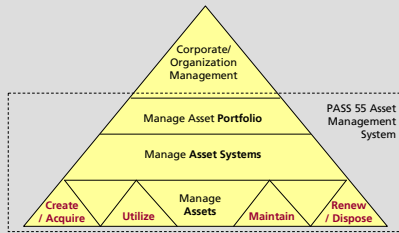
- ▶ fail to meet some of its objectives?
- ▶ have initiative overload?
- ▶ have internal conflict for investment or resource?
- ▶ have a lack of clarity over objectives?
- ▶ have uncertainty of risk tolerability?

▶ If the answer is "yes" to any of the above then you should consider an asset management approach and look at PAS 55.

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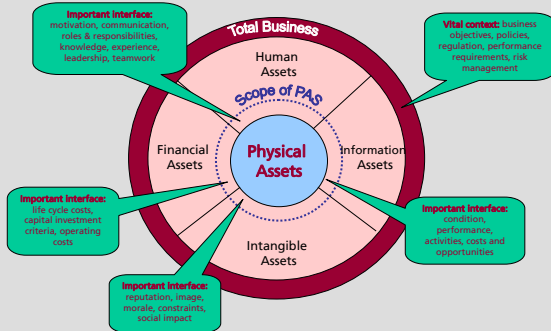
Levels of assets and their management



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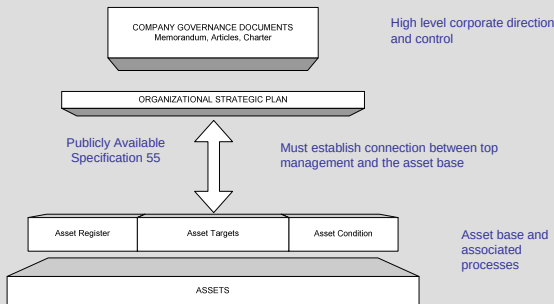
Scope - Relationship of PAS55 to Other Assets



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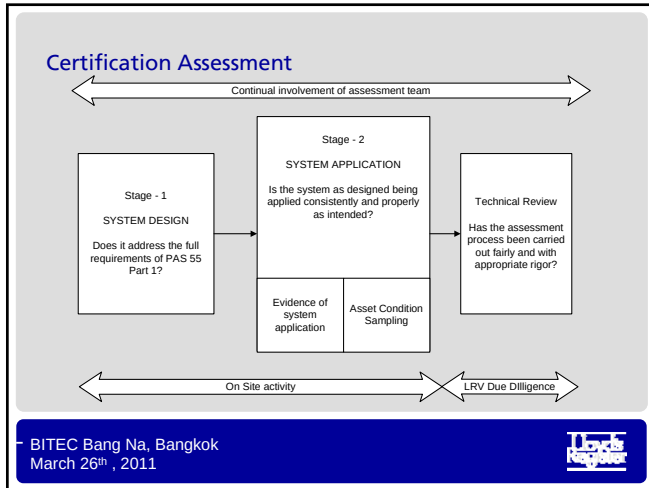


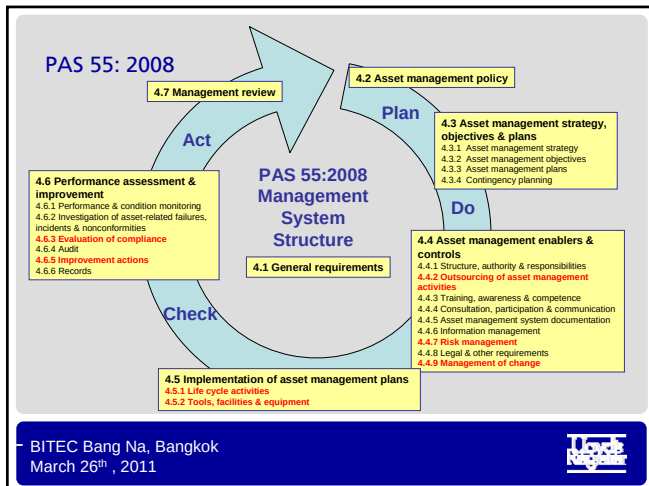
The PAS 55 Asset Management approach

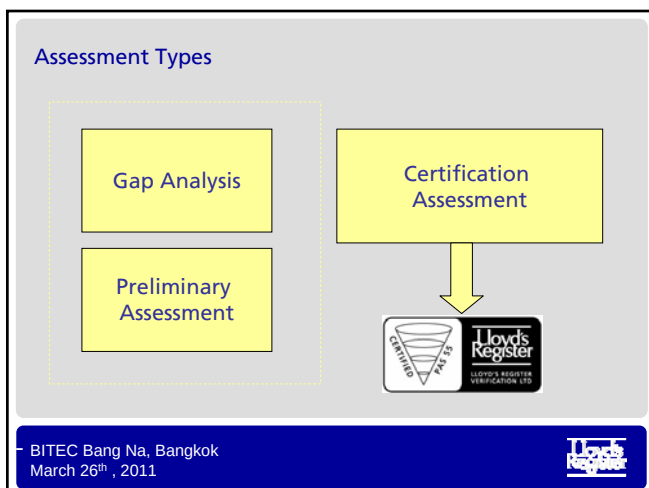


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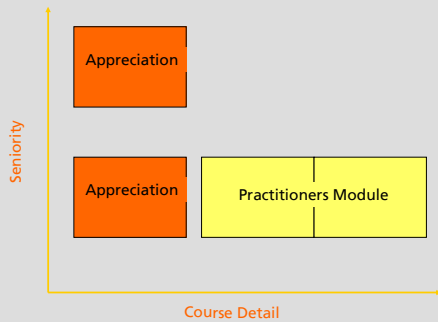








AM Training Courses



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Typical concerns relating to PAS 55

We already have several other management system certifications.
Won't PAS 55 mean we have to develop a new asset management system?

PAS 55 was specifically designed to be compatible with other management systems. PAS 55 does NOT require a standalone management system. Our experience as assessors to date has been that many organisations have an AM system comprising elements of existing management, safety management and environmental management systems.

Won't PAS 55 result in additional and duplicate audits?

The potential for additional audit exists. The LR approach is one of applying a light touch to those areas already certified by an accredited certification body. There is real potential to align surveillance programmes to gain efficiency.

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Feedback from users of PAS 55

95% of respondents to a recent survey conducted by the Institute of Asset Management specified the following identified benefits from adopting PAS 55:

- increased control/efficiency,
- increased confidence of senior executives,
- increased stakeholder confidence,
- improved quality services,
- enhanced reputation.

Source: BSI/IAM Survey of PAS 55 Users, October 2007

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Benefits achieved by users of PAS 55

Numerous companies across several sectors have realised substantial benefits through PAS 55:

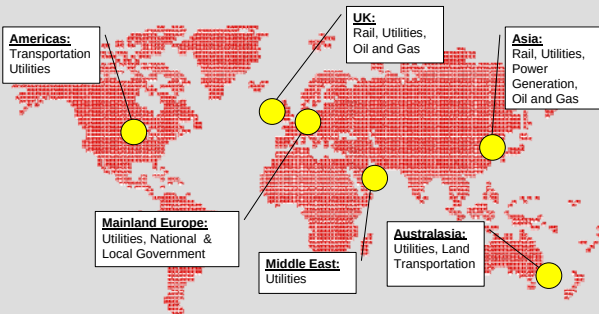
- oil company: 50% reduction in operating costs with 15% increase in output,
- electricity network: 21% reduction in costs with 27% improvement in quality and reliability,
- transport provider: 25% reduction in unit costs with 41% improvement in customer service.

Source: IAM Launch of PAS 55:2008, November 2008

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BSI PAS 55 – Progress to Date



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PAS 55 Client Base



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Asset owners are expecting a real contribution from asset management to achieve sustainable operations

Due to reliability and integrity issues a major petrochemical producer experienced:

- between 2006 and 2008 unscheduled shutdowns going up from 33 to 53
- Lost production increasing by 3.5% (prod A) and 4.4% (prod B)
- Significant energy losses
- Costing the producer in excess of Euro 75 mln/yr

Top management decided to postpone all capacity expansion investments and instead rely on the introduction of Risk Based Inspections to regain the 'lost' capacity

It will be up to us to deliver this strategic capability!!

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Create a place in the future for your organisation

Do Something that Matters

Lloyd's Register

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For more information, please contact:

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Lloyd's Register International
(Thailand) Ltd.

E chamni.mosagul@lr.org

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