Implementing PAS 55, Asset Management Standard, Through FMRIMS and MAINTintelligence Synergy

By Namik Kosaric P.Eng.
Principle Consultant
NORCAN RELIABILITY ENGINEERING
TABLE OF CONTENTS

1.0 MANAGEMENT SUMMARY .......................................................................................... 5
2.0 INTRODUCTION ........................................................................................................ 8
3.0 THE PAS 55 ASSET MANAGEMENT STANDARD .................................................. 10
4.0 THE SCOPE OF PAS 55 .......................................................................................... 12
5.0 PAS 55 AND COMPLIANCE .................................................................................... 14
6.0 THE BENEFITS OF PAS 55 ..................................................................................... 16
7.0 PAS 55: FUTURE CHALLENGES AND DIRECTIONS .......................................... 18
8.0 HOW FMRIMS ASSET MANAGEMENT SUPPORTS THE BENEFITS OF PAS 55 .................................................................................................................. 20
   8.1 PAS 55 4.3: Asset management strategy, objectives, and plans ...................... 24
   8.2 PAS 55 4.4: Asset management enablers and controls .................................. 26
   8.3 PAS 55 4.4.7: Risk management ..................................................................... 34
   8.4 PAS 55 4.4.8: Legal and other requirements .................................................. 36
   8.5 PAS 55 4.5: Implementation of asset management plans .............................. 37
   8.6 PAS 55 4.6: Performance assessment and improvement .............................. 41
   8.7 PAS 55 4.6.1: Performance and condition monitoring ................................. 42
9.0 CONTACTS FOR MORE INFORMATION ................................................................... 44
TABLE OF FIGURE

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Web based Asset Management System</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>Integrated Asset Management System</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>Maintenance and Condition Monitoring Asset Management System</td>
<td>22</td>
</tr>
<tr>
<td>4</td>
<td>Benchmarking</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>Best Practices</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>MAINTellegence Integrated Asset Management System</td>
<td>27</td>
</tr>
<tr>
<td>7</td>
<td>MAINTellegence Integrated Asset Management System</td>
<td>28</td>
</tr>
<tr>
<td>8</td>
<td>MAINTellegence Integrated Asset Management System</td>
<td>29</td>
</tr>
<tr>
<td>9</td>
<td>MAINTellegence Intelligent Diagnostics</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>MAINTellegence Predictive Technology</td>
<td>31</td>
</tr>
<tr>
<td>11</td>
<td>MAINTellegence Visual Inspection</td>
<td>31</td>
</tr>
<tr>
<td>12</td>
<td>MAINTellegence Visual Inspection</td>
<td>32</td>
</tr>
<tr>
<td>13</td>
<td>MAINTellegence Intelligent Diagnostics</td>
<td>32</td>
</tr>
<tr>
<td>14</td>
<td>MAINTellegence Integrated Asset Management System</td>
<td>33</td>
</tr>
<tr>
<td>15</td>
<td>Risk due to Degraded Asset Management System</td>
<td>34</td>
</tr>
<tr>
<td>16</td>
<td>Risk Based Priority</td>
<td>35</td>
</tr>
<tr>
<td>17</td>
<td>Risk Based Equipment Reliability Strategy</td>
<td>35</td>
</tr>
<tr>
<td>18</td>
<td>Manufacturing Performance Improvements</td>
<td>37</td>
</tr>
<tr>
<td>19</td>
<td>Continuous Manufacturing Performance Improvements</td>
<td>38</td>
</tr>
<tr>
<td>20</td>
<td>Implementing Continuous Manufacturing Performance Improvements</td>
<td>38</td>
</tr>
<tr>
<td>21</td>
<td>Pillars for Continuous Manufacturing Performance Improvements</td>
<td>39</td>
</tr>
<tr>
<td>22</td>
<td>Culture for Continuous Manufacturing Performance Improvements</td>
<td>40</td>
</tr>
<tr>
<td>23</td>
<td>Team Progress Reporting</td>
<td>40</td>
</tr>
<tr>
<td>24</td>
<td>Defining and Implementing Improvements</td>
<td>41</td>
</tr>
<tr>
<td>25</td>
<td>Managing Improvements</td>
<td>42</td>
</tr>
</tbody>
</table>
1.0 MANAGEMENT SUMMARY
1.0 MANAGEMENT SUMMARY

The British Standards Institute's Publicly Available Specification 55 (PAS-55), Asset Management provides organizations with a framework for establishing good practices in asset management.

PAS 55 can provide guidelines and recommendations on “WHAT TO DO” although it does not prescribe solutions on how to do it.

Developing asset management plans can amount to a sizable body of work requiring substantial resource investment relative to sourcing and application of Best Practices proven by pacesetting operations.

**PAS 55 provides:**

- a standard and consistent approach which also delivers a level of continuity to asset management service delivery over the life cycle of the project
- less susceptible to be affected by system administration personnel changes during the term of the project due to the robust framework
- a clear definition of asset management which can be understood at all levels and by all staff disciplines
- a framework which promotes a continuous improvement business culture
- widely accepted as a world-wide specification for organizations seeking to demonstrate a high level of professionalism in managing their physical assets
- the asset management plan is based on a reputable and sustainable reference source which can be used as a base reference to maintain asset management system continuity and sustainability
- the asset management framework can compliment and be integrated with existing organization strategic plans and support management systems, e.g. safety, quality, environmental
- flexible to changing strategic plans
Industry needs specifics “HOW TO” guidance to implement PAS 55 as a comprehensive management system.

FMRIMS (Facility Maintenance Reliability Integrity Management System, Norcan Reliability Engineering) & MAINTintellegence Asset Management (©DMSI Reliability Maintenance, Maintenance Management System, Asset Management System, Condition Monitoring Systems) provide “HOW TO” expertise for PAS 55 implementation!

FMRIMS & MAINTintellegence provide pacesetting Best Practices and Processes for capital asset-intensive industries to supplement PAS 55 “WHAT TO” guidance document.

Today’s industry is plagued with nuclear disasters, fires, oil spills and fires. This is putting specific pressure on the need for good asset management with increased expectations from companies, regulators, and shareholders at a time when assets are becoming much more interconnected, instrumented, and intelligent.

The PAS 55 standard need to be supplemented by expertise, best practices and business processes to ensuring safety, reliability and maintenance effectiveness across the growing assets manufacturing base and is aligned with management systems within the manufacturing organization.

FMRIMS & MAINTintellegence know how and processes can implement PAS 55. The FMRIMS & MAINTintellegence software provides capabilities and functionalities which allow asset-intensive industries to implement this standard. Using FMRIMS & MAINTintellegence Asset Management software to support the PAS 55 standard can improve customer service, increase return on assets, enable greater compliance, improve asset performance, and reduce risk—all in a shorter time period.

Industry experts from FMRIMS & MAINTintellegence can assist organizations in realizing these benefits through developing appropriate strategies and ensuring successful implementation of FMRIMS & MAINTintellegence Asset Management leveraging the PAS 55:2008 asset management standard.
2.0 INTRODUCTION
2.0 INTRODUCTION

Availability, Reliability and Maintenance Costs are critical parameters in operating plants. Effectiveness of operating plants varies significantly in industry. Pacesetters spent ¼ of maintenance costs compared to low performers with better safety and asset utilization.

Best Practices utilized by pacesetters are seldom know or applied by low performers.


This new standard is a high level document outlining the best practices in asset management systems.

PAS 55 is becoming internationally accepted as the industry standard for quality asset management. The standard acts as a valuable guideline for asset lifecycle management, quality control, and compliance.

The purpose of this document is to describe the background and objectives of the PAS 55 standard and how currently available enterprise asset management (EAM) systems, specifically FMRIMS & MAINTelligence Asset Management, enable the implementation of this standard.
3.0 PAS 55 ASSET MANAGEMENT STANDARD
3.0 PAS 55 ASSET MANAGEMENT STANDARD

PAS 55 is becoming internationally accepted as the industry standard for quality asset management, acting as a valuable guideline for asset lifecycle management, quality control, and compliance.

PAS 55 asset management standard gives guidance and best practices on developing and implementing “WHAT TO” for asset management.

PAS 55 is a high level guidance defining asset management as “systematic and coordinated activities and practices through which an organization optimally and sustainably manages its assets and asset systems, their associated performance, risks and expenditures over their lifecycles for the purpose of achieving its organizational strategic plan.”

There are different levels at which asset units can be identified and managed—ranging from discrete assets to more complex functional asset systems, networks, sites, or diverse portfolios.

The standard is focused on all types of assets, varying from critical or strategic physical assets to human assets. The physical assets are positioned in the following four classes:

- Plant and production (oil, gas, chemicals, pharmaceuticals, food, Electronics, power generation)
- Infrastructure (railways, highways, telecommunications, water and wastewater, electric and gas distribution)
- Mobile assets (military, airlines, trucking, shipping, rail)
- Real estate and facilities (offices, schools, hospitals)

PAS 55 states that the definition of asset management represents a significantly greater scope than just the maintenance or care of physical assets.
4.0 SCOPE OF PASS 55
4.0 THE SCOPE OF PAS 55

PAS 55 standard can benefit companies to gain competitive advantage by ensuring that they are effectively managing their asset. This standard must be implemented as an integral part of the overall business environment of a manufacturing plant.

Data on condition, performance, activities, costs, and opportunities are needed for a implementation.

The shop floor operator and mechanics perspective is necessary to assess motivation, expertise, and roles and responsibilities of the people and leadership teams involved within the organization.

PAS 55 requirements address “good practices” rather than “best practices”.

All applied processes must be effective and must require evidence of what is being done and why.

The standard is non-prescriptive—as in standards like the International Organization for Standardization (ISO) 9001, ISO 14001, or Occupational Health and Safety Assessment Series (OHSAS) 18001.

All elements of the standard framework need to be covered in the process.

PAS 55 standard is independent of an asset distribution or asset ownership structure and is based on the concept of the PDCA cycle (Plan-Do-Check-Act), meaning that measurable continual improvement is an integral part of the approach. This makes the PAS 55 standard an ideal complement to management systems that may already be in place such as Process Safety Management.

Using the standard provides assurance to the organization and to its external stakeholders that physical infrastructure assets are managed.

PAS 55 standard can benefit operating plants to gain competitive advantage by ensuring that they are managing their assets using pacesetting Best Practices and providing direction for use of FMRIMS & MAINTelgence Asset Management, enable the implementation of this standard.
5.0 PAS 55 AND COMPLIANCE
5.0 PAS 55 AND COMPLIANCE

PAS 55 is designed to help organizations develop asset management by meeting PAS 55 requirements.

Requirements address “good practices” rather than “best practices” in each area. Best Practices application is covered by FMRIMS & MAINTntelligence Asset Management.

All applied processes must be effective and must require evidence of what is being done and why. The standard is non-prescriptive-as in standards like the International Organization for Standardization (ISO) 9001, ISO 14001, or Occupational Health and Safety Assessment Series (OHSAS) 18001. All elements of the standard framework need to be covered in the process.

PAS 55 standard is independent of an asset distribution or asset ownership structure and is based on the concept of the PDCA cycle (Plan-Do-Check-Act), meaning that measurable continual improvement is an integral part of the approach. This makes the PAS 55 standard an ideal complement to certified management systems that may already be in place.

Using PAS 55 standard with FMRIMS & MAINTntelligence Asset Management can provide assurance to the organization and to its external stakeholders that physical infrastructure assets are managed in an pacesetting way.
6.0 BENEFITS OF PAS 55
6.0 THE BENEFITS OF PAS 55

PAS 55 standard can benefit companies not only from the regulatory point of view, but also to help them gain competitive advantage by ensuring that they are effectively managing their assets using pacesetting practices outlined in FMRIMS & MAINTintellegence Asset Management.

Using this standard methodology with FMRIMS & MAINTintellegence Asset Management for comprehensive asset management can drive cost savings and service improvement.

Overall, using PAS 55 standard with FMRIMS & MAINTintellegence Asset Management encourages companies to:

- Achieve asset management pacesetter best practices.
- Operation and Maintenance Strategy for entire asset base and information strategy in accordance with the company’s overall strategy.
- Organize around true lifecycle asset management processes.
- Challenge and reduce current time-based work and replace with a “risk-based” management approach.
- Position asset management-specific accountability from the “shop floor to the top floor” and create motivational performance management.
- Focus on building the asset management knowledge base.
- Understand and target the tools, and engage the entire organization.
- Adopt a truly holistic approach by continuously challenging good or best practices.
7.0 PAS 55: FUTURE CHALLENGES AND DIRECTIONS
7.0 PAS 55: FUTURE CHALLENGES AND DIRECTIONS

Specific challenges for asset management include:

- Integrating asset management into companies’ long-term equipment reliability strategies.
- Connecting and integrating asset management with overall management strategies and processes.
- Developing a competency-building framework for asset management.
- Assuring environmental, regulatory, and legal compliance to meet safe and sustainable manufacturing.
8.0 HOW FMRIMS ASSET MANAGEMENT SUPPORTS THE BENEFITS OF PAS 55
8.0 HOW FMRIMS ASSET MANAGEMENT SUPPORTS THE BENEFITS OF PAS 55

FMRIMS & MAINTintelligence Asset Management provides PAS 55 with knowledge base and communication mechanism for the users interface and a secure data repository for all asset-related information.

FMRIMS & MAINTintelligence Asset Management provides the following capabilities:

- A web based data base for all asset-related information
- Performance criteria and associated key performance indicator (KPI)
- The identification of performance failure
- Tracking and management of incidents, problems and change
- Support for corrective and preventive action(s)
Implementing PAS 55, Asset Management

Figure 1 - Web based Asset Management System

Depository and records of equipment reliability strategy, equipment conditions, past incident investigations is a corporate knowledge base. This knowledge base need to be managed and frequently revisited to ensure corporate compliance to the implemented management systems (PSM). Seldom corporations have such a data base, as shown on Fig.1, located on the Intra-web corporate platform to guide current investigation and provide records of past investigations!

The ability of the FMRIMS & MAINTelligence Asset Management workflow engine to model and monitor processes and procedures provides a communication mechanism for the user community and a secure data repository for all asset-related information.

FMRIMS@RCM/RBI/IPF + MAINTelligence Synergy

The CLIENT program is based on the powerful synergy of FMRIMS and MAINTelligence asset management systems.

Figure 2 - Integrated Asset Management System
FMRIMS@RCM/RBI/IPF will provide front end assessment of operational, maintenance and / or redesign needs to ensure that assets and organization can provide competitive and effective performance.

MAINTelligence is to provide world class maintenance and condition monitoring database and inputs by operators and mechanics using hand held units.

Figure 3 - Maintenance and Condition Monitoring Asset Management System

**FMRIMS ASSESSMENT**

**FMRIMS™** application, integrated systems, managing processes and technology will be used to assess your organization against other leading companies and discover the factors preventing the superior performance

At the end of our initial diagnostic analysis, CLIENT will clearly understand:

- The sources of competitive advantage
- The changes in business and operational strategies required to meet achieve pacesetter performance and bring lasting change.
- How to exploit your core capabilities, stretch goal setting and determine performance metrics.
- Where to apply proven best practices that drive out waste and increase productivity.
Having defined areas of improvement, CLIENT can develop and implement integrated FMRIMS™ + MAINTelligence solutions customized to CLIENT operational infrastructure.
8.1 PAS 55 4.3: Asset management strategy, objectives, and plans

PAS 55 states: “where separate asset management information systems exist, the organization shall ensure that the information provided by these systems is consistent.”

FMRIMS & MAINTelligence Asset Management is to be able to integrate efficiently with a range of other systems, so that at any one time there is only “one version of the truth” in relation to asset information. In this respect, the capability to integrate with other external systems—such as FMRIMS & MAINTelligence Asset Management components—provides a standards-based approach to systems integration.

FMRIMS BENCHMARK

Benchmarking performance and best practices will give CLIENT capability to develop internal strength and resources required for becoming the best in class.

i.) Numerical Benchmarking

Competition availability and maintenance cost

ii.) Best Practices Benchmarking

What has competition done to achieve cost and availability advantage?

Figure 4 - Benchmarking

FMRIMS EQUIPMENT RELIABILITY STRATEGY
FMRIM@RCM/RBI/IPF software package will be used to deliver improvements in operation, maintenance and bad actors re-design to achieve pacesetter availability, maintenance and operating costs. The software and system is designed for corporate web application.

FMRIM@RCM/RBI/IPF will be applied to connect operation, re-design and maintenance tasks considering effects on failure modes, failure mechanism and reliability. This link provides the direct connection to a clear ROI for an activity and/or program.

FMRIM@RCM/RBI/IPF includes industry's most comprehensive oil and gas industry data repository of component information, including failure modes, failure mechanism, failure probabilities, operator, maintenance and re-design tasks, intervals, and effectiveness based on customer defined risk tolerance criteria. This will be strengthened with MAINTelligence input of Best Practices proven by Operating Industry to yield superior performance improvements (Lafarge North America)

FMRIM@RCM/RBI/IPF includes over 600 common infrastructure components, thousands of operation, maintenance and re-design tasks, failure mechanism and failure modes codified from extensive number of years of experience.

Best-In-Class Strategies

Lafarge North America

Utilizes MAINTelligence technology in the following areas:
- Raw materials and mill circuit
- Drive motor, Safety and housekeeping checklist
- Equipment specific checklist: Pump, Compressor, and Bucket Elevator

Examples of Money Saving Inspection:
- Raw Mill FK Pump Bearing Failure
- Cooler Compartment Fan Motor Bearing Failure
- Cooler Compartment Fan Drive Belt Failure
- Svedala Feeder Chain Link Failure
- Kiln Feed Bucket Elevator Vibration
- Gearbox Oil Leaks
- Feeder Drag Chains out of Time
- Precip Coal Mill Separator Drive Belt Slipping Off
- Numerous Safety Issues
- Numerous Housekeeping Issues

Figure 5 - Best Practices
8.2 PAS 55 4.4: Asset management enablers and controls

This section of PAS 55 deals with structure, authority, and responsibilities for asset management. FMRIMS & MAINTelligence Asset Management provides full support to many of the functions noted in this section of the standard, including procedures for:

- Tactical planning, development, management of schedules, and resource allocation.
- Asset configuration, calibration, and maintenance.
- Management of spare parts.
- Maintenance, inspection, and testing of systems and equipment.
- Management of change and risk mitigation.

MAINTelligence MAINTENANCE MANAGEMENT

MAINTelligence includes comprehensive process based on data transmission and analysis using a hand help units to input data by operators, mechanics and engineers.

MAINTelligence provides a series of templates to input maintenance and operating data.

MAINTelligence provides a process to integrate decision making and problem solving based on control of limits that can lead to failures. The software and system is designed for corporate web application.
Asset and Maintenance Management

MAINTelligence is a full-featured maintenance management system (CMMS) with advanced scheduling capability, asset tracking, spare parts management, root cause failure analysis and purchasing / procurement capabilities. Track work requests, work orders, tools, personnel, parts inventory… and much more! The SmartSchedule™ system lets you trigger work orders by calendar, meter value, operation state and machine condition.

Figure 6 - MAINTelligence Integrated Asset Management System
Asset Basic Care and Equipment Inspections

MAINTelligence is the leader in the field of automated equipment inspection. MAINTelligence InspectCE handheld software is versatile enough to handle:

- Operator and Reliability (Asset) Basic Care
- PM, Safety and Environmental Routes
- Work orders – managing and tracking.

Don’t let inspection data go into the trash can—turn your inspections into a valuable resource for monitoring equipment health, improving safety and increasing production. Replace your clipboard and capture the knowledge of your aging workforce with MAINTelligence. Our handheld units are designed to be rugged, easy to use and effective both for operations and maintenance personnel.

Figure 7 - MAINTelligence Integrated Asset Management System
MAINTelligence is the only system you need to build a comprehensive machine condition monitoring program. Build a fully integrated equipment health monitoring system using ALL of the available monitoring technologies:

- Vibration analysis
- Lubricant analysis,
- Ultrasonic measurements,
- Thermography,
- Motor monitoring

All the technologies reside in one program and in one database!

Figure 8 - MAINTelligence Integrated Asset Management System
MAINTelligence’s intelligent agents for equipment health assessment and work scheduling are fully customizable to create a complete, integrated and automated equipment reliability system. The diagnostic tools review and analyze large amounts of machinery vibration, lubrication and inspection data, using the extensive libraries for high performance diagnostics.

Figure 9 - MAINTelligence Intelligent Diagnostics
Implementing PAS 55, Asset Management

Predictive Technology Integration

- Vibration Analysis
- Oil Analysis “Tribology”
- Ultrasound
- Infra-Red

Figure 10 - MAINTellegence Predictive Technology

VISUAL INSPECTION

Make visual inspections easier and more accurate using pre-defined pick lists.

Figure 11 - MAINTellegence Visual Inspection
VISUAL INSPECTION

Download schematics of machines and parts, or upload sketches you make in the field.

Download instructions and alert procedures.

Figure 12 - MAINTellegence Visual Inspection

VISUAL INSPECTION

Attach condition monitoring instruments like vibration level meters and temperature guns.

Figure 13 - MAINTellegence Intelligent Diagnostics
VISUAL INSPECTION

Display trends of gauge reading data, fluid levels, vibration levels.

Download as much historical data as you need!

Figure 14 - MAINTellegence Integrated Asset Management System
8.3 PAS 55 4.4.7: Risk management

FMRIMS & MAINTelligence Asset Management manages the day-to-day activity of operation and maintenance work and has a specific role to play in supporting the identification and management of asset-related risks.

Figure 15 - Risk due to Degraded Asset Management System

FMRIMS & MAINTelligence Asset Management has a built-in formal structure for reporting on asset failures by individual asset and by asset type. This in turn supports the mean time between failure (MTBF) and mean time to failure (MTTF) types of analysis, and feeds key data into failure mode and effects analysis (FMEA), which is a key part of Reliability-Centered Maintenance (RCM).
Risk assessment reviews and authorization processes can be modeled using the FMRIMS & MAINTintelligence Asset Management workflow, and notifications and deviations can be used to communicate and monitor status as well as individual or team activities.

Figure 16 - Risk Based Priority

Figure 17 - Risk Based Equipment Reliability Strategy
8.4 PAS 55 4.4.8: Legal and other requirements

FMRIMS & MAINTelligence Asset Management ensures that information about regulatory and statutory requirements is associated with assets and work procedures, by making employees aware of the procedures and subsequently able to take the appropriate actions.

FMRIMS & MAINTelligence Asset Management also makes it possible to generate the appropriate reports to monitor legal and statutory compliance.
8.5 PAS 55 4.5: Implementation of asset management plans

FMRIMS & MAINT Intelligence Asset Management software has also developed an implementation methodology to ensure support of all objectives for a successful implementation of PAS 55, based on industry and subject matter experience in this domain.

MANUFACTURING PROFIT IMPROVEMENTS

To keep Client Operating plant running effectively, there is a need to achieve zero defects, zero breakdowns and zero accidents.

FMRIMS@MPI is a strategy driven, issues based approach for increasing revenue, reducing costs, optimizing assets, leveraging technology and increasing effectiveness across the value chain.

FMRIMS@MPI - a world wide proven approach
- Leverages unparalleled experience of all sizes across industries
- Provides practitioners who have extensive functional, industry and profit improvement expertise
- Supplies the right tools / analytics for each client situation
- Targets high impact areas across the value chain
- Identifies critical enablers to achieve benefits rapidly

Figure 18 - Manufacturing Performance Improvements

FMRIMS@MPI is based on the Japanese concept of Total Productive Maintenance, which is similar to the western concept of World Class Manufacturing.
Implementing PAS 55, Asset Management

FMRIMS@MPI is an industrialized system of continuous improvement

<table>
<thead>
<tr>
<th>Standardized approach and methods</th>
<th>Balanced top-down / bottom-up approach</th>
<th>Visualization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pillars, routes, methods</td>
<td>KPI driven</td>
<td></td>
</tr>
<tr>
<td>Extended participation</td>
<td>Inter-functional working groups</td>
<td>Systematic skills improvement</td>
</tr>
</tbody>
</table>

Figure 19 - Continuous Manufacturing Performance Improvements

FMRIMS@MPI can assist Client Operating Company to succeed in reaching a pacesetter performance and prosper for the future, in providing technology and know-how to drive the necessary productivity and hence competitiveness by unlocking the potential of their biggest asset: Client Operating Company people.

**FMRIMS@MPI IMPLEMENTATION**

FMRIMS@MPI is the process of analyzing the flow of information and materials in an environment and continuously improving the process to achieve enhanced value for the enterprise.

It uses the building blocks of: standardized work, workplace organization, visual controls, effective plant layout, quality at the source, batch reduction, teams, customer demand-based manufacturing, point-of-use storage, quick changeover, one-piece flow, cellular manufacturing, and tact time.

FMRIMS@MPI also applies the modern elements and technologies of scrap reduction, process improvements in machining and tool selection as well as material selection, set-up reduction, Just-In-Time, Kaizen, world class manufacturing, synchronous manufacturing, and inventory management.

Figure 20 - Implementing Continuous Manufacturing Performance Improvements
FMRIMS@MPI provides a business strategy and how to manage change effectively. These processes are essential because markets and competitors don’t stand still. Competition is an inevitable part of manufacturing today and the ability of a firm to compete is the final arbiter of the longevity of Client Operating business.

Figure 21 - Pillars for Continuous Manufacturing Performance Improvements

FMRIMS@MPI provides a process and know-how to enlist the support of all workers in the planned change. This will only happen when each worker finds fulfilment in the process of change.

FMRIMS@MPI provides orchestrated transition to knowledge based operation driven to satisfy employee’s needs such as identity, excitement, learning, and to feel valued.
FMRIMS@MPI IMPLEMENTATION?

FMRIMS@MPI is a methodology that manages all efforts to reach the excellence.

It aims at building a culture to maximize production effectiveness & people capability.

Figure 22 - Culture for Continuous Manufacturing Performance Improvements

These needs are met in many different ways providing excitement in search for enlightenment. Client employees will be induced to a ‘compelling vision’ that gives focus, meaning and a positive physiology.

FMRIMS@MPI WAY OF WORKING

- Visual communication
- Team & performance driven
- Process oriented
- Customer focused

- Many customers & auditors have visited
- WCM

Figure 23 - Team Progress Reporting
8.6 PAS 55 4.6: Performance assessment and improvement

The two main activities of this section of PAS 55 are:

- Performance and condition monitoring (4.6.1).
- Investigation of asset-related failures, incidents, and nonconformities (4.6.2).

FMRIMS & MAINTelligence Asset Management provides full support for these activities by providing all data necessary to track, monitor, and manage asset condition and performance. FMRIMS & MAINTelligence Asset Management also supports Corrective and Preventive Action (CAPA) in life sciences environments and Corrective Action Programs in nuclear environments.
8.7 PAS 55 4.6.1: Performance and condition monitoring

FMRIMS & MAINTelligence Asset Management is to provide a structured data environment where the results of all the various monitoring activities can be brought together and reviewed against established structures, policies, and targets.

FMRIMS & MAINTelligence Asset Management supports both the concepts of “leading” indicators—where potential problems can be identified before they occur—and “lagging” indicators, where, for example, the analysis of past failures can indicate a decreasing performance trend.

Investigation and follow-up of incidents and nonconformities are key to asset performance improvements. FMRIMS & MAINTelligence Asset Management has a linked set of incident, problem, and change management applications which support the identification of incidents, the allocation of problems for investigation, and the management of changes to assets or procedures.

Figure 25 - Managing Improvements
9.0 CONTACTS FOR MORE INFORMATION
9.0 CONTACTS FOR MORE INFORMATION

For more information

To learn more about how FMRIMS & MAINTintellegence Asset Management solutions can help you manage business critical assets and facilitate compliance with PAS 55 standards, contact your FMRIMS & MAINTintellegence Asset Management sales representative at Norcan Reliability Engineering,

_or visit www.norcanreliabilityengineering.com and

©DMSI Reliability Maintenance, Maintenance Management System, Asset Management System, Condition Monitoring Systems, Vancouver, BC, Canada,

_or visit www.desmaint.com/

ACKNOWLEDGEMENTS

Thanks to Mr. Killian Wagner for commenting and editing the white paper.
Namik Kosaric is a Canadian Professional Engineer with experience with Norcan Reliability Engineering, PETRONAS, Bahrain Petroleum Company and ESSO Petroleum Canada in reliability improvements and maintenance cost reduction, mechanical design, project engineering and technical support of Oil Refineries and Oil Production Facilities.

Currently Namik Kosaric is Principle Consultant with Norcan Reliability Engineering involved in FMRIMS implementation to worldwide clients.

For 8 years in PETRONAS Namik Kosaric was responsible for providing technical and knowledge leadership in development, coordination and implementation of plant reliability and integrity improvements and program to PETRONAS OPU’s to improve and support the overall Petronas objectives.

In BAPCO, Namik Kosaric, pioneered and implemented a root cause failure analysis of lost profit opportunities and chronic failures using a multi-disciplinary teams to improve plant reliability, availability, safety and to ultimately reduce operating costs. Significant cost savings were achieved as a result of over 200 completed investigations.

For 23 years in ESSO Petroleum Canada, Namik Kosaric has made significant contribution worldwide in reliability improvements, design, projects and maintenance cost reduction in upstream and downstream facilities.