SWEATING THE ASSETS

Reduce costs and boost output by getting more out of your assets.

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INTRODUCTION

Across many industries, business conditions have become even tougher. Companies need new and smarter ways to boost margins if they want to remain successful into the future.

Economically, the short-term outlook for many industries is grim. Rising costs and falling commodity prices are putting pressure on the bottom line. Globally, demand in China is falling and businesses must become more competitive to survive. In this tough environment, companies need new ways to increase their margins.

The good news – particularly for companies that own a lot of assets – is that there is a fast and effective way to achieve margin growth. Some people call it ‘sweating the assets’. But it’s not just about making your assets work harder. Rather, it’s about making assets work more efficiently and effectively; it’s about steering clear of downtime or unexpected equipment failure; and it’s about trimming unnecessary expenditure from asset management budgets. From a bottom line perspective, it’s about boosting the assets’ contribution to earnings before interest and tax (EBIT).

This whitepaper explores a range of methodologies for making assets run more productively, and to increase their value or reduce their costs in a sustainable way that delivers long-term results for the business.

MARGIN GROWTH INITIATIVES

1. Structure
   Centralised functions assist line management allowing growth without duplication of support. Projects enhance our breadth/depth.

2. Supply & Logistics
   The best way to provide products and services to our customers in a secure and cost effective manner.

3. Manufacturing
   Consistency and efficiency of planned production through asset management and process control.

4. Value in Use
   Applying products and techniques in ways that add value to our customers while enhancing our services.

It is expected that annual revenue will increase, driven by changing product and services mix, growth in new markets and increasing strip ratios.

Source: Orica
THE ECONOMIC CONTRIBUTION OF ASSETS

What contribution do your assets currently make to your business? Are they drawing funds from the bottom line, or working above nameplate capacity to contribute more to your margin?

In tough economic times, the evaluation of how your assets contribute to overall margins is very important. Such an evaluation will help you identify whether your assets are costing your business money – in which case you can implement strategies to reduce these costs; or whether they have the potential to contribute to margin gains – in which case you can implement strategies to increase the percentage they add to the bottom line.

As any asset manager will attest, it can go either way. Assets can be the source of margin increase or margin loss, depending on their reliability and availability.

ASSETS’ CONTRIBUTION TO MARGIN LOSSES

Unfortunately, assets can occasionally let a business down. Equipment breakdowns, overspend on maintenance or, worse, major meltdowns have all been known to significantly impact on the profitability of a company.

There are four key events in which underperforming assets cause margin losses:

1. Catastrophic failure
2. Systemic failures
3. Equipment defects
4. High cost of maintenance

ASSETS’ CONTRIBUTION TO MARGIN GAINS

Managed the right way, assets can contribute significantly to profit margins. It takes a strategic approach to maintenance and asset management, in key areas such as:

1. Increasing availability and plant capacity
2. Reducing unnecessary maintenance costs
3. Reducing unnecessary spares holding costs
4. Planning optimum retirement of plant and equipment

THE PATH TO MAKING GAINS

The rest of this whitepaper examines the methodologies and best practices for both reducing the likelihood of assets causing margin loss, and increasing the likelihood of assets contributing to margin gains.
If you have identified that your assets are costing your business money – whether through catastrophic failure, systemic failure, equipment defects or excessive maintenance – there are proven techniques for dealing with the problem.

Here, we look at the most suitable techniques for eliminating or avoiding the primary causes of margin loss.

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<th>Cause of Margin Loss</th>
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Whilst there are common risk management tools applied in various stages of equipment lifecycle such as FMEA, HAZOP, Fault and Event Trees, there are many occasions whereby catastrophic failures still occur, such as Texas City explosion, the Longford Gas plant, Deepwater Horizon and others. VAA is a high level process that collects information regarding vulnerabilities across a wide cross section of plant operators, maintainers, inspectors, engineers. It takes opinions, experiences, informal practices, workarounds, deterioration, changed conditions, changed operating parameters, and identifies potential exposures and vulnerabilities. It is highly engaging, rigorous and produces a lot of information to be then prioritised for follow up action.

**PROCESS RELIABILITY**

This technique involves using a statistical process to identify systemic losses and special cause (or one-off) events that are not typical of normal production.

The statistical analysis of daily production data using Weibull technique identifies the types of losses a plant may be experiencing when compared against nameplate or other similar plants. An understanding of the volume of losses attributed to systemic or special causes provides insights into performance issues and where to address the causes. The analyst is then able to focus on areas of improvement and ongoing trending of results.

Shown below is an analysis plot representing the results of a processing plant and losses attributable to both systemic and special cause (reliability) issues.
ROOt CAuSE AnAlySIS (RCA)

Over time, assets inevitably deteriorate, errors can be made, conditions may change. Equipment failures take time to address and, often, asset managers have other priorities so it is easier to just fix today’s problems. If the cause of problems are ignored or swept under the carpet, they will build up over time and potentially cause major problems down the track. Plant reliability may be compromised, losses accumulate and more significant failures can eventuate.

RCA is a tried and tested technique for identifying problems within plant or equipment. It is a highly effective method for getting to the root causes (because there is rarely only ever one cause) of problems; and for finding solutions that can reduce the likelihood of a repeat occurrence. A culture of addressing the causes of problems will reduce the daily load of repairs, increase reliability and reduce the likelihood of more significant failures.

MAINTEnAnCe OPtIMISAtIOn

The cost of maintenance is an area that is often seen to be discretionary – and making savings can have an immediate impact on the bottom line.

However, if cuts are made in the short term, you may face significantly higher costs down the track. You can use a range of Maintenance Optimisation strategies to help cut costs – taking both short term and long term impacts into account.

Reliability Centred Maintenance (RCM) is a proven procedure that incorporates techniques such as Failure Mode Effects Analysis (FMEA) to determine the optimum maintenance policy for a particular asset. Many contingencies – such as redundancy, cost of spares, cost of labour, equipment ageing and repair times – are taken into account in such an analysis, and RCM can show how and where to reduce costs. A quantitative approach to RCM using failure models and simulators provide the means to make truly proactive decisions, forecast outcomes and align decisions using today’s knowledge to future expectations.

BEyOnD tHE REACtIVE

Once these techniques have been successfully implemented – and the sources of margin loss have been adequately removed – you are then ready to implement techniques that move your assets from the company’s cost centre to its profit centre.

The proactive asset management techniques described in the next section are geared for contributing to sustainable, long-term growth and margin gains.
INCORPORATING MARGIN GAINS ATTRIBUTED TO ASSETS

Just as you can control how much an asset costs your business, you can control how much an asset can positively contribute to the bottom line.

This section looks at specific techniques that can be applied to increase the profitability and performance of assets.

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SYSTEM ANALYSIS

The primary objective of System Analysis is to identify and eliminate bottlenecks in a system, and is particularly useful in complex operations where the contribution of different parts of the system are not clear.

An analyst performing System Analysis using builds a representative model using reliability block diagrams, and runs a simulation to produce a quantitative view of the contribution of all parts of a system. The technique is used to assess the reliability of individual components and their dependencies on other events or assets in order to assess the overall availability of the system.

This helps to determine the importance of each element, so that the analyst can play “what if” with different levels of redundancy, size of buffers, maintenance strategies, and spares holding levels, in order to find the optimum.

MAINTENANCE BENEFIT ANALYSIS

Unfortunately, there has been a long tradition of organisations fostering a culture of maintenance in which the maintenance crews are lauded as heroes when they step in to fix things that are broken. In such cultures, preventative maintenance is less appreciated, despite it being proven to save money.

Maintenance Benefit Analysis – similar to Maintenance Optimisation, as described in the previous section – is used to evaluate a maintenance plan and identify any areas where maintenance is either not needed or is not optimal. A Maintenance Benefit Analysis is used to identify where alternatives to current practice can be improved by choosing a different type of strategy or frequency.

SPARES OPTIMISATION

Typically, maintenance crews love spares and want lots of them in their plant or facility. Yet plant managers resent having too many spares in stock as they tie up capital and take up storage space.

Spares Optimisation is all about finding the optimum level of spares to hold; a level that balances the cost of not having spares available against the cost of holding the spares in stock.

REPAIR VS REPLACE ANALYSIS

Knowing when to replace a piece of equipment shouldn’t be guesswork, as the right time to replace can save hundreds of thousands of dollars in repairs.

Repair vs Replace Analysis is used to predict or track the costs of repairs against the cost of replacement. As the cost of repairs increases (which incorporates costs like labour and parts), it becomes less viable to maintain the asset. Plus, as the cost of new equipment falls, it becomes more viable to buy it new. Life Cycle Cost analysis can be applied to assess the optimum point to switch from repair-mode to replace-mode.
As its name suggests, an “asset” is a useful or valuable thing. Indeed, the antonym of “asset” is “liability”. Hence, an organisation’s assets should deliver value; not cost money.

With the right techniques and strategies in place, asset managers can ensure that their plant and equipment is performing at and being maintained at optimum levels. These many and varied techniques can be applied across the different phases of an asset’s life to ensure that, instead of draining money from the bottom line, it actively contributes to margin increases.

ARMS Reliability can show you how to achieve great cost savings and margin increases across the whole organisation by using these techniques and their associated software tools; and will train your team to implement and manage these changes proactively.

About ARMS Reliability

Since 1995, ARMS Reliability has been at the forefront of proactive asset management strategies for a range of blue chip companies throughout the world. These companies have entrusted us with delivering business goals through effective asset management and improvements in operational productivity.

ARMS Reliability is a service, software, and training organisation providing a “one stop shop” for Reliability Engineering, RAMS, and Maintenance Optimisation for both new and existing projects.

If you would like to discuss your situation and what are the essential elements to achieving best practice Asset Management, then give ARMS Reliability a call or Enquire now.