IQA
Technical Committee

# TECHNICAL BRIEFING PAPER No. 2

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# EVENT DRIVEN DETERMINISTIC COSTING AN OVERVIEW

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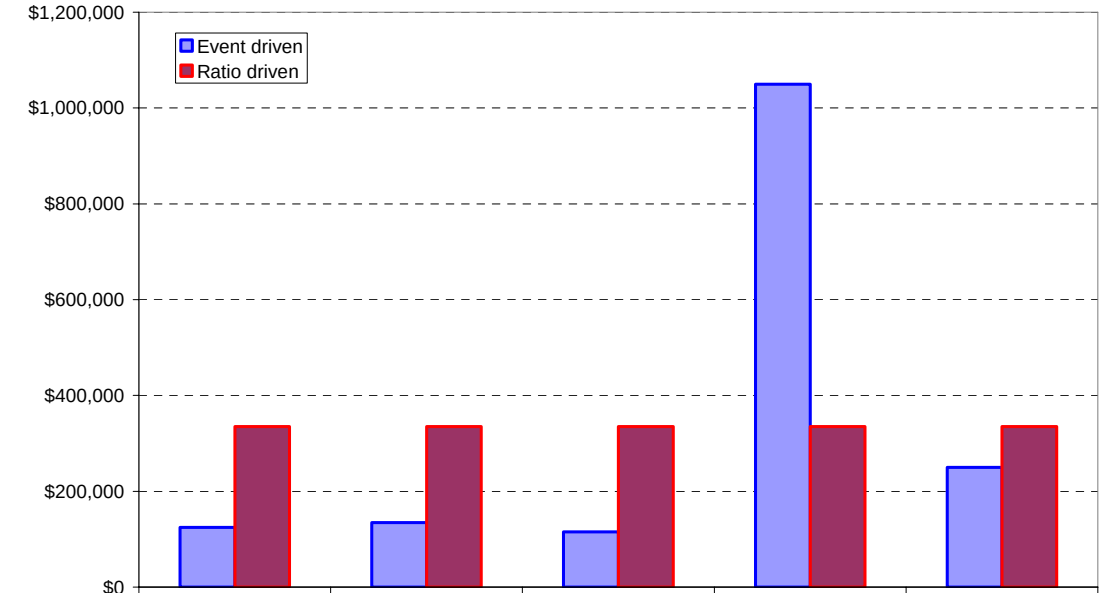
## Introduction

Real world operations tend to be event driven e.g. product changes, major maintenance event, servicing etc. Financial models on the other hand tend to be ratio driven – e.g. $/month, t/yr etc and seek to approximate the events that occur in operations. The difference between these two view of the world can be substantial and this paper seeks to note the differences in outcome and the discuss the sense in taking up an even driven costing methodology. The following graph gives an example of the maintenance costs of a machine considered in both a ratio and event driven format.




| | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Event driven | $125,000 | $135,000 | $115,000 | $1,050,000 | $250,000 |
| Ratio driven | $335,000 | $335,000 | $335,000 | $335,000 | $335,000 |

**Figure 1 - Machine $/hr vs. $/yr**

Many businesses would take the costing approach shown by the maroon bars, not the blue ones. The operational reality however is that the blue bars are more useful to us as they allow us to plan for the future, not just know what it might cost as an average – e.g. backslapping about beating budget in years 2006-08 is liable to end in tears in 2009 when reality catches up. The blue bars are helpful not only in understanding cash flow, but also in determining such things as equipment availability, maintenance planning, spares inventory and labour requirements.

## Event Driven Costing

In an operational sense we think of events (e.g. an engine rebuild) and we generally have some idea of the frequency at which it will occur. For example, we might say that an electric motor has a life of say 15,000 hrs before it must be rebuilt or a conveyor belt has a life of one million tonnes at which point it needs to be replaced. When we view components in isolation, this type of analysis is fairly simply to deal with. However, when we begin to build up complex systems with multiple components on varying repair/replace schedules, the outcomes are hard to predict with conventional models and more specialised tools are required than spreadsheets. This type of analysis is particularly pertinent when we consider the life cycle cost of a machine. The following graph shows the maintenance costs for a machine running on a 1,500 hr/yr schedule vs. the same machine on a 2,000 hr/yr schedule.

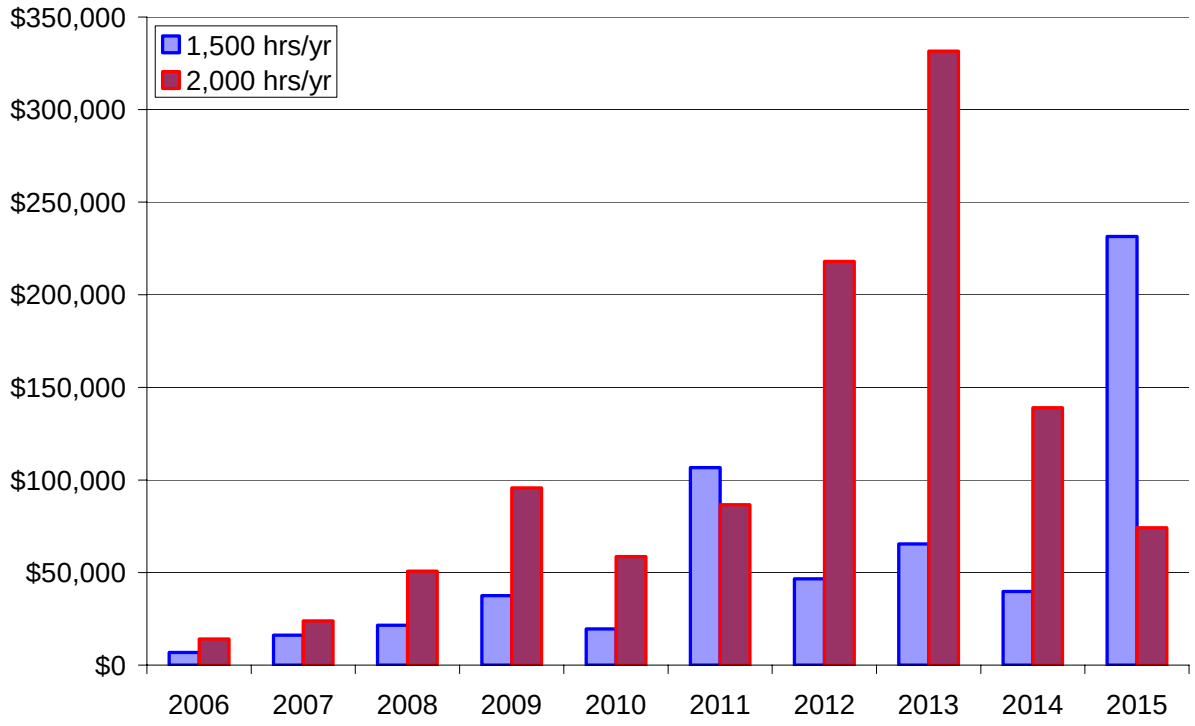



**Figure 2 - Maintenance cost - 1,500 hrs/yr vs. 2,000 hrs/yr**

As you can readily observe, the outcomes are significantly different - not only the amount of money, but the periods in which it is due.
It should be further noted that the maintenance cost per hour is $38/hr for the machine working on the 1,500 hr schedule and $52/hr on the 2,000 hr schedule. This is due to expensive life cycle costs being moved forward in time.
Another benefit to considering the outcome from an event driven viewpoint is that the NPV is different for an event driven calculation than for a ratio driven one. For example, if we took a constant maintenance cost per year for the blue bars, we would see an NPV of $363k. The event driven maintenance cost is $294k (major expenditure later and hence further discounted).

## Summary

Event driven costing is a useful planning tool that can help us better understand future costs and when they will likely fall and is relevant to the costing of machinery, both mobile and fixed.

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